WAITAKERE CITY COUNCIL
- 6 OCT 2006

DOCUMENT TRANSFER

To: **Waitakere City Council**
Private Bag 93 109
Henderson
Waitakere City 1231, New Zealand

Job No: 42608

Attention: Felicitas Dhliwayo

File:

From: Matthew Paetz

Date: 4 Oct 06

Copy to:

Babbage CONSULTANTS
BABBAGE CONSULTANTS LIMITED
109 FANSHAWE STREET, AUCKLAND
PO BOX 2027, AUCKLAND 1, NEW ZEALAND
PHONE 0-9-379 9980, FAX 0-9-377 1170
EMAIL: admin@babbage.co.nz

Housing Development
West Coast Rd (No. 423-429), Henderson

678308

DOCUMENTS: Please find enclosed diagram for Certificate of title for West Coast Road.

ACTION REQUIRED: Your information.

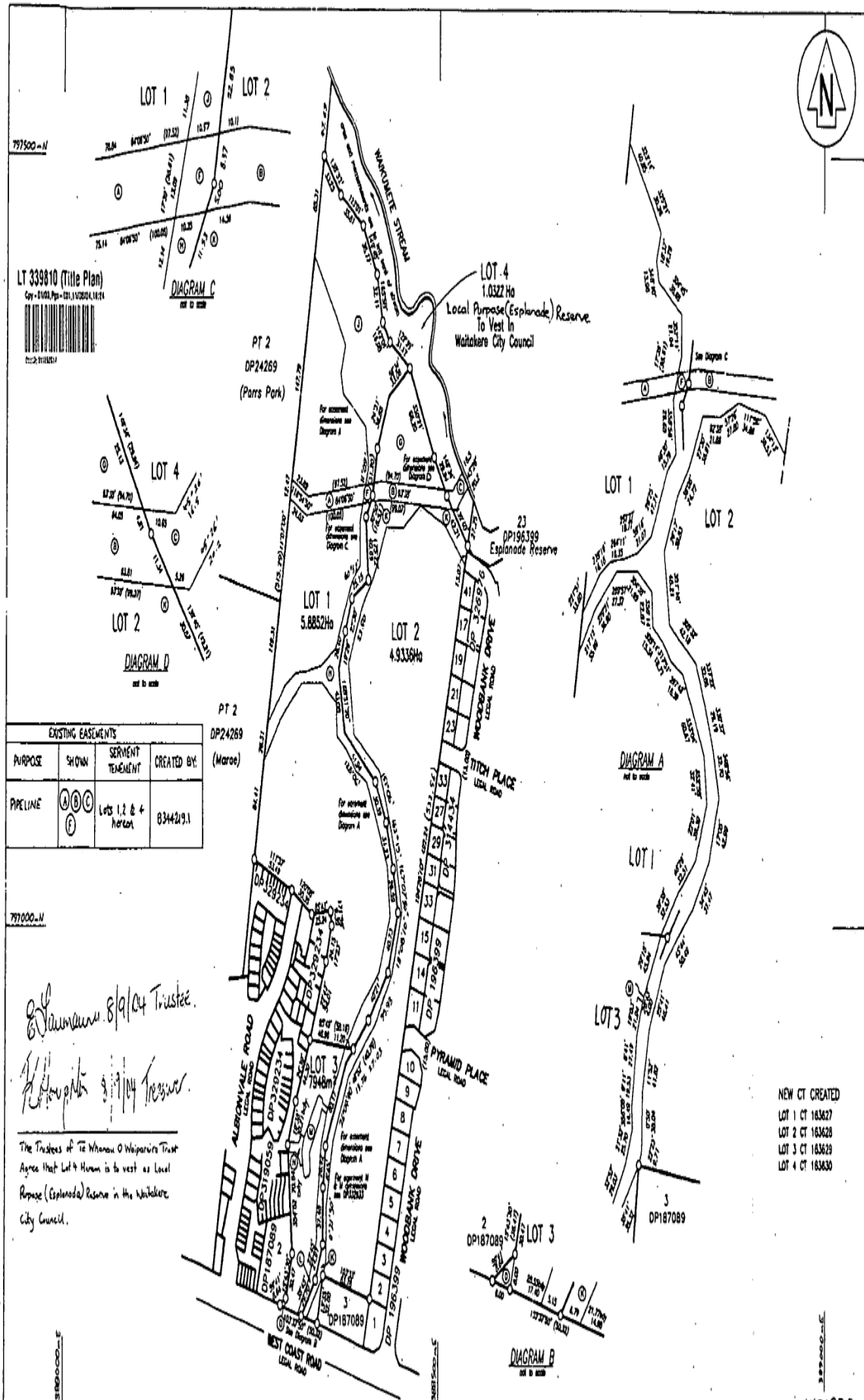
Regards

pp.

Matthew Paetz
Babbage Consultants Ltd

Chief Executive	
Corporate Services	
City Services Moselle	
Consultancy Services	
ECO - WATER	
Strategic Group	
Consent Services	✓
Field Services	

SENT: ✓ SURFACE MAIL FAST POST COURIER OTHER



EXISTING EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY:
PIPELINE	A B C F	Lots 1,2 & 4 hereon	B344219.1

E Hawkins 8/9/04 Trustee.

K Hemphill 8/9/04 Trustee.

The Trustees of Te Whanau O Waipareira Trust Agree that Lot 4 Hereon is to vest as Local Purpose (Esplanade) Reserve in the Waitakere City Council.

NEW CT CREATED
LOT 1 CT 163627
LOT 2 CT 163628
LOT 3 CT 163629
LOT 4 CT 163630

W21820

Approvals

I hereby certify that this plan was approved by the WAITAKERE CITY COUNCIL Council pursuant to Section 223 of the Resource Management Act 1991 on the 3rd day of August 2004 subject to the granting or reserving of the easements setout in the memorandum hereon.

Authorised Officer

EXISTING EASEMENTS IN GROSS			
PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY:
OIL & GAS SUPPLY	A B C F	Lots 1,2 & 4 hereon	B344219.1
STORMWATER DETENTION & DRAINAGE	M	Lot 3 hereon	6070221.2
ROW	N	Lot 3 hereon	6070221.1

EXISTING EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY:
RIGHT OF WAY	D	LOT 3 HEREON	6270606.7

MEMORANDUM OF EASEMENTS IN GROSS			
PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
DRAINAGE	F N J	LOT 1 HEREON	WAITAKERE CITY COUNCIL
	K B G	LOT 2 HEREON	
	L	LOT 3 HEREON	

Pursuant to Section 239(2) of the Resource Management Act 1991, the Waitakere City Council hereby certifies that Lot 4 on this plan shall vest in the Waitakere City Council subject to the existing easements hereon.

CLASS 1 SURVEY - Authorised Officer

Total Area 12.6458ha

Comprised in CT 117B/312

I, Nicholas Gordan Davies being a person entitled to practice as a licensed cadastral surveyor certify that:

(a) the surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor-General's Rules for Cadastral Survey 2002/2

(b) this dataset is accurate and has been created in accordance with that Act and those Rules

Signed ... Date 06/08/2004

Field Book ... p ... Traverse Book ... p ...

Reference Plans ...

Examined ... Correct ...

Approved as to Survey by Land Information NZ on

13/09/2004

Deposited by Land Information NZ on

2/2/2004

Title Received 11 AUG 2004

DP339810

LAND DISTRICT NORTH AUCKLAND

Survey Blk. & Dist. II TITIRANGI

NZMS 261 Sheet ... Record Map No. ...

Lots 1 - 4 Being Subdivision of Lot 4 DP187089

TERRITORIAL AUTHORITY Waitakere City

Surveyed by Davis Ogilvie 20703

Scale 1:2500 Date MAY 2004

-9+8---.

Waitakere City Council
Te Tatao o Waitakere

Memorandum

To	**Felicitas Dhliwayo** Consent Services Civic Offices
From	**Lucy Lunevich** Water & Drainage Engineer **EcoWater Solutions**
Date	Friday, 06 October 2006
Subject	**ECO-WATER CONDITIONS – SUB**

RMA No. 20061078
SPW No. 22816
Address: 423 – 429 West Coast Road
Applicant: NZ Housing Foundation

The following conditions are based on an assessment of the information provided with your application, and additional information supplied by you following a Section 92 request for further information addressing storm water treatment and detention on the site. Council has reviewed the impact the development would have on the environment and on EcoWater's infrastructure. When examining the application, reference was made to Council's Code of Practice for City Infrastructure and Land Development (WCC COP), District Plan and relevant ARC publications. In addition, Council engineers responsible for Water Supply, Wastewater, Stormwater, Subdivision and Consents were also requested to review your application.

1: SECTION 223 REQUIREMENTS

(a) As required by Condition (EW 5) below, define the 1 in 100 year overland flow path and provide a drainage easement(s) in gross in favour of Council in a Memorandum of Easements endorsed on the survey plan. Include in the Section 223 approval on the plan, "subject to the granting or reserving of the easement(s) set out in the Memorandum hereon." Notes:

(i) The easement document will be prepared by Council's Solicitor at the applicant's cost.
(ii) Prior to submitting the survey plan for Section 223 certification, obtain EcoWater's approval to the drainage easement.

This condition is required to comply with WCC COP (Refer section 4.2, 4.3.2.2, 4.3.4, 4.3.7.2).

(b) Provide drainage easements (for the services through Lots to Lots to protect the existing or proposed connections) in a Memorandum of Easements endorsed on the survey plan. Include in the Section 223 approval on the plan, "subject to the granting or reserving of the easement(s) set out in the Memorandum hereon."

This condition is required to comply with WCC COP (Refer section 6.3.4).

2: SECTION 224C REQUIREMENTS

ECOWATER CONDITIONS (PUBLIC DRAINAGE)

(EW 1) Before the commencement of any work, obtain the approval of Council to engineering plans and specifications prepared in accordance with Council's "Code of Practice for City Infrastructure and Land Development" detailing the nature and extent of any proposed

work. The engineering plans submitted will be processed separately and any amendments required will be advised in the engineering approval. *This condition is required to comply with WCC COP (Refer section 1.8).*

(EW 2) Design, provide and install a complete public wastewater reticulation system to serve all Lots in compliance with Councils Code of Practice for City Infrastructure and Land Development (Refer Section 5.0). Specific requirements:

(i) Under specific engineering approval extend the public wastewater system from the existing points within the site to serve each residential Lot within a separate connection to the public system. Specific requirements:

(ii) At the stage of engineering approval provide the written consent from Water Care Services Ltd to build over their sanitary sewer line.

(iii) No storm water treatment devices are permitted to be build above the public sewer lines.

(iv) Re-route the existing public drainage lines passing through Lot(s) 31-32 to provide more adequate building sites for those Lots. At the stage of engineering approval a quote will be obtained from Councils contractor for the proposed re - location of the reticulation system and new manholes required on the existing wastewater network.

(v) Design and install the new reticulation system clear from the proposed building platforms. Locate all drainage lines in the front on Lots where possible to provide ease of access for future maintenance requirements.

(vi) Advice Note: EcoWater policy requires any wastewater manholes or line connections to be constructed by EcoWater Solutions maintenance contractor. Wastewater manhole connections may be constructed by the applicant's contractor with engineering plan approval and under EcoWater's Quality Assurance supervision or by EcoWater Solutions maintenance contractor.

This condition is required to comply with the WCC COP (Refer section 5.0). The condition specifies location and design features required for the proposed drainage lines to minimise long term maintenance costs, increase accessibility and to minimise the likelihood of ground water infiltration into the public drainage system.

(EW 3) Take note that the existing public sanitary sewer passing through Lots may need to be re-laid at the owners expense (for that length below and one metre either side of the new dwelling) at the time application is made for building consent on this Lot. The building consent application shall include a cctv video inspection of the wastewater drain and foundation bridging details.

This condition is required to comply with the WCC COP (Refer section 4.4.3). An information leaflet is available from Council's Front Counter on building over public drains.

(EW 4) Design, provide and install a complete public storm water drainage system to serve all Lots in compliance with Council's Code of Practice for City Infrastructure and Land Development (Refer section 4.0). Specific requirements:

(i) Under specific engineering approval install the public storm water system to serve each residential Lot within a separate connection to the public system. Specific requirements:

(ii) Extend storm water line from the upstream properties 32, 34, 36 and 38 Wood Bank Drive.

(iii) Collect all existing discharge points. The system shall include connection to down pipes or drainage from any proposed buildings/paved areas.

(iv) Design the storm water network clear from the proposed building platforms.

(v) Obtain the written consent of the owner(s) if necessary prior to the commencement of work and obtain written evidence of their satisfaction with the restoration.

This condition is required to comply with the WCC COP (Refer section 4.0). The above condition specifies location and design features required for the proposed drainage lines to minimise long term maintenance costs, increase accessibility and to minimise the likelihood of ground water infiltration into the public drainage system.

(EW 5) That all new buildings must be constructed at least 500mm above the 1% AEP flood plain or the level of any downstream hydraulic control (500 mm above the crest of any road embankment), whichever is higher.

(EW 6) Provide a catchment analysis, define and form the 1 in 100 year overland flow path. Provide an As Built plan of the overland flowpath showing a long section and cross section for inclusion in Council's Hazards and Special Features Register.

include in report.

This condition is required to comply with the WCC COP (Refer section 4.2, 4.3.2.2, 4.3.4, 4.3.7), and because a site visit / EcoWater records / the Hazard Register / EcoWater Catchment Studies has revealed that the property is affected by overland stormwater flows in the 1 in 100 year storm event. This overland flowpath is required to be registered on the title by easement and on Council's Hazards and Special Features Register to ensure that future development does not take place in this flowpath.

(EW 7) To prevent increasing downstream flooding and increased channel erosion on the Opanuku Stream, stormwater disposal is required to comply with EcoWater's Countryside and Foothills Stormwater Management Code of Practice. A consent notice is to be issued and registered on the new title(s) for Lot(s) stating that the stormwater disposal system from any development on the site shall be designed to incorporate the following requirements to the satisfaction of EcoWater:

i) The proposed development must comply with the Parrs Stream Management Plan (Consent number 23006).
ii) That new developments should incorporate storm water management measures to restrict their post-development 50% AEP flows to their pre-development levels.
iii) Mimic natural runoff patterns, and not to discharge directly to a watercourse, open drain or piped system.
iv) To allow 20m average riparian margins from the centreline of the stream channel, and 4.5m above stream bed level.
v) The proposed storm water treatment devices must be capable of 75% sediment removal (as per the ARC Technical Publication No 10).
vi) Open channels within the site must be monitored for channel erosion, and appropriate mitigation works implemented as and when necessary.
vii) Note: Council's Hazards and Special Features Register will be advised of the above requirements.

This condition is required to ensure that the stormwater flow and volume from the development is kept to predevelopment levels for various storm events. This is necessary to ensure already severe downstream flooding is not increased as a result of development. It is also required to ensure channel erosion in the Opanuku Stream or its upper tributaries is not increased. The most effective means for achieving this outcome is replanting, roofwater re-use and minimising impervious areas.

(EW 8) Provided attenuation and treatment devices to serve the development as per the Waitakere City Council Comprehensive Discharge Consent for the Parrs Cross Catchment and WCC Code of Practice for City Infrastructure and Land Development (refer Section 4).

i) The proposed swale will be replaced the exiting pond to serve the Stage 3 of the development and upstream properties (Albion Vale catchments). At the stage engineering approval application provide a methodology of the relocation of the excising storm water device (pond).
ii) Provide calculation for each treatment device to comply with ARC TP 10 requirements.
iii) The approved access to treatment device(s) must remain available at all times for the design lifetime of the pond.
iv) Mechanism to drain the main pond and the forebay without the necessity for pumping (over pumping). In other words, wherever practical, it should be possible to drain the main pond and the forebay by gravity flow.
v) Provide maintenance manual and procedures for the removal and disposal of sediment including frequency.
vi) The need for armoured spillways when the discharge velocity is greater than 2m/s for more than one-hour duration.
(i) Provide engineering plans and calculations to EcoWater for approval prior to commencing works.
(ii) Provide a planting plan, including species list, quantities, and methodology to EcoWater and Parks for approval prior to commencing planting.

(iii) Provide a surveyed as-built plan of the device showing all lid and invert levels, permanent water level, and contours at 200mm intervals below water level.
(iv) Provide a geotechnical completion report certifying construction of the pond.
(v) Provide a maintenance manual for the treatment device.

This condition is required to ensure that adverse effects of the proposed development on local waterways and receiving environments are mitigated. Stormwater quality treatment intercepts a percentage of silts, sediments, heavy metals and other pollutants washed off road carriageways and impermeable surfaces that would otherwise degrade the environment.

(EW 9) All ponds shall be operated and regularly maintained by the developer, or his agent, for a period of one year with the planting being maintained for two growing seasons. At the end of the two growing season period a final inspection and handover to Council's Storm water Operations department shall take place. The following activities and procedures shall be completed to Council's satisfaction prior to final acceptance of the pond(s):

(i) During building operations on individual lots, a significant amount of sediment is likely to enter the pond(s). Accordingly, the developer shall ensure that the pond(s) are cleaned and de-silted and sediment disposed of to the developer's own approved site.

(ii) Any rubbish collected and disposed of appropriately.

(iii) Planting well established and maintained for the two growing seasons. Grass cut regularly and dead plants replaced with the same or similar or bonding arrangements suitable to the Development Engineer arranged.

(EW 10) Design, provide and install a complete public water supply reticulation system and fire fighting services to serve all Lots in compliance with Council's Code of Practice for City Infrastructure and Land Development (Refer section 6). Specific requirements:

(i) Under specific engineering approval install the public water supply system from within the site to serve each residential Lot within a separate connection to the public system. Specific requirements:
(ii) Provide and install a private water service pipe to the body of each Lot as specified in WCC COP Section 6.3.12 Case 1.
(iii) Pay to the Council the cost of supervising the shut down of Council's water supply mains. This service includes Council providing written advice to all affected property owners/tenants.
(iv) Provide a detail showing the proposed connection to the existing Council watermain/s. The detail is to include all flanges, joints and applicable details. In addition any water reticulation plan is to show all necessary design details to inform construction (eg. thrust blocks etc).
(v) Provide and install a fire hydrant within 135 metres of the farthest point of fire risk and within 65m of the end of a cul-de-sac. Note: The hydrant is to be on a direct traffic route to the property. The distance specified above may not be measured as a radius.
(vi) Where the required public system is on private property, easements over the course of such system in favour of Council will be necessary.

This condition is required to comply with the WCC COP (Refer section 6.0), and to specify location and design features required for the proposed water reticulation to minimise long term maintenance costs, increase accessibility and encourage property owner accountability for water use and water conservation.

(EW 11) Provide in the design of services for the reticulation of the upstream catchment and install such reticulation to the boundary of the upstream properties.

(EW 12) Where drainage work is required to be carried out on land outside the subdivision, obtain the written consent of the owner(s) of that land prior to the approval of the drainage plans. After construction and prior to Section 224 release, obtain the written acknowledgement of the owner(s) that the property has been satisfactorily reinstated.

This condition is required to comply with the WCC COP (Refer section 1.6.2.3).

(EW 13) Contact EcoWater's Subdivisions Assistant (ph 8368000ext8248) to arrange a pre-start meeting. Plans are required to be submitted and Engineering Approval obtained before requesting a pre-start meeting.

(EW 14) Provide an As-Built drainage plan prepared by a registered surveyor and cctv video inspection of the new public drainage, in accordance with WCC COP.

FEES, BONDS & CONTRIBUTIONS

(FC 1) Pay any EcoWater engineering, works supervision, 224c processing, and administrative fees as incurred. These fees will be charged at Councils advertised schedule of fees.

(FC 2) Pay a 2½% maintenance deposit (minimum $500.00) on the value of works being taken over by Council, which is refundable upon final acceptance of the works at the end of the maintenance period.

This condition is required to comply with the WCC COP (Refer section 1.10.1, 1.11.5.1, 5.7 Quality & Release Section).

(FC 3) Pay to the Council pursuant to Section 407/409 of the Act the sum of **$207,492.01 (incl. GST at 12.5%). This includes $30,071.34** for 18 units and **$177,420.67** for 59 dwellings (incl. GST at 12.5%) towards the mitigation of downstream flooding through the Twin Streams Project (Oratia / Opanuku Stream Catchment) necessary to serve the subdivision. ($1,670.63 per additional unit or $3,007.13 per additional Lot).

This condition is required to comply with the requirements of Section 283 of the Local Government Act, and because stormwater drains in the catchment are under capacity to accommodate development to permitted activity level. Therefore the applicant is required to contribute towards the cost of upgrading the under capacity drainage to enable development to proceed without increasing the frequency or severity of overflows.

GENERAL CONDITIONS

(GL 1) Advise Council the name of the Consultant and/or person(s) who will be the developer's representative fulfilling engineering responsibilities as detailed in section 1.4.1 of Council's Code of Practice for City Infrastructure and Land Development.

A résumé stating the qualifications and experience of the nominated representative may be required at the Council's discretion.

Note: WCC COP requires the developer to appoint a suitably qualified and experienced person for any projects that involve development works for which standards are specified in the COP. On larger projects (those with public roading) a Registered Engineer or Registered Surveyor will be deemed to meet these criteria. The developer's representative shall have insurance liability and indemnity cover as appropriate, and be responsible for the following:

i) Investigating, designing and obtaining approvals for the works.
ii) Providing contract administration and engineering supervision of the works.
iii) Co-ordination of specialist responses e.g. geotechnical, hydrology, structural reporting.
iv) Certification of the works upon completion.

This condition is required to comply with WCC COP (Refer section 1.4).

Felicitas Dhliwayo

From: Jodie Mitchell [jodiemitchell@slingshot.co.nz]
Sent: Monday, 2 October 2006 10:22 a.m.
To: Felicitas Dhliwayo
Subject: RE: 423 West Coast Road

Hi Felicitas

Yes, Jeanette, Renee, Gordon and I met to clarify issues and it was agreed that we would provide consistency and work together but also that Gordon would deal with the individual lots and Parks with the public land. Parks S 92 request sent on 21/09/06 did not involve any individual/private landscaping or planting requests. The request was following the Design Review comments and is the final requirements prior to approval.

None of the issues were major – just some additions to the planting schedules (following ecological input that was not provided previously as Chris was away for 7 weeks) and also planting details for trees on roads/adjacent to public parking areas. I didn't include all of the ecological issues as from my perspective the information already received addressed most of Parks concerns and a balanced approach between arboricultural/maintenance/ecological is the most reasonable.

I am available Friday, however, once Catherine has got back to me with the requested information all of our concerns have been covered so my presence is likely to be of little benefit at cost to the applicant.

Let me know if you need further information.

Yes – raining I would welcome it more if I had already planted my garden!

Regards
Jodie

Jodie Mitchell
Planning Consultant
ph/fax 09 575 3635
Mob 021 664 807
Postal Address: 26 Kesteven Ave
Glendowie
Auckland 1005

-----Original Message-----
From: Felicitas Dhliwayo [mailto:Felicitas.Dhliwayo@waitakere.govt.nz]
Sent: Monday, October 02, 2006 8:25 AM
To: Jodie Mitchell
Subject: 423 West Coast Road

Goodmorning Jodie

I was wondering if your landscape requirements have been satisfied. Did you receive any amended plans? I havent received anything new. I was talking to Gordon (Council's Landscape Architect) and he said that the plans submitted so far do not include the correct species of trees on the individual lots. I know you guys have been working together so that you request the same information. I realise you send a S92 letter to Catherine on 21/09/06. Does this also cover the individual lots. Please advise.

Matthew Paetz of Babbage Consultants has requested that we meet with him this Friday for an update on this application. He had indicated he wants to meet with Jeannette, Peter Joyce and myself. So I need to know where everything else is at before we meet. From what he is saying I have the feeling that he thinks everying else has been finalised and expects the report to be finalised in a couple of weeks.

Have a good day (the weather is horrible though).

Regards,

Felicitas Dhliwayo
Resource Planner
Waitakere City Council

Phone: 836 8000 x8352

Note:
This message is for the named person's use only. It may contain confidential, proprietary or legally privileged information. No confidentiality or privilege is waived or lost by any mistransmission. If you receive this message in error, please immediately delete it and all copies of it from your system, destroy any hard copies of it and notify the sender. You must not, directly or indirectly, use, disclose, distribute, print, or copy any part of this message if you are not the intended recipient.
Any views expressed in this message are those of the individual sender, except where the message states otherwise and the sender is authorised to state them to be the views of any such entity.
Thank You.
http://www.waitakere.govt.nz

2/10/06

spoke to Jodie & asked her to talk to Catherine so that the agreed species of Prunus amamii are on individual lots instead of Py- Amended plans to be provided.

D O C U M E N T T R A N S F E R

To:	**Waitakere City Council** Private Bag 93109 Henderson Waitakere City Auckland, New Zealand	***Job No:***	42608/C
Attention:	Lucy Lunevich	***File:***	
From:	Fiona Keir	***Date:***	28 Sep 06
Copy to:			

RECEIVED ON
2 9 SEP 2006
BY ECOWATER

Babbage CONSULTANTS
BABBAGE CONSULTANTS LIMITED
109 FANSHAWE STREET, AUCKLAND
PO BOX 2027, AUCKLAND 1, NEW ZEALAND
PHONE 0-9-379 9980, FAX 0-9-377 1170
EMAIL: admin@babbage.co.nz

WAITAKERE CITY COUNCIL
2 9 SEP 2006
677835

Housing Development
West Coast Rd (No. 423-429), Henderson
Resource Consent Updated Drawings

DOCUMENTS: Please find attached a set of updated drawings:

42608 C01 Topographical Plan (Sheet 1)
42608 C02 Topographical Plan (Sheet 2)
42608 C03 Earthworks Plan (Sheet 1)
42608 C04 Earthworks Plan (Sheet 2)
42608 C05 Erosion & Sediment Control Plan (Sheet 1)
42608 C06 Erosion & Sediment Control Plan (Sheet 2)
42608 C07 Sediment Control Details
42608 C10 Drainage Plan (Sheet 1)
42608 C11 Drainage Plan (Sheet 2)
42608 C15 Stage 2 Swale Layout
42608 C16 Stage 3 Swale Layout
42608 C17 Wetland & Detention Basin 1 Layout
42608 C18 Pond Details Plan
42608 C19 Detention Basin 2 Layout
42608 C20 Roading Plan (Sheet 1)
42608 C21 Roading Plan (Sheet 2)
42608 C22 Road Longitudinal Sections (Sheet 1)
42608 C23 Road Longitudinal Sections (Sheet 2)
42608 C24 Road Longitudinal Sections (Sheet 3)
42608 C25 Road Cross Sections (Sheet 1)
42608 C26 Road Cross Sections (Sheet 2)
42608 C35 Services Plan (Sheet 1)
42608 C36 Services Plan (Sheet 2)
42608 C45 Stormwater Catchment Plan (Sheet 1)
42608 C46 Stormwater Catchment Plan (Sheet 2)
42608 C50 Retaining Wall Plan (Sheet 1)
42608 C51 Retaining Wall Plan (Sheet 2)

Kevin,
Copy for your info
From,

ACTION REQUIRED: To be included in the resource consent application.

Regards

Fiona Keir
Babbage Consultants Ltd

Chief Executive	
Corporate Services	
City Services Moselle	
Consultancy Services	
ECO - WATER	✓
Strategic Group	
Consent Services	
Field Services	

Copy of Letter + Docs to Lucy. 29.9.06

SENT: ✓ SURFACE MAIL FAST POST COURIER OTHER

Felicitas Dhliwayo

From: Jodie Mitchell [jodiemitchell@slingshot.co.nz]
Sent: Friday, 22 September 2006 1:17 p.m.
To: Felicitas Dhliwayo
Subject: FW: 423-429 West Coast Road, RMA 20061077

Hi Felicitas

Apologies for not sending this through yesterday. Following design review last Tuesday some minor changes / further detail was requested. Copy below of request to SOUL Environments following a call with Cath first.

Any questions let me know
Jodie

Jodie Mitchell
Planning Consultant
ph/fax 09 575 3635
Mob 021 664 807
Postal Address: 26 Kesteven Ave
Glendowie
Auckland 1005

-----Original Message-----
From: Jodie Mitchell [mailto:jodiemitchell@slingshot.co.nz]
Sent: Thursday, September 21, 2006 3:07 PM
To: 'cath@landscapearchitecture.co.nz'
Subject: 423-429 West Coast Road, RMA 20061077

Catherine

Further to our phone call and my e-mail yesterday, the following amendments are requested subsequent to the landscaping being submitted to Parks Design Review:

1. That the tree at the northern end of the most southern parking area on the western side of Parrs Stream be removed and replaced with permeable pavers. This is on the basis that the area is marginal for a tree and also to avoid the area becoming muddy during the wetter months.

2. Can you please clarify the curbing proposed and mulching in relation to the specimen tree in the traffic calming area/round about at the southern end and also the trees for the curved parking area adjacent to the stream. Curbing for the planting needs to have a raised edge in order to contain mulch and avoid spillage.

3. Please confirm that the parking areas provided on the streets will be curbed. It is required that the parking areas are not flush with the footpath this may require the installation of wheel stops. (Final detail can be to the satisfaction of the parks consents planner if preferred?)

4. A 3 metre chain entry is required for the maintenance route into the stormwater/wetland area.

5. Planting amendments suggested:

Types B and C: Re-vegetation shrub and tree mixes:

Add toe toe. *Cortaderia fulvida* should be ok as Types B and C doesn't include areas close to the walkway (it can be noted that it isn't planted within 2.5 metre of the streamside walkway to avoid this)

Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks:

Add *cordyline australis* and *coprosma robusta*
Change *phormium cookianum* to *tenax*

Thanks Catherine, please get in touch should you have any queries / wish to discuss.

Jodie Mitchell
Planning Consultant
ph/fax 09 575 3635
Mob 021 664 807
Postal Address: 26 Kesteven Ave
Glendowie
Auckland 1005

Refer: Helen Chin: EcoWater: Ref: ICMP.HC
Extension No. 8241: 6 Henderson Valley Road

14 September 2006

Auckland Regional Council
Private Bag 92012

AUCKLAND

Attention: Susan Ira

Dear Sue

PARRS STREAM STORMWATER MANAGEMENT PLAN – (CONSENT NUMBER 23006)

Waitakere City Council requests formal manager approval for a modification of the Parrs Stream Stormwater Management Plan (PSSMP) with respect to 423 West Coast Road; a 61 lot subdivision.

This follows from a meeting on 12 September 2006 between Lucy Lunevich (WCC), Graeme Ridley (ARC Consultant) and Babbage Consultants Ltd (Developers consultant).

Under the PSSMP the main stream channel below West Coast Road is to be protected by a 20m riparian. The proposal as presented has structures within the riparian/floodplain which are contrary to the recommendation within the PSSMP, however, Graeme Ridley has advised that whilst the ARC do not encourage the construction of structures in the riparian, in this instance it is recognised that there is no alternative location on the site whilst maintaining the economic viability of the development.

Further to the meeting and after conferring with the relevant ARC officer regarding the situation of siting stormwater detention ponds in the riparian at West Coast Road, Graeme Ridley advised Babbage Ltd that the ARC had agreed that the appropriate consents can be approved for the proposal subject to specific consent conditions. If these are complied with, then the ARC will be satisfied that the application is compliant in respect of the catchment management plan and ARC policy.

In order to protect the responsibilities of both WCC and ARC in the light of these decisions, we respectfully ask that you approve a modification to the PSSMP to reflect the above conditions.

Yours sincerely,

Helen Chin
Stormwater Catchment Planning Engineer

423 West Coast Rd

MEETING WITH

Chris Boucher
Jodie Mitchell
Renee Lambert
Jeannette Ibrahim

} Arboricultural Issues.

Fortunately Renee was able to confirm the number of preliminary discussions & that although specific tree removal was never discussed the role of Parks in managing the reserve has always been quite clear.

Jodie & Renee have accepted responsibility for managing tree removal / weed control & re-planting through auditing of consent.

Chris has therefore (gracefully) agree that he no longer has a role & will withdraw his services at this point.

We reserved the ability to use his services for post consent peer review.

Felicitas Dhliwayo

From: Jeannette Ibrahim
Sent: Tuesday, 29 August 2006 10:30 a.m.
To: Felicitas Dhliwayo
Subject: FW: 423 West Coast Road - Housing Foundation of NZ application

Does this help you with the EcoWater stuff ?

From: Shelley Renkema
Sent: Tuesday, 29 August 2006 10:13 a.m.
To: Jeannette Ibrahim; Lucy Lunevich
Cc: Michael Campbell
Subject: RE: 423 West Coast Road - Housing Foundation of NZ application

Jeannette
The 20m riparian margin is a requirement of the Parrs Stream Catchment Management Plan, and the ARC Comprehensive Discharge Consent which has been issued to WCC on the basis of that document. We MUST comply with that document.
If the applicant wishes to apply for a development that is not in compliance with both of those documents, then they are required to obtain a separate stormwater discharge consent from the ARC for their development. From EcoWater's point of view the only assessment we can make is against the CMP and Comprehensive Discharge Consent, which they are NOT complying with.

THIS IS AN ASSESSMENT MADE UNDER THE INFRASTRUCTURE RULE..... PLUS THE GREENFIELDS SUBDIVISION RULES..... REFER PARTICULARLY TO ASSESSMENT CRITERIA 4(ab) as well as 4(aa), 4 (ac), 4(ad), 4(ae), 4(af), 4(ag), 4(ah), 4(ai), 4(aj) etc.

Based on their current proposal that does not comply with the ARC discharge consent, we are not in a position to be able to write conditions of consent unless the applicant amends their proposal to comply with the CMP and ARC discharge consent, or else provides evidence that ARC has granted a separate discharge consent to their particular proposal. Please advise the applicant accordingly.

Kind Regards

Shelley Renkema
Principal Subdivision & Consents Engineer
Development Services - EcoWater

Waitakere City Council
Waitakere Central - Admin Building Level 4
6 Henderson Valley Road
Phone: 836 8000 extn 8203
Fax: 836 8001
Email: shelley.renkema@waitakere.govt.nz

From: Jeannette Ibrahim
Sent: Tuesday, 29 August 2006 9:35 a.m.
To: Lucy Lunevich
Cc: Shelley Renkema; Michael Campbell
Subject: 423 West Coast Road - Housing Foundation of NZ application

Hi Lucy

Regarding the above - the titles have issued for this land and the consent notices cover the drainage reserve, the FFL for buildings and the planting of the reserve areas - there is

nothing on the titles that can allow you to revisit the average 20m riparian management - I would point out though that (a) (as I recollect it) the drainage reserve as vested to Council does in fact provide this protection and (b) the original 'requirement' was actually an Advice Note which has no enforceability associated with it.

All this was in fact discussed at length in the preliminary discussion that Council had with the applicant and there really should be no need to be revisiting this yet again - I believe the applicants had consulted extensively with EcoWater before putting their application in to Council and would have quite justifiable expectations that their application could be processed without too many hiccups along the way.

Hope you can see your way soon to providing appropriate conditions of consent that would allow suitable mitigation of environmental effects.

Regards
Jeannette

Jeannette Ibrahim
Team Leader - Consents

Tel: 836 8000 ext 8535
jeannette.ibrahim@waitakere.govt.nz
Fax: 836 8001

Level 2 Waitakere Central
Private Bag 93109
Henderson 0650

FILE COPY

Refer: Felicitas Dhliwayo, Consent Services
Extension No. 8352

25 August 2006

Matthew Paetz
Babbage Consultants Ltd
P O Box 2027

AUCKLAND

Dear Matthew

REQUEST FOR FURTHER INFORMATION IN ACCORDANCE WITH SECTION 92 OF THE RESOURCE MANAGEMENT ACT 1991

Re: **Resource Consent Application:** RMA20061077/20061078
Proposal: To construct 77 residential units and subdivide into 61 lots requiring consent for; medium density housing, density, height, height in relation to boundary, earthworks, vegetation alteration and development on land known to be subject to inundation.
Site Address: 423-429 West Coast Road

I acknowledge receipt of your resource consent application dated 26 June 2006.

Following the meeting held on 17/08/09 I have discussed the request for further information from Council's Consultant Arborist, Mr Chris Boucher with my Team Leaders, Jeanette Ibrahim and Matthew Wright. We have agreed to amend the request for further information that was e-mailed to you on 15/08/06. I would like to take this opportunity to apologise for sending the information request without editing it.

The following further information is requested to enable an adequate analysis of your proposal, its effects on the environment and the way in which any adverse effects on the environment may be mitigated. The information requested below will enable Council to undertake a full and proper assessment of the application and provide a determination on it.

Please provide a detailed report with the following information;

1. Please provide a copy of an A3 plan (or larger) of vegetation removal/protection, preferably shown on a topographical site plan so that scaling can be readily undertaken.

2. Please also show the Natural Area Limits, i.e. General Natural Area, Restoration and Riparian Margin. Please specify the vegetation to be removed or works within the dripline of trees in the natural areas and the associated activity status for each natural area.

3. A detailed proposed tree protection methodology that includes protection measures for the overhanging vegetation from adjoining sites (not part of the subject site). Please specify/ clarify the extent of earthworks where they come within the dripline of protected trees on the site and on neighbouring sites and provide an assessment of effects on these trees.

Pursuant to S.92A of the Resource Management Act you must respond in writing to the following information request by 11 September 2006 by undertaking one (or more) of the following options:

1. Provide the information.

2. Request, in writing, an alternative date by when this information would be provided. The revised timeframe would need to be agreed to by Council. The application would remain suspended until this time. If you agree to provide the information but do not nominate a timeframe then Council will set a reasonable time within which you must comply, and will notify you of this.

3. Advise in writing that you are refusing to provide the information if you consider the information request to be unnecessary to enable the determination of the application.

4. Object to the information request under Section 357A of the Resource Management Act. The application would remain suspended until the objection was resolved or appeal rights are exercised.

If no response is received to any of the options by 16 September 2006, or you refuse to provide the information under Option 3 then Council may decline the application on the basis of insufficient information.

In accordance with the Resource Management Act, processing of your application will be suspended until the indicated date, pending your response to this request.

Please note that the Resource Management Act prescribes a detailed process for the issuing of requests for further information, and the options available to an applicant when responding to these requests. This letter is intended as a summary only of the legislative processes involved. Requests for information are issued by Council in order to facilitate the efficient processing of your application, and to ensure that all necessary information is before Council to ensure best practice decision-making takes place. If you wish to query Council's information request then we suggest that you contact the author of this letter to discuss, prior to taking any formal steps under the Act.

If you have any queries regarding the above, please contact Felicitas Dhliwayo of Consent Services (phone 836 8000 Ext 8352).

Yours faithfully

Felicitas Dhliwayo
Resource Planner

cc Chris Boucher

GEMS PROPERTY PROFILE

- Property Details
- Licences
- Rates
- Dogs
- Ownership/Tenancy
- Water Billing
- R.F.S.
- Register of Hazards and Special Features
- Notes
- Analysis

PROPERTY DETAILS

GEMS Id : 305273
Address : 423-429 WEST COAST RD, GLEN EDEN, WAITAKERE CITY 0602
Property Type : Standard Property
Property Name :
Rate Account : 802080

Back to Top

LICENSING

Lot 3

There is no Licensing data

Back to Top

RATES

802080 Rate Account
787747 Ratepayer & Own NEW ZEALAND HOUSING FOUNDATION
802080 ENDED :
628888 Ratepayer & Own PHILIP LINDSAY PARR
802080 ENDED :
695851 Ratepayer & Own ALAN BRIAN PARR
802080 ENDED :
5015 Ratepayer & Own TE WHANAU O WAIPAREIRA TRUST

Back to Top

DOGS

There is no Dogs data

Back to Top

PROPERTY

There is no Ownership/Tenancy data

Back to Top

WATER BILLING

No Water Billing Details for this property

Back to Top

REQUEST FOR SERVICE

DEV's : Development Contributions

DEV	20040002	Current: Contact Details: Claudine Chalton - 837 4214
Owner	5015	TE WHANAU O WAIPAREIRA TRUST

HSF's : Hazards & Special Features

HSF	7762	Completed: Site - not buildings flooded
HSF	11689	Completed: Drainage easement Area M.
Owner	5015	TE WHANAU O WAIPAREIRA TRUST
HSF	11690	Completed: Right of Way easement.
Owner	5015	TE WHANAU O WAIPAREIRA TRUST
HSF	12074	Completed: Overland flowpath area L.
Owner	5015	TE WHANAU O WAIPAREIRA TRUST
HSF	12077	Completed: Flowpath/floor levels.
Owner	5015	TE WHANAU O WAIPAREIRA TRUST

LIM's : Land Information Memorandum

LIM	20050521	Completed: Client :EQUITY REALTY (1995) LTD
Applicant	781088	PHILL PURNELL ANDREWS
Owner	5015	TE WHANAU O WAIPAREIRA TRUST

PFT's : Property File Tracking

PFT	305273	Current:
Owner	5015	TE WHANAU O WAIPAREIRA TRUST

RFS's : Request For Service Complaints

RFS	135793	Completed: Customer advised vacant section is overgrown and
Customer	656330	YVETTE JUNE BUTLER
RFS	248539	Completed: Rob advises that there is a missed green metro ru
Customer	603043	WAITAKERE CITY COUNCIL

RMA's : Resource Management Act

RMA	20030146	Completed: Pre-application meeting - medium density developm
Applicant	729850	DAVIS OGILVIE & PARTNERS
ENDED *Applicant*	*5015*	*TE WHANAU O WAIPAREIRA TRUST*
RMA	20030326	Current: Removal of Gorse, Wooley Nightshade, Fruit trees.
Applicant	752217	ROYCE INVESTMENTS LIMITED
ENDED *Applicant*	*5015*	*TE WHANAU O WAIPAREIRA TRUST*
RMA	20031138	Completed: SUB: 3-Lot; Area > 1 Ha
Applicant	5015	TE WHANAU O WAIPAREIRA TRUST
RMA	20040821	Completed: Pre Apllication meeting for a proposed subdivisio
Applicant	752217	ROYCE INVESTMENTS LIMITED
ENDED *Applicant*	*5015*	*TE WHANAU O WAIPAREIRA TRUST*
RMA	20041222	Current: Sec 127 request to change condition 1 of RMA 200311
Applicant	752217	ROYCE INVESTMENTS LIMITED
ENDED *Applicant*	*5015*	*TE WHANAU O WAIPAREIRA TRUST*
RMA	20061077	Current: Residential development - density; hgt; impermeable
Applicant	787747	NEW ZEALAND HOUSING FOUNDATION
RMA	20061078	Suspended: 61 LOT SUB
Applicant	787747	NEW ZEALAND HOUSING FOUNDATION

Back to Top

REGISTER OF HAZARDS AND SPECIAL FEATURES

*

Special Feature Number: 7762
Property affected by flooding. (Refer all applications for building consent to Drainage Engineer).

Special Feature Number: 11689
Area lettered M on Lot 3 DP 339810 is a drainage easement in favour of Council to provide for and maintain stormwater quality treatment devices/ponds.

Special Feature Number: 11690
Area N on Lot 3 DP 339810 is a Right Of Way Easement in favour of Council.

Special Feature Number: 12074
The owner shall not place, erect, construct or permit to remain on any part of the easement land lettered L on DP 339810 any solid structure, fill or other impediment which may inhibit the natural flowpath of water nor carry out any reshaping, excavation, filling or cutting of the easement land in such a way that will result in a change in the direction or position of the natural flowpath of surface water;

Special Feature Number: 12077
The owner shall not place, erect, construct or permit to remain on any part of the remainder of the land any residential buildings unless the floor levels of such residential buildings are not less than 500mm in height above the one in one hundred year flood level of the overland flowpath measured at a point squared off the boundary of the easement land at the highest/uphill side of such proposed floor;

The floor level specified may have subsequently been altered by later catchment studies. Any building consent applications are to be referred to the Drainage Assets Engineer to check that the application is in accordance with the current information.

Back to Top

PROPERTY NOTES

Entity PR **Entity key** 305273 **Sequence** 1779
Note type PDP No Private Drainage Plan **Level** Normal
Date created 23 Mar 2005, 12:37
Created by SS7 CHRISTINE BOSWELL, Phone 8634
Warning expired No
Note summary
Note details

Entity PR **Entity key** 305273 **Sequence** 1308
Note type PSF Planning Special Feature **Level** Normal
Date created 17 Mar 2005, 17:28
Created by PLK RM PLANNER(RESIGNED03/06/2005), Phone 8623
Warning expired No
Note summary PLANNING SPECIAL FEATURES
Note details
1 * DISTRICT ARTERIAL ROAD (HIGH NOISE ROUTE)
2 * RIPARIAN MARGIN (7m) ALONG EASTERN BOUNDARY OF SITE
3 * RIPARIAN MARGIN (NON-RIPARIAN) ON NORTH-EAST CORNER OF SITE

Entity PR **Entity key** 305273 **Sequence** 1
Note type SCT Sewer Catchment **Level** Normal
Date created 09 Aug 2000,
Created by IS2 JOHN MCLEOD, Phone 8930
Warning expired No
Note summary GLEN EDEN
Note details

Entity PR **Entity key** 305273 **Sequence** 1
Note type SSC Sewer Sub Catchment **Level** Normal
Date created 09 Aug 2000,
Created by IS2 JOHN MCLEOD, Phone 8930
Warning expired No
Note summary ge63
Note details

Entity PR **Entity key** 305273 **Sequence** 1
Note type TZ Transitional Zoning **Level** Normal
Date created 30 Jun 2000, 18:00
Created by
Warning expired No
Note summary COMMERCIAL 4 (W)
Note details

Back to Top

PROPERTY ANALYSIS

Group [CA] Cadastral Reference
Sub [ ]
Ref. F8 D4 **Review date**

Click here to get parcel information 305273

Back to Top

GEMS PROPERTY PROFILE

- Property Details
- Licences
- Rates
- Dogs
- Ownership/Tenancy
- Water Billing
- R.F.S.
- Register of Hazards and Special Features
- Notes
- Analysis

PROPERTY DETAILS

GEMS Id : 314319
Address : 4 PYRAMID PL, GLEN EDEN, WAITAKERE CITY 0602
Property Type : Standard Property
Property Name :
Rate Account : 811387

Back to Top

LICENSING

Lot 2

Gas pipeline

There is no Licensing data

Back to Top

RATES

811387 Rate Account
787747 Ratepayer & Own NEW ZEALAND HOUSING FOUNDATION
811387 ENDED :
5015 Ratepayer & Own TE WHANAU O WAIPAREIRA TRUST

Back to Top

DOGS

There is no Dogs data

Back to Top

PROPERTY

There is no Ownership/Tenancy data

Back to Top

WATER BILLING

Account No : W1335800702
Account Status : Active
Amount Outstanding : $.00
Date Last Bill :
Date Last Paid : / /
On Direct Debit? : N
Account Name : NEW ZEALAND HOUSIN
Arrears Status : Date:
Date Due :
Amount Last Bill : $.00
Amount Last Paid : **********
Meter Location : 0.5M FR R CNR & 0.

Meter No : 26001385

Special Reading? : No

Reading Details

Reading Date	Units Cons.	$Amount Billed	Days Cons.	Avg Daily Litres Cons
	0	.00		
	0	.00		
	0	.00		
	0	.00		

Back to Top

REQUEST FOR SERVICE

AVH's : Abandoned Vehicles

AVH 14895 Completed: silver mitzi V3000,no plates,WOF/REGO exp'05, SY1
Customer 783355 FS6 - DONALD LEITCH
ENDED *Customer* *787747* *NEW ZEALAND HOUSING FOUNDATION*

HSF's : Hazards & Special Features

HSF 12071 Completed: Revegetation of reserve.
HSF 12073 Completed: Overland flow Areas K, B and G.
HSF 12076 Completed: Flowpath/floor levels.
HSF 12087 Completed: Property affected by flooding.

LIM's : Land Information Memorandum

LIM 20050532 Completed: Client :EQUITY REALTY (1995) LTD
Applicant 781088 PHILL PURNELL ANDREWS
Owner 5015 TE WHANAU O WAIPAREIRA TRUST

PFT's : Property File Tracking

PFT 314319 Current:
Owner 787747 NEW ZEALAND HOUSING FOUNDATION

RFS's : Request For Service Complaints

RFS 388009 Completed: Caller noticed removal of trees on vacant land be
Customer 759529 BARBARA MARY MCLAREN
RFS 408925 Completed: Caller advises that 3 days ago a contractor (call
Customer 788739 CANDICE ANN OSBORNE

RMA's : Resource Management Act

RMA 20031138 Completed: SUB: 3-Lot; Area > 1 Ha
Applicant 5015 TE WHANAU O WAIPAREIRA TRUST

Back to Top

REGISTER OF HAZARDS AND SPECIAL FEATURES

*

Special Feature Number: 12071
The owner of the land shall not develop any part of the lot unless:

(a) That portion of the local purpose reserve being Lot 4 DP 339810 that is located adjacent to the land that is subject of such further development has been replanted to the entire satisfaction of the Waitakere City Council; and

(b) All replanting referred to herein is maintained by the owner at the owner's expense for a period of not less than two years from the date of the replanting and all maintenance is to be carried out to the entire satisfaction of the Waitakere City Council;

AND IT IS AGREED that the value, as assessed by the Waitakere City Council, of all replanting undertaken within the said Lot 4 DP 339810 shall be offset against any reserve contribution payable to the Waitakere City Council by the owner at the time of such further development.

Special Feature Number: 12073
The owner shall not place, erect, construct or permit to remain on any part of the easement land lettered K, B and G on DP 339810 any solid structure, fill or other impediment which may inhibit the natural flowpath of water nor carry out any reshaping, excavation, filling, or cutting of the easement land in such a way that will result in a change in the direction or position of the natural flowpath of surface water;

Special Feature Number: 12076
The owner shall not place, erect, construct or permit to remain on any part of the remainder of the land any residential buildings unless the floor levels of such residential buildings are not less than 500mm in height above the one in one hundred year flood level of the overland flowpath measured at a point squared off the boundary of the easement land at the highest/uphill side of such proposed floor;

The floor level specified may have subsequently been altered by later catchment studies. Any building consent applications are to be referred to the Drainage Assets Engineer to check that the application is in accordance with the current information.

Special Feature Number: 12087
Property (site) affected by flooding. (Refer all applications for building consent to the Drainage Planning Engineer).

The reason for this note is that there may be: a stream on or adjacent to the site (if any); possible pipeline overflow in an extreme storm event; overland flow from an upstream catchment and or ponding or flooding on parts of the site during wet weather conditions. The principal building on site is not directly affected. The circumstances giving rise to this note could be derived from a stormwater flooding questionnaire; a reported incident; and or a computer model study of the catchment in which the property is situated. The note is to ensure that any subsequent building proposal for the site and building consent application accommodates the potential consequences of flooding. In some cases this may mean that no further development is possible on the site.

Back to Top

PROPERTY NOTES

Entity PR **Entity key** 314319 **Sequence** 1778
Note type PDP No Private Drainage Plan **Level** Normal
Date created 23 Mar 2005, 12:36
Created by SS7 CHRISTINE BOSWELL, Phone 8634
Warning expired No
Note summary
Note details

Entity PR **Entity key** 314319 **Sequence** 1076
Note type PSF Planning Special Feature **Level** Normal
Date created 16 Mar 2005, 09:46
Created by PLK RM PLANNER(RESIGNED03/06/2005), Phone 8623
Warning expired No
Note summary PLANNING SPECIAL FEATURES
Note details
1 * LOCAL ROAD
2 * RIPARIAN MARGIN (7m) RUNS ALONG WESTERN BOUNDARY

3 * RIPARIAN MARGIN (NON RIPARIAN) ON SITE
4 * RESTORATION NATURAL AREA AT NORTH END OF SITE
5 * NATURAL GAS AND PETROLEUM PIPELINE ACROSS NORTHERN END OF SITE

Back to Top

PROPERTY ANALYSIS

Group [CA] Cadastral Reference
Sub [ ]
Ref. F8 D4 **Review date**

Click here to get parcel information 314319

Back to Top

Waitakere City Council
Te Tatao o Waitakere

Memorandum

To	**Jeannette Ibrahim** Consents Services Civic Offices
From	**Shelley Renkema** Water & Drainage Engineer **EcoWater Solutions**
Date	22 June 2004
Subject	**ECO-WATER CONDITIONS – VARIATION TO SCHEME PLAN**

RMA No. 20031138
SPW No. 21820
Address: 423-429 West Coast Rd, Glen Eden
Applicant: Te Whanau O Waipareira Trust

The following conditions are based on an assessment of the information provided with your application, and additional information supplied by you following a Section 92 request for further information addressing flooding issues. Council has reviewed the impact the development would have on the environment and on EcoWater's infrastructure. When examining the application, reference was made to Council's Code of Practice for City Infrastructure and Land Development (WCC COP) and District Plan. In addition, Council engineers responsible for Water Supply, Wastewater, Stormwater, Subdivision and Consents were also requested to review your application.

1: SECTION 223 REQUIREMENTS

(a) As required by Condition (EW1) below, define the 1 in 100 year floodplain of the Parrs Stream and tributary and provide a drainage easement(s) in gross in favour of Council in a Memorandum of Easements endorsed on the survey plan. Include in the Section 223 approval on the plan, "subject to the granting or reserving of the easement(s) set out in the Memorandum hereon." Note: The easement document will be prepared by Council's Solicitor at the applicant's cost.

This condition is required to comply with WCC COP (Refer section 4.2, 4.3.2.2, 4.3.4, 4.3.7.2).

2: SECTION 224C REQUIREMENTS

ECOWATER CONDITIONS (PUBLIC DRAINAGE)

(EW 1) Davis Ogilvie & Partners have provided calculations and a plan dated 4 September 2003 showing the effect of the 100 year flood frequency level of the Parrs Stream and tributary on all Lots adjacent thereto. Provide a drainage easement over the 1 in 100 year floodplain.

This condition is required to comply with WCC COP (Refer section 4.2, 4.3.2.2, 4.3.4, 4.3.7)

(EW 2) Advice Note: upon further development of Lots 1, 2 & 3 stormwater disposal is required to comply with the Parrs Stream Stormwater Management Plan and associated ARC Comprehensive Discharge Consent as follows:

(i) The area affected by flooding during the 1 in 100 year storm event is required to vest in Council as drainage reserve.

(ii) Lot 3 only – The area occupied by the stormwater treatment pond on Lot 3 is required to vest in Council as drainage reserve.

(iii) The main stream channel below West Coast Rd is to be protected as a riparian stormwater management area for an average width of 20m each side. Existing ponds and wetland communities should be preserved and enhanced and additional riparian planting carried out.

(iv) Incorporate, where practical, 'low impact design' principles as per ARC technical publication TP124.

(v) Incorporate stormwater management measures to restrict the post-development 50% AEP flows to pre-development levels.

(vi) The floor level of any new building must be constructed at least 500mm above the 1% AEP floodplain or the level of any downstream hydraulic control (eg 500mm above the crest of any road embankment), whichever is higher.

(vii) Provide stormwater quality treatment to the development in accordance with ARC's TP10, and Council will contribute towards upsizing the device to serve the upstream catchment, including the maximum possible length of West Coast Rd.

(viii) If a proposed development is outside the scope of the Parrs Stream Stormwater Management Plan and associated ARC Comprehensive Discharge Consent held by Waitakere City Council, the applicant will be required to obtain a separate discharge consent from the Auckland Regional Council.

(ix) Note: Council's Hazards and Special Features Register will be advised of the above requirements.

This condition is required to ensure that the stormwater flow and volume from the development is kept to predevelopment levels for various storm events. This is necessary to ensure already severe downstream flooding is not increased as a result of development. It is also required to ensure channel erosion in the Waikumete & Oratia Streams or its upper tributaries is not increased. The most effective means for achieving this outcome is replanting, roofwater re-use and minimising impervious areas.

FEES, BONDS & CONTRIBUTIONS

(FC 1) Pay any EcoWater engineering, works supervision, 224c processing, and administrative fees as incurred. These fees will be charged at Councils advertised schedule of fees.

(FC 2) Pay to the Council pursuant to Section 407/409 of the Act the sum of $406.64 (incl. GST at 12.5%) towards the cost of upgrading the sanitary sewer reticulation (main system improvements) necessary to serve the subdivision. ($203.32 per additional Lot).

This condition is required to comply with the requirements of Section 283 of the Local Government Act, and because wastewater drains in the catchment are under capacity to accommodate development to permitted activity level. Therefore the applicant is required to contribute towards the cost of upgrading the under capacity drainage to enable development to proceed without increasing the frequency or severity of overflows.

(FC 3) Pay to the Council pursuant to Section 407/409 of the Act the sum of $6,014.25 (incl. GST at 12.5%) towards the cost of upgrading the stormwater drainage system (Oratia Stream Catchment, Twin Streams Project, main system improvements) necessary to serve the subdivision. ($2,673.00 plus GST per additional Lot).

This condition is required to comply with the requirements of Section 283 of the Local Government Act, and because stormwater drains in the catchment are under capacity to accommodate development to permitted activity level. Therefore the applicant is required to contribute towards the cost of upgrading the under capacity drainage to enable development to proceed without increasing the frequency or severity of overflows.

Felicitas Dhliwayo

From: Jeannette Ibrahim
Sent: Monday, 28 August 2006 4:58 p.m.
To: Felicitas Dhliwayo
Subject: FW: 20031138 - EcoWater variation conditions 22.06.04.doc
Attachments: 20031138 - EcoWater variation conditions 22.06.04.doc

more info emerging - don't know if this will affect anything - i believe it is covered by the drainage reserve that has already been taken.

Jeannette

From: Lucy Lunevich
Sent: Monday, 28 August 2006 4:49 p.m.
To: Jeannette Ibrahim
Subject: RE: 20031138 - EcoWater variation conditions 22.06.04.doc

I was advised by Shelley that 20.m riparian margins should be on this site (which is below West Coast Rd). This is a part of ARC Comprehensive Discharge Consent as well (Peter Kov "reduced" from 30.0m to 20.0m).

Please note original subdivision (3 Lots) granted with conditions to do so. Please see attached. If I am wrong please advice.

Regards, Lucy

From: Shelley Renkema
Sent: Monday, 28 August 2006 4:36 p.m.
To: Lucy Lunevich
Subject: 20031138 - EcoWater variation conditions 22.06.04.doc

Felicitas Dhliwayo

From: Jodie Mitchell [jodiemitchell@slingshot.co.nz]
Sent: Saturday, 26 August 2006 2:09 p.m.
To: Gordon Griffin; 'Nick Robinson'; Roscoe Webb
Cc: 'Matthew Paetz'; Felicitas Dhliwayo
Subject: RE: West Coast Road

Hi Nick

Thanks for clarifying the matters raised in my letter. The following is provided in reply.

1. Given the slope of the bank grass is clearly inappropriate in terms of maintenance.

2. I have confirmed with Roscoe that block planting will be acceptable. The plants proposed are also satisfactory, including the exotic species listed. There is no requirement for all reserve plants to be native species in this instance.

3. While in terms of vehicular access, a wider path would be preferable for maintenance. However, given the narrow nature of the reserve together with the desire to avoid retaining walls (which is great), the 1.5m pathway, in consideration of the wider context, is adequate. The Code of Practice requires that the pedestrian pathway be exposed aggregate (section 7.3.7.3).

4. Bollards won't be required for the car parking spaces overlooking the stream, however as the slope of the drainage reserve to the north of the footbridge is gentler they will be required to prevent vehicles entering this reserve.

5. Regarding street trees, I understand that you were provided with inaccurate advice re: the Ulmus (Elm) trees. Apologies for this confusion. Given your overall landscaping layout, Liquidamber styraciflua is an appropriate street tree and one included on the Draft Tree Selection List.

With reference to, your final comment, it is correct that Prunus Sp. is included in the Draft Tree Selection. However there is a note that the P.awanui is best adapted for Waitakere City conditions and in this instance, Parks believe that the awanui would result in greater success than the Prunus x yedoensis.

It is noted that the table at this stage is in Draft form and while it can be used as a guide, is as yet not a statutory document. However, depending on a variety of factors there will be instances in which some species may be preferable over others included in the list. In the future Parks would be happy to discuss any specific species questions you may have prior to lodgment.

I trust that the above resolves outstanding Parks issues. If this is not the case, please let me know.

Regards
Jodie

Jodie Mitchell
Planning Consultant
ph/fax 09 575 3635
Mob 021 664 807
Postal Address: 26 Kesteven Ave
Glendowie
Auckland 1005

-----Original Message-----
From: Gordon Griffin [mailto:Gordon.Griffin@waitakere.govt.nz]

Sent: Friday, August 25, 2006 9:32 AM
To: Nick Robinson; Roscoe Webb; Jodie Mitchell
Cc: Matthew Paetz; Felicitas Dhliwayo
Subject: RE: West Coast Road

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regards
Gordon

From: Nick Robinson [mailto:nick@landscapearchitecture.co.nz]
Sent: Thursday, 24 August 2006 1:10 p.m.
To: Roscoe Webb; Jodie Mitchell; Gordon Griffin
Cc: Matthew Paetz; Felicitas Dhliwayo
Subject: West Coast Road

Hi Jodie, Roscoe and Gordon,

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Tel: 09-377-6822
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Email: nick@landscapearchitecture.co.nz
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Thank You.
http://www.waitakere.govt.nz

Felicitas Dhliwayo

From: Nick Robinson [nick@landscapearchitecture.co.nz]
Sent: Friday, 25 August 2006 3:04 p.m.
To: Gordon Griffin
Cc: Roscoe Webb; Jodie Mitchell; Matthew Paetz; Felicitas Dhliwayo
Subject: Re: West Coast Road

Hi Gordon,

Thanks for the quick response.

I will action your points regarding ground treatment in a note on the drawings.

Sophora microphylla Aiton (1789): 'Aiton' is the authority and 1789 the date for the name *Sophora microphylla* . According to the botanists this is the currently preffered name fgo rthe taxon previously known as *S. m.* var *microphylla.* If you click on the link in my original email it will take you to the Manaaki Whenua web page that I have used as my reference

http://nzflora.landcareresearch.co.nz/default.aspx?NavControl=search&selected=NameSearch.

(This web site is great for authoritative data on NZ natives)

Regards,

Nick

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ALL services are located at Waitakere Central, 6 Henderson Valley Road. The Customer Services 'One Stop Shop' is on Level 2 of the Administration wing. The 24 Hour Call Centre number remains 839 0400

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Thank You.
http://www.waitakere.govt.nz

Felicitas Dhliwayo

From: Gordon Griffin
Sent: Friday, 25 August 2006 9:51 a.m.
To: Felicitas Dhliwayo; matthew.paetz@babbage.co.nz
Subject: RE: landscaping issues

Matthew we have resolved the landscape plan re the on site planting. I have responded to Nick this morning. When finished, this however involves the framework trees. It is desirable that the planting of the framework trees be as per the approved plans, but there is some in-built flexibility, as a number of varieties of the Magnolia x soulangeana would be fine.
There would be plenty of scope beyond the plan for the residents to do their own thing since it is a framework of trees shown on the plan rather than full planting of each residential site.
Council's monitoring officers will have the say as to any substitutions made and are reasonable in this regard. It is desirable however that you follow the approved plans and I believe that shouldn't be a problem. Regards, Gordon.
Fwel
-----Original Message-----
From: Felicitas Dhliwayo
Sent: Thursday, 24 August 2006 7:49 a.m.
To: Gordon Griffin
Cc: Jeannette Ibrahim
Subject: FW: landscaping issues

Hi Gordon

Can you please get back to Matthew or to me regarding issues below.

Cheers

Felly.

-----Original Message-----
From: Matthew Paetz [mailto:matthew.paetz@babbage.co.nz]
Sent: Wednesday, 23 August 2006 4:35 p.m.
To: Felicitas Dhliwayo
Cc: bd.nzhf@xtra.co.nz; rientjes.consult@xtra.co.nz
Subject: landscaping issues

Hi Felicitas
We are actioning Gordon's requests on landscaping.
However there is just one point we wish to clarify.
Is there any way that a degree of flexibility can be built into the consent conditions so that the landscaping for the individual sites does not have to religiously follow the concepts that we are submitting?
I guess we have a little bit of concern that there will be no flexibility for individual house owners to individualise their properties Perhaps you could discuss with Gordon and Jeanette and advise us Thanks

Kind regards
Matthew

Matthew Paetz
Babbage Consultants Limited
Ph +64 9 379 9980 Fax +64 9 377 1170
E-mail; matthew.paetz@babbage.co.nz
Web; www.babbage.co.nz

CAUTION: This email message and accompanying data may contain information that is confidential and subject to legal privilege. If received in error, please notify us immediately, do not distribute the information to any party and erase all copies of the message and attachments. Thank you

Ref: 42608 : West Coast Rd (No. 423-429), Henderson

Felicitas Dhliwayo

From: Gordon Griffin
Sent: Friday, 25 August 2006 9:32 a.m.
To: Nick Robinson; Roscoe Webb; Jodie Mitchell
Cc: Matthew Paetz; Felicitas Dhliwayo
Subject: RE: West Coast Road

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P.O. Box 106747
Auckland 1143

Tel: 09-377-6822
Fax: 09-377-6821
Email: nick@landscapearchitecture.co.nz
www.landscapearchitecture.co.nz

Felicitas Dhliwayo

From: Matthew Paetz [matthew.paetz@babbage.co.nz]
Sent: Wednesday, 23 August 2006 4:35 p.m.
To: Felicitas Dhliwayo
Cc: bd.nzhf@xtra.co.nz; rientjes.consult@xtra.co.nz
Subject: landscaping issues

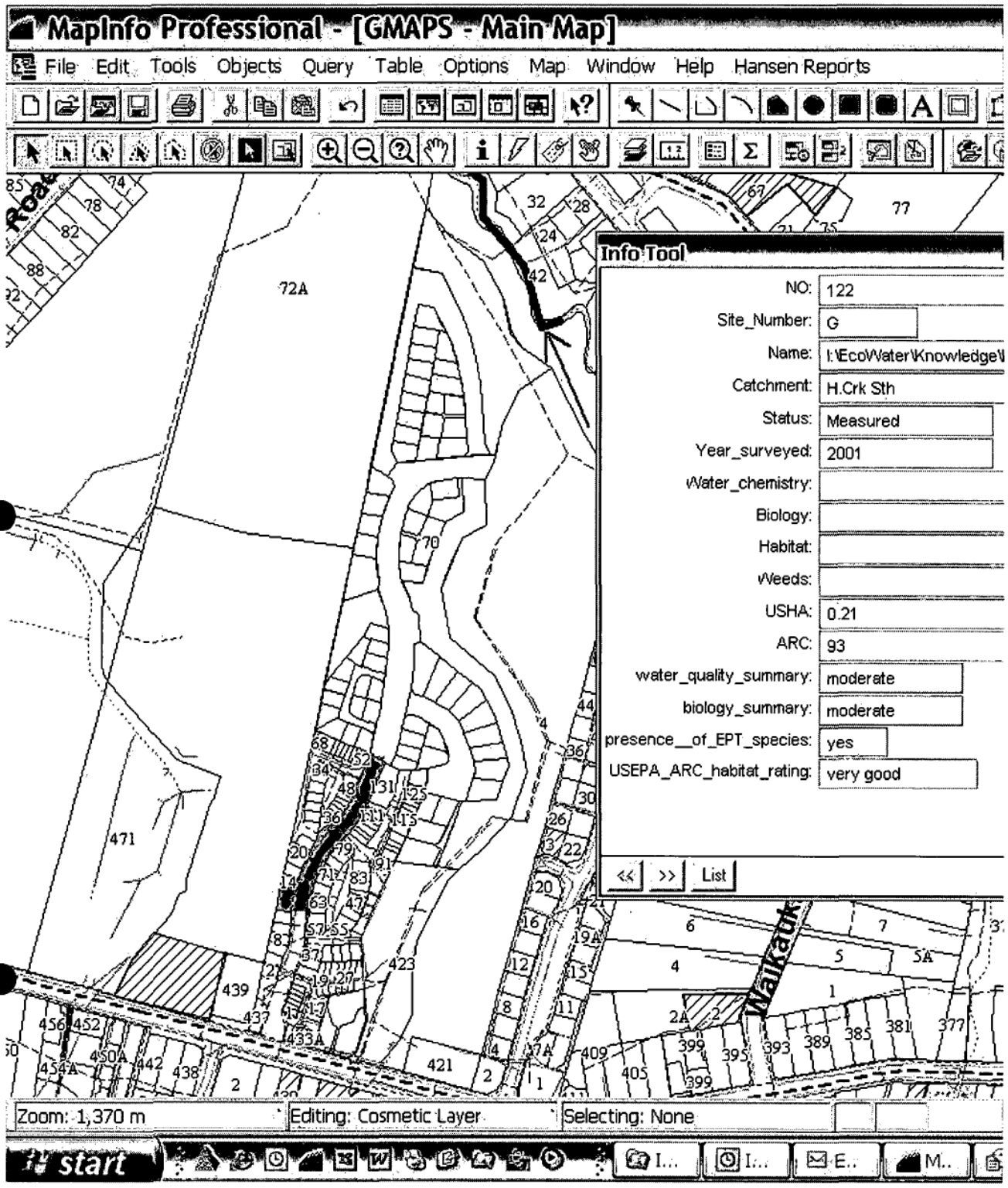
Hi Felicitas
We are actioning Gordon's requests on landscaping.
However there is just one point we wish to clarify.
Is there any way that a degree of flexibility can be built into the consent conditions so that the landscaping for the individual sites does not have to religiously follow the concepts that we are submitting?
I guess we have a little bit of concern that there will be no flexibility for individual house owners to individualise their properties Perhaps you could discuss with Gordon and Jeanette and advise us Thanks

Kind regards
Matthew

Matthew Paetz
Babbage Consultants Limited
Ph +64 9 379 9980 Fax +64 9 377 1170
E-mail; matthew.paetz@babbage.co.nz
Web; www.babbage.co.nz

CAUTION: This email message and accompanying data may contain information that is confidential and subject to legal privilege. If received in error, please notify us immediately, do not distribute the information to any party and erase all copies of the message and attachments. Thank you

Ref: 42608 : West Coast Rd (No. 423-429), Henderson



From: Jeannette Ibrahim
Sent: Tuesday, 22 August 2006 3:11 p.m.
To: Graham Leonard; Kevin Fan
Subject: Ecological quality information on the 'State of the environment' GIS maps

Hi Graham, Kevin

I am chasing the source of the information label for Parrs Stream, especially as it relates to 423 West Coast Road. Can you help? any references, reports etc?

Jeannette Ibrahim

From: Kevin Fan

Sent: Tuesday, 22 August 2006 4:01 p.m.

To: Jeannette Ibrahim; Graham Leonard

Subject: RE: Ecological quality information on the 'State of the environment' GIS maps

Hi Jeannette

EcoWater has an updated floodplain for 423 West Coast Road.
The attached plan is the most updated stream quality summary measured in 2001, it is in the main channel, we have not done any water quality survey of the small stream in 423 West Coast Road, the source for showing on the "Ecological quality information on the 'State of the environment' GIS maps" is not sure.

Regards
Kevin

Felicitas Dhliwayo

From: Jodie Mitchell [jodiemitchell@slingshot.co.nz]
Sent: Tuesday, 22 August 2006 2:52 p.m.
To: Felicitas Dhliwayo; Roscoe Webb; Gordon Griffin
Attachments: westcoast423-429.22august06.doc

Hi All

Please find attached a letter to SOUL Environments, attn: Nik Robinson. The letter contains some a request for species changes and also clarification on whether a grassed area or mass planting could be introduced for some of the reserve areas.

I have faxed a copy to Nik and will send a hard copy so you don't need to Felicitas. I will also send a copy to Matthew Paetz, Planning Consultant to keep him in the loop.

Regards
Jodie

Jodie Mitchell
Planning Consultant
ph/fax 09 575 3635
Mob 021 664 807
Postal Address: 26 Kesteven Ave
Glendowie
Auckland 1005

Jodie Mitchell
Planning Consultant

22 August 2006

SOUL Environments Ltd
P O Box 60211
Titirangi
Auckland

Fax: 817 3789

Attention: Nik Robinson

RMA No. 20061078
SPW No. 22816
Address: 423-429 West Coast Road, Glen Eden
Applicant: New Zealand Housing Foundation C/- Babbage Consultants Ltd

Dear Nik

RE: Parks Planning Comments Relating to Additional Information Provided

Thank you for presenting the amended and more detailed landscaping information aht the meeting on Thursday 17th August 2006, it was helpful in providing clarification.

Following the meeting, I have had the opportunity to discuss the revised landscaping schedules and corresponding plans regarding public spaces with Roscoe Webb, Team Leader, Parks Assets Operations. While the information was largely concurred with, several questions were raised. These are detailed as follows:

a) In relation to Area 'E' on the original landscape plan LSP-01 dated 16/06/06, in terms of maintenance of the landscaping and path clearance, a grassed area would be preferable. This is also likely to be a more cost effective alternative for your client. However, the practicality of this option depends largely on the finished slope of this area and whether it would be conducive to mowing. Could you please confirm the post earthworks slope.

   If the slope is incompatible with mowing, then the mix of species is considered appropriate. However, could you please confirm whether planting will be in blocks of species or mixes. The landscaping *plan "Typical Garden layout House Type 4B"* drawing number LSP-08 indicates that the planting is to be in small groups, mass planting of larger blocks is preferable. Mass planting of appropriate carex species such as testacea, secta, dissita, lessoniana, **or** lambertiana would also be suitable from Parks perspective along this slope.

b) Could you please confirm access to the above area in terms of maintenance. The type of planting may influence the access required.

c) Could you please confirm the finished slope between the public carparking spaces and the reserve as bollards may be required.

d) In terms of the street trees, Elm trees are covered by the Biosecurity Act and they can not be imported or exported out of the Auckland Region. The other species are considered suitable including:

1. Callistemon viminalis – Callistemon
2. Liquidamber styricaflua – American Sweet Gum
3. Prunus Awanui – Flowering Cherry
4. Betula rigra – River Birch
5. Fraxinus excelsior "Aurea' – Golden Ash

Any of these species would be appropriate to replace the Elm trees with, for example River Birch would be suitable for the setting.

I note that there is one Prunus x yedoensis proposed for the southern end of the development on the reserve adjacent to the two carparking spaces. This species should be replaced with the Awanui variety.

This information is required under Section 92 of the Resource Management Act 1991 to clarify some aspects while also providing feedback on Parks requirements. Therefore, the application has been placed 'on hold' until the additional information is received.

Should you have any queries regarding the above, I would be happy to discuss them with you directly. Any information should be forwarded to me at the contact details below.

Yours faithfully

Jodie Mitchell
Consultant Planner
Parks Planning

Address for service:
26 Kesteven Avenue
Glendowie
Auckland 1005
Ph/fax 09 575 3635
Mob: 021 664 807
Email: jodiemitchell@slingshot.co.nz

CC: Felicitas Dhliwayo, WCC Resource Consents Planner
Matthew Paetz, Babbage Consultants Ltd.

21 August 2006

Chris Boucher
P O Box 125-062
St Heliers
Auckland

Dear Chris

RE: Further information request for 423-429 West Coast Road- RMA20061077/20061078

Thank you for the arboricultural comments received for the above application. I have discussed your request for further information with my Team Leader, Jeanette Ibrahim and we would like to apologise for not defining the brief more clearly. I would like to clarify the following matters;

- Riparian margin areas are being addressed by Council's Parks Department. Land has already been vested as Drainage reserve under an earlier subdivision.

- As a comprehensive development including design and build, extensive earthworks are proposed. This also requires ARC consent. Therefore these matters will be adequately addressed under this consent and by ARC.

- Therefore we are asking for input on arboricultural matters only.

- An AEE has been provided and we are not in a position to dictate to an applicant who should undertake their work.

- We have therefore modified your request to the following as we believe that with the attached additional information this would be sufficient to allow you to make an assessment and provide appropriate recommendations;

  (i) **Please provide a copy of an A3 plan (or larger) of vegetation removal/protection, preferably shown on a topographical site plan so that scaling can be readily undertaken. The following scales are preferable; 1:100; 1:200 and 1:250.**

  (ii) **Please also show the Natural Area Limits, i.e. General Natural Area and Riparian Margin.**

  (iii) **An proposed tree protection methodology that includes protection measures for the overhanging vegetation from adjoining sites (not part of the subject site).**

- At this stage it is anticipated that a number of aspects of the proposal will be addressed post-approval through conditions of consent including weed eradication, re-vegetation and landscape treatment.

- Please note that Council is strongly supporting this proposal at the Strategy and Development level as a show case for affordable housing and the applicant is a non-profit organisation.

I will be forwarding the further information request to the applicant on the 25th of August. If you feel I have left out some important information please let me know before that date. I will post copies of the topographical and earthworks plans which you should receive shortly.

Regards,

Felicitas

Chris Boucher
CONSULTANT ARBORIST
P.O. Box 125-062, St Heliers, AUCKLAND 5
Phone/Fax: (09) 528-3645 Mobile: 021-855-894
Email: Chris.Boucher@arbman.co.nz

MEMORANDUM

TO: **FELICITAS DHYLIWAYO - RESOURCE PLANNER, WAITAKERE CITY COUNCIL**

DATE: **14 August 2006**

SUBJECT: **423-429 WEST COAST ROAD, GLEN EDEN – PRELIMINARY ASSESSMENT**
Reference: RMA20061078

ZONING: **LIVING ENVIRONMENT – GENERAL, RESTORATION & RIPARIAN MARGIN NATURAL AREAS**

1.0 As Consultant Arborist to the Waitakere City Council, I have been engaged to provide assessment of an application to subdivide the above property for a seventy-seven unit residential development. In the absence of a specific brief and detailed information, my preliminary assessment focuses on a number of issues relevant to existing vegetation present on the site and implications for that which allegedly remains following subdivision.

2.0 The proposals presumably include earth works for building footprints, internal road and pathway formation, vegetation alteration including tree removals and construction activity within root zones of protected trees and vegetation, installation of reticulated and other services, landscaping and other associated works. It is not clear whether dwelling construction is included in the application and your advice as to this matter is appreciated.

3.0 I have been provided with part of the application documentation that includes a vegetation assessment commentary from *Wilcon Sylvan Parks and Landscape Management* dated 16 June 2006. This document includes Sheet 2 (only) of an obscure aerial photograph (at greatly reduced scale) of part of the site, onto which, the proposed development is superimposed and a number of vegetation reference features are marked. I have also been provided with an Assessment of Visual Effects dated 21 June 2006 together with reduced scale landscape concept plans for the site, both from *Soul Environments*.

4.0 I understand that given the extent and location of proposed vegetation alteration on this site, alteration proposals are generally assessed as Controlled, Limited Discretionary and Discretionary Activities. Alteration of vegetation listed under the Removable Vegetation Appendix and the Environmentally Damaging Plants Appendix is also captured by these Activities. Your advice confirming these matters is also appreciated. Overall, the application is assessed as a **Discretionary Activity**.

5.0 Additionally, I have visited the site on 20 July 2006 to assess the application and to obtain a better understanding as to what vegetation is affected by the proposals.

6.0 To summarise, inadequate information is provided in order that the nature and extent of adverse effects on existing vegetation on the site can be accurately determined. The vegetation assessment report does not fully address the issues associated with subdivision proposals to develop the site. Instead, the assessment relies on photographs, brief comments and somewhat obscure compass directions in lieu of definitive reference points on a larger-scale survey plan. This is an ineffectual attempt to identify to the Council charged with processing the application, as to what vegetation protected by District Plan Rules is to be removed and what is proposed for retention. The report also lacks certainty on a number of matters relating to recommendations provided, therefore providing little surety to the Council that any vegetation can in fact be adequately retained on the site.

7.0 From the information provided, I am not able to accurately determine the true extent of protected trees and vegetation proposed for removal or yet that which is to remain on the site. To this end, there appears to be some contradiction between the vegetation assessment report and that depicted on the landscape concept plans. Moreover, the assessment report provides a non-qualifying and inadequate vegetation preservation methodology that promotes little to ensure that vegetation to be retained can be adequately protected and preserved prior to, during and post construction on the site.

8.0 At this point, it is worth noting that I have assumed assessment of proposed weed management and landscaping for the site and implementation thereof, will be undertaken by other Council officers.

9.0 From my site visit, significant vegetation alteration including the removal of a number of trees, has already taken place. Much of which has occurred in close proximity to the stream that transverses the site in predominantly south-north direction. This work may well have caused an adverse effect to the ecology of the stream. Moreover, it is not clear from the application exactly what is proposed to the watercourse or yet water levels. Acknowledging that I am not an ecologist by profession, changes to the stream ecology may have a deleterious effect on stream-side vegetation that is to be retained on the site.

10.0 My opinion about the extent of potential adverse ecological effects caused by the proposals is based upon my involvement and observations made during ten years experience gained in dealing with similar circumstances throughout the Auckland region. I therefore suggest that a detailed ecological impact assessment report with proposed mitigation measures be provided by the applicants for consideration by Council officers.

11.0 The following comments are additionally relevant and may form the basis for a request for further information under Section 92 of the Resource Management Act 1991:

- The vegetation assessment commentary from *Wilcon Sylvan Parks and Landscape Management* dated 16 June 2006 does not fully address all of the issues surrounding proposed vegetation alteration on the site. It is not therefore, sufficiently robust and qualified to provide the Council with required surety that the extent and nature of adverse effects are accurately identified or yet can be satisfactorily managed. The applicants are requested to submit a comprehensive impact assessment report from a qualified and competent arborist, experienced in addressing vegetation alteration issues as part of larger-scale site development activities. The report must comprehensively address the following matters:

1. Identify, locate and describe by way of general survey comment, protected trees and vegetation on and overhanging the site, potentially affected by subdivision proposals. Identify all protected vegetation proposed for removal and/or retention on a large-scaled survey plan of the site. Reference numbers placed upon a small scale obscure aerial photograph and referenced to non-sequential photographs as currently provided, are inadequate. It is usual practice to superimpose the proposed development onto a large-scale survey plan (A1) that accurately depicts vegetation on the site. The plan should also show the location of all Natural Areas on the site and important protected trees in chronological order so that accurate Council assessment can be undertaken.

2. A detailed description of development proposals together with comprehensive protection and preservation measures considered necessary to ensure the satisfactory retention (where applicable) of trees and vegetation on and adjacent to the site. These measures are to include preservation of the line of Japanese Cedar trees (*Cryptomeria japonica*) at the rear of 2, 4 and 6 Woodbank Drive and in private ownership. Protection measures should also cover adjacent earthworks, corresponding silt control where appropriate and adjacent construction activities. Auckland Regional Council Publication TP90 silt control installation recommendations may not be acceptable adjacent to retained trees and vegetation on the site.

3. A detailed tree felling methodology statement to include measures necessary to preserve trees and vegetation surrounding each proposed cleared area.

4. A description of storm water dispersion proposals to benefit retained trees and vegetation that attempts to replicate as far as possible, overland flow patterns which exist currently.

5. Identify waste water disposal and other reticulated service arrangements where protected vegetation is to be retained and preserved. It is noted that an existing sewer pipe crosses the stream amongst protected vegetation and it is not clear from information provided whether these features are to be retained as part of site development proposals.

- From the landscaping concept plans provided, I note that parts of the western stream bank are subject to weed management and replanting by others. Please clarify this issue as the weed management strategy included with the application clearly indicates that these matters are to be addressed for a period of two years. Whilst a financial bond cannot be used for punitive reasons, such a bond may well assist the Council to ensure compliance of consent conditions and to undertake any remedial measures necessary in order to assist with mitigation of adverse effects.

If you require clarification on the issues I have raised or further assistance, please do not hesitate to let me know.

Chris Boucher
CONSULTANT ARBORIST TO THE WAITAKERE CITY COUNCIL

Felicitas Dhliwayo

From: John Carroll
Sent: Thursday, 10 August 2006 3:20 p.m.
To: Felicitas Dhliwayo
Subject: RE: FW: RMA20061078 - 423-429 West Coast Road, Glen Eden.doc

Hi Felly,

The reply is just what I expected might happen and for MDH the ratio is 1:1 plus 1:4 so they are really complying except for the double/single garage arrangement. His explanation and suggestion would be acceptable, if you wish to use it.

Cheers,
John

-----Original Message-----
From: Felicitas Dhliwayo
Sent: Thursday, 10 August 2006 2:59 p.m.
To: John Carroll
Subject: FW: FW: RMA20061078 - 423-429 West Coast Road, Glen Eden.doc

John

I send your comments to the applicant's agent and his response is below.

Cheers

Felly

-----Original Message-----
From: Matthew Paetz [mailto:matthew.paetz@babbage.co.nz]
Sent: Thursday, 10 August 2006 2:51 p.m.
To: Felicitas Dhliwayo
Cc: bd.nzhf@xtra.co.nz; rientjes.consult@xtra.co.nz; fhc@babbage.co.nz; stas.louca@babbage.co.nz; ja@babbage.co.nz
Subject: RE: FW: RMA20061078 - 423-429 West Coast Road, Glen Eden.doc

Hi Felicitas
thanks for forwarding WCC's traffic engineering assessment.
We note that he is generally satisfied, however he raised a query with regard to the parking provision for the 6 apartment units in Stage 3.
It is a good question, but can be easily resolved.
The plans show four double garages. Council's traffic engineer has naturally assumed therefore that 2 of the 6 units will not have any carparking.
The garaging arrangement as shown should be viewed as indicative only at this stage. It has always been the Foundation's intention for there to be at least 1 parking space available for each of the units.

A simple solution is for two of the double garages to be redesigned as single garages. This would mean that four of the units would each have one single garage, and two of the units would have double garages.
Rather than redesigning the plans at this stage, we would rather nominate a condition of resource consent, which could be equivalent to:

"Each of the 6 units in Apartment Block "2B" shall be provided with at least one secure carparking space which is available, and accessible to, all occupants of each unit at all times."

Please forward this email to Council's Traffic Engineer and advise of his response.

Kind regards

Matthew

4 Pyramid Place

Memorandum

To	Felicitas Dyliwayo – Resource Planner
From	John Carroll – Transport Engineer Consents
Date	10 August 2006
Subject	**Transport Assets Report: RMA20061077 (LUC) & RMA20061078 (SUB) (SPW22816)**

423-429 West Coast Road, Glen Eden

I have reviewed this combined land use and subdivision consents application to create a medium density residential complex consisting of 77-units in detached, semi detached and apartments in a multi-staged development project. My assessment of roading, parking and driveway requirements is:

Transport Assessment Report:

This application is supported by a transport assessment report prepared by Martin Magyar, Senior Traffic Engineer and reviewed by Gary Vlieg, Associate of Traffic Design Group; dated 21 June 2006. This report includes existing transport network, proposed development, traffic effects, parking, road layout, servicing, construction traffic, district plan requirements and conclusions; stating "It is found there no traffic planning reason to preclude acceptance of the development proposal as presented." Transport Assets generally agree with this report.

Location:

The subject two adjoining sites are generally located between West Coast Road, Pyramid Place, Titch Place and Woodbank Drive. The project adjoins recent, similar land development projects off Albionvale Road, but is mostly separated by the Waikumete Stream from them.

All these named roads are designated as Local Road in Council's roading hierarchy, with increasing traffic volumes as each new development is completed and dwellings become occupied.

Stages & Road Access:

- Stage 1A: Lot 71 Road to Vest (Road Pt1, 2 & 4) – services Lots 1 to 7 and 67 Local Purpose (Drainage) Reserve to Vest, accessed from existing Titch Place and Woodbank Drive.
- Stage 1B: Lot 70 Road to Vest (Road Pt1 & 3) – services Lots 8 to 18, accessed from Stage 1A.
- Stage 1C: Lot 69 Road to Vest (Road Pt1) – services Lots 26 to 35 and 67 Local Purpose (Drainage) Reserve to Vest, accessed from Stage 1A.
- Stage 1D: Lot 68 Road to Vest (Road 5) – services Lots 19 to 25 and 65 Local Purpose (Drainage) Reserve to Vest, accessed from Stage 1A.
- Stage 2A: Lot 63 Road to Vest (Road 6, 7 & 8) – services Lots 36 to 46 and 64 Local Purpose (Drainage) Reserve to Vest, accessed from Pyramid Place.
- Stage 2B: Lot 63 Road to Vest – services Lots 47 to 55 and 64 Local Purpose (Drainage) Reserve to Vest, accessed from Stage 2A.
- Stage 3: Shared Driveway (ROW), lettered A & B – services Lots 57 to 61 and 62 Local Purpose (Drainage) Reserve to Vest, accessed from West Coast Road.

Road to Vest in Council:

- Road 1 – about 337m long from existing Woodbank Road to Road 2, with a varied width road reserve (adjacent to Local Purpose (Drainage) Reserve with a 5.50m wide carriageway and indented parking bays.
- Road 2 – about 158m long from Road 1 (Woodbank Drive extension) to Road 2 (Titch Place extension), with road reserve to be 15.00m wide with 5.50m wide carriageway and indented parking bays.
- Road 3 – about 215m long running northwest from Road 2 to Road 1 with road reserve to be 12.5m wide with 5.50m wide carriageway.
- Road 4 – about 48m long from existing Titch Place to Road 2 with road reserve to be 14.9m wide with 7.50m wide carriageway - an extension of the existing road.
- Road 5 – about 67m long from Road 4 to end with road reserve to be 12.5m wide with 5.50m wide carriageway.
- Road 6 & 7 and 8 – about 192m long total from existing Pyramid Place to end and varied width, split horizontal and vertical road reserve with 3.50m wide carriageways with a cul-de-sac head and indented parking.

Shared Driveway:
- ROW lettered A & B – A servicing Lots 57 to 60 (4 lots – 2.7m wide minimum carriageway with passing bays and 1.3m services strip). B servicing Lots 61 & 62 Local Purpose (Drainage) Reserve (2 lots – 2.5m wide minimum carriageway with 0.7m services strip) [see Road 10 typical section with footpath].

Road Gradients:
The gradient design on the provided longitudinal sections complies with Council's Code of Practice for City Infrastructure and Land Development.

Driveway Gradients:
On completion of earthworks, all future driveway gradients should not exceed Council's 20% or 1 in 5 maximum desirable with change in gradient transitioning applied – subject to building consent processing.

Parking:

On-street:
- Road 1 will provide a total of 16 on-street indented visitor parks against the Local Purpose (Drainage) Reserve.
- Road 2 will provide a total of 5 on-street indented visitor parks on the west side only.
- Road 6 & 7 and 8 combined will provide a total of 6 on-street indented visitor parks along the garden island only and 2 at the end.
- Total on-street car parks = 29

- Shared Driveway will provide a total of 6 indented visitor parks on the west side near the entry.

Onsite with dwellings:
- Type 1 House (2-bdrm Senior/carport): Lots 57 to 59 (4) 2 car parks, carport & stack on driveway with reversing less than 20m to shared driveway – complies. [8 total]
- Type 2A House (2-bdrm apartments/basement double garage – 2-floors): Lot 61 (8) 2 car parks in 2x double garage with reversing less than 20m to shared driveway – complies. [16 total]
- Type 2B House (2-bdrm apartments/basement double garage- 3 floors): Lot 61 (6) 2 car parks in 4x double garage with reversing less than 20m to shared driveway – complies. [8 total - *and shortfall of 2 double garages (enclosed) for 2x 3rd floor apartments. Please query this with the applicant, Feli.*]
- Type 2C House (2-bdrm apartments/basement triple Undercroft carport – 2-floors): Lot 56 (4) 3 car parks in 2x triple "Undercroft" garage with reversing less than 20m to road – complies. [16 total]
- Type 3 House (3-bdrm/single garage): Lots 2 to 4, 9 to 11, 13 & 14, 27 & 28, 43 & 44, and 46 (14) 2 car parks, integral garage & stack on driveway with reversing less than 20m to road – complies. [28 total]
- Type 4A House (4-bdrm/double garage): Lots 7, 8, 16 to 18, 33, 19 & 20, 24 & 25, 36 to 40, 45, 47, (17) 2 car parks in double garage with reversing less than 20m to shared driveway – complies. [34 total]

- Type 4B House (4-bdrm/double garage): Lots 29 & 30, 34, 48 to 54, (10) 2 car parks in double garage with reversing less than 20m to road – complies. [20 total]
- Type 4C House (4-bdrm/single garage): Lots 5 & 6, 21 & 22, 41, 55 (6) 2 car parks in single garage & stack on driveway with reversing less than 20m to the road – complies. [12 total]
- Type 5A House (5-bdrm/double garage): Lots 1, 12, 15, 26, 31 & 32 (6) 2 car parks in double garage with reversing less than 20m to road – complies. [12 total]
- Type 5B House (5-bdrm/double garage): Lots 42 (1) 2 car parks in double garage with reversing less than 20m to the road – complies. [2 total]
- Type 5C House (5-bdrm/double garage): Lots 23 (1) 2 car parks in double garage with reversing less than 20m to the road – complies. [2 total]
- Total onsite car parks = 158

The total number of car parks to be provided for the project is 193. There will be additional about 35 visitor parks in the driveways of dwellings with double garages (about 228 total) - the traffic consultant estimates about 220 car parks available. With the reasonable spread of on-street indented visitor car parks on the proposed roads and shared driveway the total parking provision should be adequate for this project.

Parking compliance will be checked as part of the building consent application processing for each lot/dwelling.

Transport Assets support the application subject to the following conditions:

TA1. Before commencement of work, obtain the approval of Council to engineering plans and specifications prepared in accordance with Council's "Code of Practice for City Infrastructure and Land Development" detailing the nature and extent of any proposed work; and pay the Engineering Approval Fee.

TA2. Before commencement of work, pay the Works Supervision Fee for the Transport Assets component. Additional work supervision fees may be required over and above the deposit paid by the applicant, and will be based at a $ per hour rate.

TA3. Pay to Council a street damage bond of $5000 prior to the commencement of work. This bond shall be refunded in full after inspection by Council's Construction Supervisor confirms no damage to Council's roading assets has occurred. The inspection is to take place once all work is completed.

TA4. Pay 2.5% maintenance deposit on the value of the works being taken over by Council which is refundable upon final acceptance of the works at the end of the maintenance period.

TA5. The roads (Lots 63 & 68 to 71) vested to Council shall be designated as a Local road.

Roading

RD1. Take note that the street intersection geometry, street furniture and safety features will be finalised through the engineering plan approval process, and this may result in minor amendments to lot boundaries at these locations to accommodate necessary design details.

RD2. Design, form and completely construct the proposed roads (Lots 63 & 68 to 71) in accordance to Council's Code of Practice for City Infrastructure and Land Development to the satisfaction of the Council.
Notes:
(1) Street tree planting shall be carried out (subject to prior approval of a plan showing the location and the species to be used) to the satisfaction of the Service Manager: Parks Green Assets.
(2) The intersection geometry, street furniture and safety features will be finalised through the engineering plan approval process.
(3) Footpaths shall be provided full length on both sides of the road.
(4) Provide indented on-street parking (normally at a ratio of one parking space per three dwellings).

(5) Access to properties that have indented parking bays on the frontage will not be permitted to locate a driveway that intersects or interferes with the operation of the parking bay. A consent notice pursuant to section 221 of the Act is required to be issued and registered on the new title for the lots affected, restricting access to the lots to the locations clear of the parking bay.

RD3. Ensure, where practicable, that not less than a 150mm deep layer of topsoil free of deleterious material is replaced on all allotments to the satisfaction of the Council.

Shared Driveways & Vehicle Crossings

SD1. Form the shared driveway (ROW) Lot 61, lettered A & B and constructs thereon a carriageway and storm water controls in accordance with Council's Code of Practice for City Infrastructure and Land Development, and to the satisfaction of Council.

Notes:

1. The construction shall include the vehicle crossing with storm water control, using standard detail SD 3.11 Heavy Commercial Vehicle Crossing and refer to SD 3.14 High Volume / Speed Vehicle Crossing for the left turn-in flare details; and for which a vehicle crossing forms shall be completed and returned to Council.

2. The construction shall include the vehicle crossing with storm water control, using standard detail SD 3.11 Heavy Commercial Vehicle Crossing at distance 70 on Road 1 for service access to the storm water ponds; and for which a vehicle crossing forms shall be completed and returned to Council.

3. Inspection of the shared driveway and vehicle crossing subgrade prior to pavement construction (or boxing prior to pouring) is required. Contact phone 836 8000 Ext. 8725 at least 48-hours prior to inspection being required.

4. Ensure that the longitudinal section of the driveway and the vehicle crossing comply with standard detail SD 3.15 Maximum Vehicle Crossing Profile.

5. All bends shall have a minimum inside radius of not less than 6.5m.

6. The minimum width carriageway on shared driveways is specified in council's District Plan and the construction details are given in the Code of Practice. Provide a carriageway width for 6-10 lots/dwellings, 3.5m wide with passing bay and 1.5m services strip. All to the satisfaction of Council.

SD2. Ensure a hard stand area for solid waste bins complies with standard detail SD 3.07 Urban Private Way Details.

SD3. Ensure a hard stand area for solid waste bins complies with standard detail SD 3.07 Urban Private Way Details.

Road to Vest

LD1. Take note that Lots 63 & 68 to 71 shall vest in the Waitakere City Council as road pursuant to Section 238 of the Act.

LD2. Provide to Council prior to the release of the 224 Certificate, all RAMM as built data and as built plans of the new roads formed (electronic and compatible with WCC GIS system). This will be inclusive of kerb lines, cesspits, street lighting, footpaths, parking bays, intersection control devices, pavement markings and signs, street furniture, landscaping, vehicle crossings, and property boundaries.

FILE COPY

Refer: Felicitas Dhliwayo, Consent Services
Extension No. 8352

03/08/06

Matthew Paetz
Babbage Consultants
P O Box 2027
AUCKLAND

Dear Matthew

REQUEST FOR FURTHER INFORMATION IN ACCORDANCE WITH SECTION 92 OF THE RESOURCE MANAGEMENT ACT 1991

Re: **Resource Consent Application:** RMA20061077/20061078
Proposal: To construct 77 residential units and subdivide into 61 lots requiring consent for; medium density housing, density, height, height in relation to boundary, earthworks, vegetation alteration and development on land known to be subject to inundation.
Site Address: 423-429 West Coast Road

I acknowledge receipt of your resource consent application dated 26/06/06.

Further to my e-mail of 27/07/06, the following further information is requested by Ecowater to enable an adequate analysis of your proposal, its effects on the environment and the way in which any adverse effects on the environment may be mitigated. The information requested below will enable Council to undertake a full and proper assessment of the application and provide a determination on it.

1. It is advisable do not relocate the exiting pond within Lot 3 DP 339810. A new position of the pond on your drawing 42608, C16 is within the current flood zone which is not acceptable. The public sanitary sewer line under the proposed pond is not acceptable as well. Moreover the relocation of this public line will be problematic as the manhole LL 26.99 and IL 24.28 is one of the lowest points of this section. Furthermore it is not advisable to excavate the stream bank within established vegetations within the flood zone. Please reconsider your proposed design in this area or explain why it is not possible.

2. If the outlined above advice of Ecowater is not acceptable then please consult in a first instance with ARC regarding a proposed relocation of the pond as the ARC is the current consent holder for this pond.

3. Please consider an additional storm water treatment device(s) for the proposed Roads 6, 7 and 8. Show storm water cesspits and manholes if necessary serving this part of the proposed subdivision (Lot 36-55).

4. **The proposed wetland and pond on your drawing C17**. Public safety, ongoing maintenance and cleaning of ponds are significant issues for Council. Accordingly, the proposal must address the following issues, with particular emphasis on maintenance and access for maintenance purposes:
    a. Future ownership of the pond and access arrangements for operation and maintenance purposes.
    b. The approved access must remain available at all times for the design lifetime of the pond.
    c. Responsibility for the asset and its ongoing operation and maintenance requirements.
    d. Procedures for the removal and disposal of sediment including frequency.
    e. The formation of suitable access for heavy equipment (long reach excavator and trucks) to carry out maintenance activities and sediment removal. The design, construction and choice of surfacing for access tracks shall be undertaken in consultation with the Storm water Operations Manager. Please extend the proposed vehicle access to each physical structures of these

devices (forebay and outlet and inlet structures). At the end of the proposed drive please show suitable reverse area.

f. Please advice if any retaining walls proposed. (i) Suitable access to all retaining walls for maintenance purposes must be provided and guaranteed for the life of the structures. (ii) Retaining walls must be designed for a minimum 100-year life.

g. The need for armoured spillways when the discharge velocity is greater than 2m/s for more than one-hour duration.

h. The need for the underlying land to be a Drainage Reserve.

i. All storm water ponds shall be fully fenced for public safety reasons. Fences shall be designed in consultation with the Storm water Operations Manager but shall generally comply with the following: Fence panels to be hot dip galvanised and powder coated "Karaka Green".

5. Please obtain from Traffic & Roading Department Planning and Consent Services of the Council a permission to create the Road 1 within the 1 in 100 year flood zone.

6. Sanitary sewer line between the proposed wetland and pond must be acceptable all the time. Please show dimensions on your cross-section **B-B.**

If you have any questions regarding the above please contact Lucy Lunevich of Ecowater on 836 8000 ext. 8259.

Pursuant to S.92A of the Resource Management Act you must respond in writing to the following information request by 24/08/06 by undertaking one (or more) of the following options:

1. Provide the information.

2. Request, in writing, an alternative date by when this information would be provided. The revised timeframe would need to be agreed to by Council. The application would remain suspended until this time. If you agree to provide the information but do not nominate a timeframe then Council will set a reasonable time within which you must comply, and will notify you of this.

3. Advise in writing that you are refusing to provide the information if you consider the information request to be unnecessary to enable the determination of the application.

4. Object to the information request under Section 357A of the Resource Management Act. The application would remain suspended until the objection was resolved or appeal rights are exercised.

If no response is received to any of the options by 24/08/06, or you refuse to provide the information under Option 3 then Council may decline the application on the basis of insufficient information.

In accordance with the Resource Management Act, processing of your application will be suspended until the indicated date, pending your response to this request.

Please note that the Resource Management Act prescribes a detailed process for the issuing of requests for further information, and the options available to an applicant when responding to these requests. This letter is intended as a summary only of the legislative processes involved. Requests for information are issued by Council in order to facilitate the efficient processing of your application, and to ensure that all necessary information is before Council to ensure best practice decision-making takes place. If you wish to query Council's information request then we suggest that you contact the author of this letter to discuss, prior to taking any formal steps under the Act.

If you have any queries regarding the above, please contact Felicitas Dhliwayo of Consent Services (phone 836 8000 Ext 8352).

Yours faithfully

Felicitas Dhliwayo
Resource Planner

Waitakere City Council
Te Tatao o Waitakere

Memorandum

To	Dylan Revel Babbage Consultants Limited
From	Lucy Lunevich Subdivision Engineer EcoWater Solutions
Date	~~29 September 2004~~ 27/07/06

ECO-WATER SECTION 92 REQUEREMNTS

RMA No. 20061078
SPW No. 22816
Address: 423 - 429 West Coast Road
Applicant: NZ Housing Federation

Therefore, the following further information is required to fully assess the impact the development would have on the environment and on EcoWater's infrastructure.

EcoWater Requirements

1. It is advisable do not relocate the exiting pond within Lot 3 DP 339810. A new position of the pond on your drawing 42608, C16 is within the current flood zone which is not acceptable. The public sanitary sewer line under the proposed pond is not acceptable as well. Moreover the relocation of this public line will be problematic as the manhole LL 26.99 and IL 24.28 is one of the lowest points of this section. Furthermore it is not advisable to excavate the stream bank within established vegetations within the flood zone. Please reconsider your proposed design in this area or explain why it is not possible.

2. If the outlined above advice of Ecowater is not acceptable then please consult in a first instance with ARC regarding a proposed relocation of the pond as the ARC is the current consent holder for this pond.

3. Please consider an additional storm water treatment device(s) for the proposed Roads 6, 7 and 8. Show storm water cesspits and manholes if necessary serving this part of the proposed subdivision (Lot 36-55).

4. **The proposed wetland and pond on your drawing C17**. Public safety, ongoing maintenance and cleaning of ponds are significant issues for Council. Accordingly, the proposal must address the following issues, with particular emphasis on maintenance and access for maintenance purposes:
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   b. The approved access must remain available at all times for the design lifetime of the pond.
   c. Responsibility for the asset and its ongoing operation and maintenance requirements.
   d. Procedures for the removal and disposal of sediment including frequency.
   e. The formation of suitable access for heavy equipment (long reach excavator and trucks) to carry out maintenance activities and sediment removal. The design, construction and choice of surfacing for access tracks shall be undertaken in consultation with the Storm water Operations Manager. Please extend the proposed vehicle access to each physical structures of these devices (forebay and outlet and inlet structures). At the end of the proposed drive please show suitable reverse area.

f. Please advice if any retaining walls proposed. (i) Suitable access to all retaining walls for maintenance purposes must be provided and guaranteed for the life of the structures. (ii) Retaining walls must be designed for a minimum 100-year life.

g. The need for armoured spillways when the discharge velocity is greater than 2m/s for more than one-hour duration.

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5. Please obtain from Traffic & Roading Department Planning and Consent Services of the Council a permission to create the Road 1 within the 1 in 100 year flood zone.

6. Sanitary sewer line between the proposed wetland and pond must be acceptable all the time. Please show dimensions on your cross-section **B-B.**

If you have any questions please do not hesitate to contact underwriter.

Yours sincerely,

Lucy Lunevich
Subdivisions and Consents Engineer

FILE COPY

Refer: Felicitas Dhliwayo, Consent Services
Extension No. 8352

24 July 2006

Matthew Paetz
Babbage Consultants Ltd
P O Box 2027

AUCKLAND

Dear Matthew

REQUEST FOR FURTHER INFORMATION IN ACCORDANCE WITH SECTION 92 OF THE RESOURCE MANAGEMENT ACT 1991

Re: **Resource Consent Application:** RMA20061077/20061078
Proposal: To construct 77 residential units and subdivide into 61 lots requiring consent for; medium density housing, density, height, height in relation to boundary, earthworks, vegetation alteration and development on land known to be subject to inundation.
Site Address: 423-429 West Coast Road

I acknowledge receipt of your resource consent application dated 26 June 2006.

Further to our telephone conversation and e-mail on 24/07/06, the following further information is requested to enable an adequate analysis of your proposal, its effects on the environment and the way in which any adverse effects on the environment may be mitigated. The information requested below will enable Council to undertake a full and proper assessment of the application and provide a determination on it.

1. A tree planting plan and schedule associated with the Landscape Master Plan. Please refer to the details in the e-mail of 24/07/06 and 25/07/06.

2. There appears to be retaining walls proposed along the eastern boundary. Please provide retaining wall heights for all proposed retaining, and please show spot levels for the land adjacent to the east, and some cross sections. This will enable Council to ascertain the potential relationship of the proposed retaining with the adjacent land and development to the east.

Pursuant to S.92A of the Resource Management Act you must respond in writing to the following information request by 14 August 2006 by undertaking one (or more) of the following options:

1. Provide the information.

2. Request, in writing, an alternative date by when this information would be provided. The revised timeframe would need to be agreed to by Council. The application would remain suspended until this time. If you agree to provide the information but do not nominate a timeframe then Council will set a reasonable time within which you must comply, and will notify you of this.

3. Advise in writing that you are refusing to provide the information if you consider the information request to be unnecessary to enable the determination of the application.

4. Object to the information request under Section 357A of the Resource Management Act. The application would remain suspended until the objection was resolved or appeal rights are exercised.

If no response is received to any of the options by 14 August 2006, or you refuse to provide the information under Option 3 then Council may decline the application on the basis of insufficient information.

In accordance with the Resource Management Act, processing of your application will be suspended until the indicated date, pending your response to this request.

Please note that the Resource Management Act prescribes a detailed process for the issuing of requests for further information, and the options available to an applicant when responding to these requests. This letter is intended as a summary only of the legislative processes involved. Requests for information are issued by Council in order to facilitate the efficient processing of your application, and to ensure that all necessary information is before Council to ensure best practice decision-making takes place. If you wish to query Council's information request then we suggest that you contact the author of this letter to discuss, prior to taking any formal steps under the Act.

If you have any queries regarding the above, please contact Felicitas Dhliwayo of Consent Services (phone 836 8000 Ext 8352).

Yours faithfully

Felicitas Dhliwayo
Resource Planner

URS

WAITAKERE CITY COUNCIL
26 JUL 2006

671239

25 July 2006

Project No.: 42089752
Ms Felicitas Dyliwayo
Resource Planner - Subdivisions
Waitakere City Council
Waitakere Central
6 Henderson Valley Road,
Waitakere

Dear Felicitas,

Subject: **Specialist Report - Geotechnical Review**
SPW22816 RMA20061078 – 77 Unit Residential Development, 423-429 West Coast Road, Glen Eden

1. Applicant Details

RMA No: 20061078

SPW No: 22816

Address: 423-429 West Coast Road, Glen Eden

Applicant: New Zealand Housing Foundation

2. Request

The request was not detailed but was taken to be for;

- Details of further information needed from the applicant,
- Comments,
- Conditions and reasons for conditions for any granted consents.

3. Proposal and Site

The proposal is for a 77 unit residential development at 423-429 West Coast Rd, Glen Eden (Legal Description Lots 2 & 3 DP 339810). The development is for 60 Lots, constructed in 3 stages (northern area first, south western last). The proposed dwellings will consist of 2 or 3 story structures.

The planned development includes significant earthworks (cuts of up to 4.5 m depth and fills of up to 3 m height). This exercise will maximise the development footprint for dwellings and will raise parts of the site to ensure that all construction will be above the 100 year flood level of the adjacent stream. The

URS New Zealand Limited
6th Floor, URS Centre
13-15 College Hill, Auckland
PO Box 821, Auckland New Zealand
Tel: 64 9 355 1300
Fax: 64 9 355 1333

work includes relocating an existing stormwater pond, and construction of a new stormwater pond. Some retaining walls (type unspecified) are proposed (up to a height of 3 m).

URS has reviewed the Babbage Consultants Limited geotechnical assessment for the site [reference 42608; dated June 2006] (the geotechnical report). The site was visited by a URS engineering geologist on 18 July 2006.

This letter is based on the review and site visit.

4. Observations of the Geotechnical Report Submitted as part of the Application

The site generally slopes gently downward to Parrs Stream, near the western boundary of the site.

The reported geology, as shown below, is consistent with the published geology (Kermode 1992);

- Occasional fill (silt and clay);
- Tauranga Group (Puketoka Formation) silt and clay; and
- Waitemata Group (East Coast Bays Formation) flysch.

The consultant reports no significant instability based on a site walk-over and air photo review, while noting that heavy grass and bush cover may be masking possible shallow slope instability features. During the URS site visit, it was noted that there was some shallow instability along the stream banks. URS also noted several broad, subtle, arcuate features on slopes leading to the stream although there was nothing to suggest these are related to deeper seated instability.

The consultant drilled 23 hand auger holes, to a maximum depth of 3.15 m, with in-situ shear strength measurements and observation of groundwater levels being made. Cuts to approximately 4.5 m are planned; however the hand auger investigations did not extend past 3.15 m. The holes stopped in very stiff clay soils and based on the site geology, it is not likely that soft deeper seated layers are present.

Laboratory testing for moisture content is reported for selected samples.

Soft, highly plastic clays are reported adjacent to the stream in places. Groundwater levels between 0.1 m and 2.9 m were typical for the site. Vegetation suggesting shallow groundwater levels in low lying areas of the site was also noted by the URS engineering geologist.

Preliminary earthworks details are provided. The geotechnical report recommends further investigations to support detailed design due to the soft materials beneath significant areas of fill. The report notes fill slopes up to 1V: 3H would likely be stable, however current designs include fills up to 1V: 2H. The report states that hence batter construction would likely require mechanical stabilization and planting, which the report notes would then allow slopes of 1V: 1H. No stability analysis is included in support of these estimates.

The consultant reported that compressible soils could result in up to 150 mm of consolidation settlement in some fill areas, and would require additional investigations and mitigation. No calculations are given for the consolidation estimates.

Bearing capacity failure in soft soils is an issue that may limit the use of some types of construction equipment and/or require staged construction with drainage.

Subsoil drainage in fill areas, behind retaining walls, and within cut areas is proposed due to shallow groundwater levels. Specific details on drainage measures are not included.

Testing for pavement design has not been carried out. The consultant recommends Scala penetrometer tests to confirm an estimated *in situ* CBR design value once earthworks are completed.

Preliminary design parameters for retaining walls are provided with the proviso that ground conditions along proposed wall alignments are confirmed and taken into account by a geotechnical engineer.

Foundation depths will be confirmed following the earthworks. Deeper footings are recommended in highly plastic soils to account for possible shrink-swell effects. Fill monitoring for settlement prior to construction is recommended. The report indicates Lots 54 and 55 are to be constructed on piled foundations that extend into the 100 year flood plain and additional investigations are recommended, however the Cut and Fill Isopac Plan (Sheet 2) indicates these Lots are outside the calculated 100 year flood level.

Nine recommendations are given in the geotechnical report associated with development of the site.

Several geologic cross-sections showing subsurface information collected, stream location and flood levels, and the proposed development details would have been useful for this project.

5. Conclusion and Recommendation

The proposed development involves significant earthworks i.e. deep cuts and fills.

Challenging ground conditions for this project include soft to firm soils, highly plastic clays, organic soils, minor shallow instability along stream banks, and relatively shallow groundwater conditions in places. However, geotechnical solutions to these issues are available and the geotechnical report includes a number of recommendations and recognises additional investigations will be needed.

Overall, the recommendations in the geotechnical report are appropriate for the site, however, items not fully addressed in the report include;

- The maximum investigation depth does not extend to the maximum proposed cut depth, the potential nature of materials within the zone that was not investigated, and possible implications for the development, are not discussed.
- Measures that will be used to deal with groundwater inflows at the site during construction, and after the development is completed, are not outlined.
- The proposal includes fill slopes at gradients of 1V: 2H constructed in areas where foundation conditions are likely to be poor. The report notes mechanical stabilization would likely be required to construct these batters, however, no stability analysis is

presented to confirm the viability of such batters. If these slope angles could not be achieved it could significantly impact the layout of the development.

- The report indicates structures on Lots 54 and 55 will be constructed on pile foundations that extend into in the 100 year flood plain. This contradicts Drawing No. G05.

These issues are reflected in the recommended conditions of consent outlined below.

6. Conditions of Consent

1. A geotechnical investigation shall be completed by an experienced geotechnical engineer for the detailed design of earthworks at the site. This shall include recommendations for the batter slopes and an assessment of overall stability of site slopes (supported by limit equilibrium analysis), consolidation characteristics of the soils, fill quality and compaction requirements. All the requirements for constructing and controlling engineered fill shall be detailed. The report on this work shall accompany the earthworks construction management report.

2. Groundwater drainage measures for the development shall be designed by an experienced geotechnical engineer, taking into account existing information on shallow groundwater levels, anticipated maximum winter high and summer low groundwater levels, and potential effects on adjacent developed properties or roadways.

3. Building consents shall be required for proposed retaining walls

4. Pavement designs shall be confirmed by an experienced geotechnical engineer following the completion of earthworks.

5. Unless there is clear evidence in the earthworks completion report that NZS 3604 requirements have been fully met, all foundations shall require specific design.

6. Foundations for all lots shall be verified by an experienced geotechnical engineer familiar with the geotechnical report and shall take into account the potential for shrink/swell behaviour.

7. Stormwater pond construction shall be supervised by an experienced engineer familiar with the geotechnical report.

8. The proposed stormwater management systems to be used during construction shall be reviewed by an experienced engineer familiar with the geotechnical report.

Yours sincerely,
URS NEW ZEALAND LIMITED

Paul Salter.

Paul Salter
Senior Engineering Geologist

INVOICE
$1551.09
TO ACCOUNTS

Evan Giles

Evan Giles
Principal Geotechnical Engineer

Chief Executive	
Corporate Services	
City Services Moselle	
Consultancy Services	
ECO - WATER	
Strategic Group	
Consent Services	✓
Core Services	

* A producer statement must be provided on completion of earthworks together with an earthworks completion report stating what requirements if any are necessary for the individual lots.

Felicitas Dhliwayo

From: Gordon Griffin
Sent: Tuesday, 25 July 2006 7:58 a.m.
To: Felicitas Dhliwayo
Subject: GG landscape assessment 24.7.06.doc 439 West Coast Rd

Felly I have just added one small further item I have high-lighted. Please end this on so it reaches the landscape architect/designer for this project. regards,
Gordon.

---

439 West Coast Road:
RMA 20061077

We will seek comment from the Parks arborist re street tree planting, and whoever at Parks has the authority for approving the reserve planting and weed management. With regard to on-site planting proposed, the Landscape Master Plan, and Typical Garden Layout plans are good as far as they go, but are incomplete in terms of being able to use them to carry out the planting. It is desirable that each plan have a planting schedule so that it is not just a concept plan,and can be followed for implementation.
I can approve the on-site planting only. In this regard, the Typical Garden Layout plan applies.In this regard, proposed 0.8m high front fences do not appear to be shown (but are on the key), I would recommend a linear clothesline in preference to a rotary one (as linear ones compromise space less).
There would be a lot of hedges. I have concerns re the maintenance required to keep these right. Where there would be a 1.8m high fence, wouldn't it be better to have some trees or medium sized shrubs within a few defined garden areas, rather than a hedge fronting a fence? For frontages, where some surveillance of the road is required, a low fence with some low shrubs, would be preferable to a hedge that may grow well above the intended 0.8m height). This may be intended, but without species proposed, it is not possible to evaluate adequately.
Comments on tree species proposed (as per planting schedules):
List A (for street trees and front yards) would be mostly very large trees: Pin oak grows to circa 18m high, similarly red oak, liquidambar and Claret ash. Oak leaves fall over a long time and don't break down quickly. When we have a planting plan it will be clearer whether the tree planting plan would have any problems. The Paulownia tomentosa would be of a better scale for within the residential sites. Puriri does not make a good street tree unless there are very wide road verges. Ash has pinnate leaves that blow away with fewer problems. I suggest for a deciduous tree on site, Ulmus parbifolia, Chinese elm. This has a suitable scale.
A Tree planting Plan and schedule is needed associated with the landscape Master Plan therefore.
(Parks have say re the revegetation areas but I add my comments): Stream edge planting: Species look fine, could include kahikatea, Dacrycarpus dacrydioides in the stream margin area also. Schefflera digitata is frost sensitive and probably better not used as a pioneer species.
List E: Low to medium shrubs for reserve and garden areas:
Don't use Coprosma kirkii, it is invasive and dull (and of hybrid origin). Preferably use species naturally occurring in Waitakere City ahead of outside forms. Eg Don't use Coprosma repens 'Poor Knights'.

Don't use Raphiolepis umbellata, which seeds everywhere and becomes a weed species. (Though has yet to be listed as environmentally damaging).
Include some locally occurring native shrubs, eg Coprosma lucida,Corokia buddleioides, C cotoneaster.
Felicia amellioides and Strobilanthes anisophyllus are subshrubs and relatively weak exotic plants. We want a framework of planting, of garden areas, trees and shrubs that are likely to endure. Those residents that garden can add such plants if they are interested at a subsequent stage. I consider these species are suitable.
Identify proposed hedge species.

Some of the species listed, eg Luculia grandifolia, Viburnum "Emeralf Lustre', are better as specimen shrubs rather than as hedge species (This is fine but don't use them as hedges).

Proposed street lighting locations should be shown on the Landscape Master Plan.

Retaining walls: I note that there would be a retaining wall along the east boundary. I am concerned at the potential to have a poor relationship with the adjacent land and development to the east. Appendix 6 Earthworks Plans, shows the location of retaining walls but does not give the height for each. There would be extensive retaining, evidently associated with creating a stepped/terraced approach to the residential sites. Please provide retaining wall heights for all proposed retaining, and please show spot levels for the land adjacent to the east, and some cross sections.

F Sedges: Parks department will have input. (Desirably Chris Ferkins). It is desirable that the Carex species locally natural to Waitakere City be used. Carex comans is not natural to this area. I would suggest Carex lessoniana, C lambertiana, c dipsacea, C secta (Refer 'Carex in Auckland A Field Guide' by Chris McKain).

There is an area of native vegetation, kanuka dominant,on the east bank of the stream, and west of units 2c and 5c-4c. A proposed driveway and pedestrian path is show within this area. Further detailing as to the locations of the trees, and with regard to the path and driveway and whether there would be any retaining or works within the driplines is needed for this area.

Gordon Griffin
Landscape architect. W.C.c. 24.7.2006.

-----Original Message-----
From: Felicitas Dhliwayo
Sent: Monday, 24 July 2006 9:41 a.m.
To: Gordon Griffin
Subject: FW: Landscape design for West Coast Road

FYI

-----Original Message-----
From: Matthew Paetz [mailto:matthew.paetz@babbage.co.nz]
Sent: Friday, 21 July 2006 10:17 a.m.
To: Felicitas Dhliwayo; matthew.paetz@babbage.co.nz; bd.nzhf@xtra.co.nz; rientjes.consult@xtra.co.nz; fhc@babbage.co.nz; ian.petty@babbage.co.nz; stas.louca@babbage.co.nz
Subject: Landscape design for West Coast Road

Waitakere City Council
Te Taiao o Waitakere

Waitakere City Council
Waitakere Central
6 Henderson Valley Road
Henderson

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Henderson
Waitakere City 0612

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09 839 0400

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Email: info@waitakere.govt.nz

Website: www.waitakere.govt.nz

20/07/2006

Matthew Paetz
Babbage Consultants Ltd
P O Box 2027
AUCKLAND

Dear Matthew,

Re: **Resource Consent Application:** RMA20061077/RMA20061078
Proposal: To construct 77 residential units and subdivide into 61 lots requiring consent for; medium density housing, earthworks, vegetation alteration, height, impermeable surfaces, height in relation to boundary.
Site Address: 423-429 West Coast Road

The Council advises that it has extended the 20 working day statutory time period within which it makes a decision on a non-notified resource consent application. The time period has been extended until 22 August 2006, pursuant to Section 37 of the Resource Management Act 1991.

The time frame has been extended due to significant workloads and the need for expert input into the consent. All effort is being made to process the application as soon as possible and hopefully before the amended completion date.

In extending the timeframe Council has considered the matters set out in Section 37. In particular, additional time will ensure that a comprehensive assessment of your application and its effects on the environment can be undertaken.

If you have any queries regarding the above, please contact Felicitas Dhliwayo of Consent Services (phone 836 8000 Ext 8352).

Yours faithfully,

Felicitas Dhliwayo
Resource Planner

SPECIALIST INPUT REPORT
EARTHWORKS

To: **Falicitas**
From: **Dean Allen – Environmental Monitoring Officer**
Date: **24/07/06**

RMA Number: **20061078**
Address: **423-429 West Coast Road**

Proposal and Site Description:

NZHF proposes to develop the subject site, 423-429 West Coast Road in a medium density configuration comprising 77 units in detached, semi-detached, and apartment building forms.

The site is an area of 5.7348 hectares and is of irregular shape. Parr's stream runs through the site in a rough North-south direction. In the southern portion of the site the land gently slopes downwards from east to west towards the riparian margins before sloping upwards from the stream channel to the western boundary. The west side of the site is moderately steep.

Review/Audit of Report submitted as part of the Application

Volume of cut to fill is estimated to be 40,000m3.

Works have 3 stages.

Cut operations are generally in stages 1 & 2 with stage 1 providing most of the fill for the stage 2 platforms and embankments.

Limited earthworks in the floodplain are needed to establish wetland storm water treatment facilities.

Main Issues/Discussion

Earthworks embankments are proposed at the interface with the stream to accommodate both usable building platforms and to provide separation for the 1 in 100 year flood of the stream.

ARC consent will be sought

Erosion and sediment control plans have been provided. Bunds have been calculated to convey the 5% AEP storm event. Monitoring of the controls has been accounted for. USLE calculations are 5.6 tonnes during the earthwork construction phase.

Conclusion and Recommendation

I find the earthworks to be fair for this development.

The controls seem adequate and maintenance has been discussed

Conditions of Consent (if supporting proposal)

Pre start meeting will be required.

EW49 SEDIMENT CONTROL ✓

EW48 *earthworks not completed within the earthworks season* ✓

EW51 ARC CONSENT ✓

EW42 *stabilised against erosion* ✓

EW43 *topsoil* ✓

Ew31 Fill away from riparian ✓

Ew30 stockpile away from riparian ✓

EW37 excess or unsuitable excavated ✓

EW40 DIRT ON ROAD ✓

EW28 COPY OF CONSENT ✓

EW21 DUST ✓

EW14 ENTRANCE ✓

Signed .....

Date .....

WAITAKERE CITY COUNCIL
10 JUL 2006
669897

Babbage CONSULTANTS

BABBAGE CONSULTANTS LIMITED
109 FANSHAWE STREET, AUCKLAND
PO BOX 2027, AUCKLAND 1, NEW ZEALAND
PHONE: 0-9-379 9980, FAX: 0-9-377 1170
EMAIL: admin@babbage.co.nz

Waitakere City Council
Private Bag 93 109
Henderson

Job Number: 42608
DMR
7 July 2006

Attention: Felicitas Dhliwayo

Dear Felicitas

West Coast Rd (No. 423-429) – Land Use and Subdivision Consent application amendment.

Following an internal audit on the land use consent application being carried out prior to finalising engineering design, we have highlighted an inconsistency which we wish to amend in the land use consent application and approval.

Within paragraph 3 in Section 8.5, and section 8.5.1 of the documentation submitted, the level of hydraulic neutrality stated for the subdivision was stipulated to a 10 year level. In reviewing the existing comprehensive discharge consent No. 23006 and the associated Parrs Stream CMP, we found that the level of hydraulic neutrality required by the consent is in fact to the 2 year (50%AEP) level.

In this respect we wish to amend the wording in the consent application to address this inconsistency.

The implications of the requested amendment to the application, with regards to the design submitted are minor. The design and dimensions of the stormwater treatment facilities shown on the drawings in the application appendices will remain unchanged. The overall depth of the stormwater detention basin is unlikely to change, however the design water levels of the detention outlet may vary slightly. We believe these changes can be captured at the time of engineering approval for the project.

We have enclosed amended drawings and calculations to demonstrate the minor impact of the amendment and wish these to supersede those within the application documents.

These amended drawings and calculations have also been supplied to the Auckland Regional Council as part of the erosion and sediment control consent application.

I am happy to answer any queries you may have and can be contacted on 367 4972

Yours faithfully

Dylan Revell
Babbage Consultants Limited

Chief Executive	
Corporate Services	
City Services Moselle	
Consultancy Services	
ECO - WATER	
Strategic Group	
Consent Services	✓
Field Services	

D O C U M E N T T R A N S F E R

To:	**Waitakere City Council** Private Bag 93 109 Henderson Waitakere City 1231, New Zealand	***Job No:***	42608
Attention:	Felicitas Dhliwayo	***File:***	
From:	Dylan M Revell	***Date:***	6 Jul 06
Copy to:			

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Housing Development
West Coast Rd (No. 423-429), Henderson
West Coast Road Application Amendment

DOCUMENTS: Covering Letter
TP108 Stormwater Design Calculations
Drawing C18 Revision A.

ACTION REQUIRED:

Application amendments enclosed, please refer to covering letter.

Regards

Dylan M Revell
Babbage Consultants Ltd

SENT: ✓ SURFACE MAIL FAST POST COURIER OTHER

TP108 - POND DESIGN GENERAL

Project:	*West Coast Raod*	By: WL	Date: 30/06/06
Job No.:	*42608*	Checked:	Date:

Combination of Stage 1 and 2 and 3

Pre-Development

Hardstand/Roof
area (ha) 0

Other (pervious)
area (ha) 5.1214

TOTAL 5.1214

Post-Development

Hardstand/Roof
area (ha) 2.2165

Other (pervious)
area (ha) 2.9049

TOTAL 5.1214

Hydrology

2 year	84 mm
10 year	134 mm
100 year	195 mm

TP108 - POND DESIGN (EXISTING DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: *42608* Checked: Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (hectares)	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Pasture*	74	5.1214	379
	Subtotal for Pervious Areas		5.1214	379
	Impervious Areas (List)			
	Roads / paved	98	0.000	0
	Subtotal for Impervious Areas		0	0
* from Table 3.3		Totals	5.1214	379

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{379}{5.1214} =$ 74

Ia (weighted) : $\frac{\text{5 x pervious area}}{\text{total area}} = \frac{5 \times 5.1214}{5.1214} =$ 5.00 mm

2. Time of Concentration

Channelisation Factor : C = 1 (from Table 4.2)

Catchment Length : L = 0.147 km (along drainage path)

Catchment Slope : Sc = 0.109 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN}$ = 0.59

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30}$ = 0.17 hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c$ = 0.11 hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 89.2 mm

Pervious = 89.2 mm

Impervious = 5.2 mm

		Storm #1	Storm #2	Storm #3
4. Average Recurrence Interval, ARI (yr) :		2	10	100
5. 24 hour Rainfall Depth, P_{24} (mm), (from Appendix A)		84	134	195
6. Runoff Index, c* : $= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.29	0.41	0.51
7. Specific Peak Flow Rate, q*, (from Figure 5.1)		0.082	0.108	0.126
8. Peak Flow Rate, q_p : $= q^* A P_{24}$ (m^3/s)		0.353	0.741	1.258
9. Runoff Depth, Q_{24} : $= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$ (mm)	Pervious	37.1	76.2	129.3
	Impervious	79.1	129.0	190.0
10. Runoff Volume, V_{24} : $= 1000 \times Q_{24} A$ (m^3)	Pervious	1,900	3,905	6,621
	Impervious	000	000	000
	Total	1,900	3,905	6,621

TP108 - POND DESIGN (POST-DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: ## Checked: 0 Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Cut faces*	74	2.9049	215
	Subtotal for Pervious Areas		2.9049	215
	Impervious Areas (List)			
	Roads / paved	98	2.217	217
	Subtotal for Pervious Areas		2.2165	217
* from Table 3.3		Totals	5.1214	432

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{432}{5.1214} = 84$

Ia (weighted) : $\frac{5 \times \text{pervious area}}{\text{total area}} = \frac{5 \times 2.9049}{5.1214} = 2.8$ mm

2. Time of Concentration

Channelisation Factor : C = 0.6 (from Table 4.2)

Catchment Length : L = 0.147 km (along drainage path)

Catchment Slope : Sc = 0.109 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN} = 0.73$

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30} = 0.17$ hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c = 0.11$ hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 47 mm

Pervious = 89 mm

Impervious = 5 mm

			Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
4. Average Recurrence Interval, ARI (yr) :			Erosion	1/3 *2	2	10	100
5. 24 hour Rainfall Depth, P_{24} (mm), (from Appendix A)			34.5	28.0	84	134	195
6. Runoff Index, c* :	$= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.23	0.19	0.45	0.58	0.67
7. Specific Peak Flow Rate, q*, (from Figure 5.1)			0.066	0.058	0.115	0.135	0.146
8. Peak Flow Rate, q_p :	$= q^* A P_{24}$	(m^3/s)	0.12	0.08	0.49	0.93	1.46
9. Runoff Depth, Q_{24} :	$= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$	(mm) Pervious	7.3	4.7	37.1	76.2	129.3
		Impervious	30.0	23.6	79.1	129.0	190.0
10. Runoff Volume, V_{24} :	$= 1000 \times Q_{24} A$	(m^3) Pervious	213	137	1,078	2,215	3,755
		Impervious	665	524	1,754	2,859	4,210
		Total	878	661	2,831	5,074	7,966

TP108 - POND DESIGN GENERAL

Project:	*West Coast Raod*	By: WL	Date: 30/06/06
Job No.:	*42608*	Checked:	Date:

Stage 1

Pre-Development

Hardstand/Roof

area (ha)	0

Other (pervious)

area (ha)	3.3948
TOTAL	3.3948

Post-Development

Hardstand/Roof

area (ha)	1.2378

Other (pervious)

area (ha)	1.7112
TOTAL	2.9490

Hydrology

2 year	84 mm
10 year	134 mm
100 year	195 mm

TP108 - POND DESIGN (EXISTING DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: *42608* Checked: Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (hectares)	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Pasture*	74	3.3948	251
	Subtotal for Pervious Areas		3.3948	251
	Impervious Areas (List)			
	Roads / paved	98	0.000	0
	Subtotal for Impervious Areas		0	0
* from Table 3.3		Totals	3.3948	251

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{251}{3.3948} = 74$

Ia (weighted) : $\frac{\text{5 x pervious area}}{\text{total area}} = \frac{5 \times 3.3948}{3.3948} = 5.00$ mm

2. Time of Concentration

Channelisation Factor : C = 1 (from Table 4.2)

Catchment Length : L = 0.147 km (along drainage path)

Catchment Slope : Sc = 0.109 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN}$ = 0.59

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30}$ = 0.17 hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c$ = 0.11 hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 89.2 mm

Pervious = 89.2 mm

Impervious = 5.2 mm

			Storm #1	Storm #2	Storm #3
4.	**Average Recurrence Interval, ARI (yr) :**		2	10	100
5.	**24 hour Rainfall Depth, P_{24} (mm),** (from Appendix A)		84	134	195
6.	**Runoff Index, c* :** $= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.29	0.41	0.51
7.	**Specific Peak Flow Rate, q*,** (from Figure 5.1)		0.084	0.116	0.125
8.	**Peak Flow Rate, q_p :** $= q^* A P_{24}$ (m^3/s)		0.240	0.528	0.827
9.	**Runoff Depth, Q_{24} :** $= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$ (mm)	Pervious	37.1	76.2	129.3
		Impervious	79.1	129.0	190.0
10.	**Runoff Volume, V_{24} :** $= 1000 \times Q_{24} A$ (m^3)	Pervious	1,259	2,589	4,389
		Impervious	000	000	000
		Total	1,259	2,589	4,389

TP108 - POND DESIGN (POST-DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: ## Checked: 0 Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Cut faces*	74	1.7112	127
	Subtotal for Pervious Areas		1.7112	127
	Impervious Areas (List)			
	Roads / paved	98	1.238	121
	Subtotal for Pervious Areas		1.2378	121
* from Table 3.3		Totals	2.949	248

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{248}{2.949} = 84$

Ia (weighted) : $\frac{5 \times \text{pervious area}}{\text{total area}} = \frac{5 \times 1.7112}{2.949} = 2.9$ mm

2. Time of Concentration

Channelisation Factor : C = 0.6 (from Table 4.2)

Catchment Length : L = 0.147 km (along drainage path)

Catchment Slope : Sc = 0.109 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN}$ = 0.73

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30}$ = 0.17 hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c$ = 0.11 hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 48 mm

Pervious = 89 mm

Impervious = 5 mm

		Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
4. Average Recurrence Interval, ARI (yr) :		Erosion	1/3 *2	2	10	100
5. 24 hour Rainfall Depth, P_{24} (mm), (from Appendix A)		34.5	28.0	84	134	195
6. Runoff Index, c* : $= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.23	0.19	0.45	0.57	0.66
7. Specific Peak Flow Rate, q*, (from Figure 5.1)		0.070	0.057	0.116	0.135	0.146
8. Peak Flow Rate, q_p : $= q^* A P_{24}$ (m^3/s)		0.07	0.05	0.29	0.53	0.84
9. Runoff Depth, Q_{24} : $= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$ (mm)	Pervious	7.3	4.7	37.1	76.2	129.3
	Impervious	30.0	23.6	79.1	129.0	190.0
10. Runoff Volume, V_{24} : $= 1000 \times Q_{24} A$ (m^3)	Pervious	125	081	635	1,305	2,212
	Impervious	371	292	979	1,597	2,351
	Total	497	373	1,614	2,902	4,563

TP108 - POND DESIGN GENERAL

Project:	*West Coast Raod*	By: WL	Date: 30/06/06
Job No.:	*42608*	Checked:	Date:

Stage 2

Pre-Development

Hardstand/Roof

area (ha)	0

Other (pervious)

area (ha)	1.5375
TOTAL	1.5375

Post-Development

Hardstand/Roof

area (ha)	0.6848

Other (pervious)

area (ha)	0.8527
TOTAL	1.5375

Hydrology

2 year	84 mm
10 year	134 mm
100 year	195 mm

TP108 - POND DESIGN (EXISTING DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: *42608* Checked: Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (hectares)	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Pasture*	74	1.5375	114
	Subtotal for Pervious Areas		1.5375	114
	Impervious Areas (List)			
	Roads / paved	98	0.000	0
	Subtotal for Impervious Areas		0	0
* from Table 3.3		Totals	1.5375	114

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{114}{1.5375} =$ 74

Ia (weighted) : $\frac{\text{5 x pervious area}}{\text{total area}} = \frac{5 \times 1.5375}{1.5375} =$ 5.00 mm

2. Time of Concentration

Channelisation Factor : C = 1 (from Table 4.2)

Catchment Length : L = 0.046 km (along drainage path)

Catchment Slope : Sc = 0.204 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN} =$ 0.59

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30} =$ 0.17 hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c =$ 0.11 hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 89.2 mm

Pervious = 89.2 mm

Impervious = 5.2 mm

		Storm #1	Storm #2	Storm #3
4. Average Recurrence Interval, ARI (yr) :		2	10	100
5. 24 hour Rainfall Depth, P_{24} (mm), (from Appendix A)		84	134	195
6. Runoff Index, c* : $= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.29	0.41	0.51
7. Specific Peak Flow Rate, q*, (from Figure 5.1)		0.084	0.116	0.125
8. Peak Flow Rate, q_p : $= q^* A P_{24}$ (m^3/s)		0.108	0.239	0.375
9. Runoff Depth, Q_{24} : $= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$ (mm)	Pervious	37.1	76.2	129.3
	Impervious	79.1	129.0	190.0
10. Runoff Volume, V_{24} : $= 1000 \times Q_{24} A$ (m^3)	Pervious	570	1,172	1,988
	Impervious	000	000	000
	Total	570	1,172	1,988

TP108 - POND DESIGN (POST-DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: ## Checked: 0 Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Cut faces*	74	0.8527	63
	Subtotal for Pervious Areas		0.8527	63
	Impervious Areas (List)			
	Roads / paved	98	0.685	67
	Subtotal for Pervious Areas		0.6848	67
* from Table 3.3		Totals	1.5375	130

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{130}{1.5375} = 85$

Ia (weighted) : $\frac{\text{5 x pervious area}}{\text{total area}} = \frac{5 \times 0.8527}{1.5375} = 2.8$ mm

2. Time of Concentration

Channelisation Factor : C = 0.6 (from Table 4.2)

Catchment Length : L = 0.046 km (along drainage path)

Catchment Slope : Sc = 0.204 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN} = 0.73$

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30} = 0.17$ hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c = 0.11$ hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 46 mm

Pervious = 89 mm

Impervious = 5 mm

		Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
4. Average Recurrence Interval, ARI (yr) :		Erosion	1/3 *2	2	10	100
5. 24 hour Rainfall Depth, P_{24} (mm), (from Appendix A)		34.5	28.0	84	134	195
6. Runoff Index, c* : $= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.24	0.20	0.46	0.58	0.67
7. Specific Peak Flow Rate, q*, (from Figure 5.1)		0.072	0.060	0.117	0.136	0.148
8. Peak Flow Rate, q_p : $= q^* A P_{24}$ (m^3/s)		0.04	0.03	0.15	0.28	0.44
9. Runoff Depth, Q_{24} : $= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$ (mm)	Pervious	7.3	4.7	37.1	76.2	129.3
	Impervious	30.0	23.6	79.1	129.0	190.0
10. Runoff Volume, V_{24} : $= 1000 \times Q_{24} A$ (m^3)	Pervious	062	040	316	650	1,102
	Impervious	205	162	542	883	1,301
	Total	268	202	858	1,534	2,403

TP108 - POND DESIGN GENERAL

Project:	*West Coast Raod*	By: WL	Date: 30/06/06
Job No.:	*42608*	Checked:	Date:

Stage 3

Pre-Development

Hardstand/Roof

area (ha)	0

Other (pervious)

area (ha)	0.4581
TOTAL	0.4581

Post-Development

Hardstand/Roof

area (ha)	0.2939

Other (pervious)

area (ha)	0.1642
TOTAL	0.4581

Hydrology

2 year	84 mm
10 year	134 mm
100 year	195 mm

TP108 - POND DESIGN (EXISTING DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: *42608* Checked: Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (hectares)	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Pasture*	74	0.4581	34
	Subtotal for Pervious Areas		0.4581	34
	Impervious Areas (List)			
	Roads / paved	98	0.000	0
	Subtotal for Impervious Areas		0	0
* from Table 3.3		Totals	0.4581	34

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{34}{0.4581} =$ 74

Ia (weighted) : $\frac{5 \times \text{pervious area}}{\text{total area}} = \frac{5 \times 0.4581}{0.4581} =$ 5.00 mm

2. Time of Concentration

Channelisation Factor : C = 1 (from Table 4.2)

Catchment Length : L = 0.044 km (along drainage path)

Catchment Slope : Sc = 0.158 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN}$ = 0.59

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30}$ = 0.17 hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c$ = 0.11 hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 89.2 mm

Pervious = 89.2 mm

Impervious = 5.2 mm

			Storm #1	Storm #2	Storm #3
4. Average Recurrence Interval, ARI (yr) :			2	10	100
5. 24 hour Rainfall Depth, P_{24} (mm), (from Appendix A)			84	134	195
6. Runoff Index, c* :	$= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.29	0.41	0.51
7. Specific Peak Flow Rate, q*, (from Figure 5.1)			0.084	0.116	0.126
8. Peak Flow Rate, q_p :	$= q^* A P_{24}$ (m³/s)		0.032	0.071	0.113
9. Runoff Depth, Q_{24} :	$= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$ (mm)	Pervious	37.1	76.2	129.3
		Impervious	79.1	129.0	190.0
10. Runoff Volume, V_{24} :	$= 1000 \times Q_{24} A$ (m³)	Pervious	170	349	592
		Impervious	000	000	000
		Total	170	349	592

TP108 - POND DESIGN (POST-DEVELOPMENT SCENARIO)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: ## Checked: 0 Date:

1. Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area	Product of CN x Area
	Pervious Areas (List)			
Waitemata clay, Class C	*Bush*	70	0	0
Waitemata clay, Class C	*Cut faces*	74	0.1642	12
	Subtotal for Pervious Areas		0.1642	12
	Impervious Areas (List)			
	Roads / paved	98	0.294	29
	Subtotal for Pervious Areas		0.2939	29
* from Table 3.3		Totals	0.4581	41

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{41}{0.4581} = 89$

Ia (weighted) : $\frac{5 \times \text{pervious area}}{\text{total area}} = \frac{5 \times 0.1642}{0.4581} = 1.8$ mm

2. Time of Concentration

Channelisation Factor : C = 0.6 (from Table 4.2)

Catchment Length : L = 0.044 km (along drainage path)

Catchment Slope : Sc = 0.158 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN}$ = 0.81

Time of Concentration : $t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30}$ = 0.17 hrs

SCS Lag for HEC-HMS : $t_p = 2/3\ t_c$ = 0.11 hrs

3. Soil Storage Parameter : S = ((1000/CN)-10)*25.4

Total = 30 mm

Pervious = 89 mm

Impervious = 5 mm

			Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
4. Average Recurrence Interval, ARI (yr) :			Erosion	1/3 *2	2	10	100
5. 24 hour Rainfall Depth, P_{24} (mm), (from Appendix A)			34.5	28.0	84	134	195
6. Runoff Index, c* :	$= \frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.34	0.29	0.57	0.68	0.76
7. Specific Peak Flow Rate, q*, (from Figure 5.1)			0.094	0.082	0.135	0.148	0.157
8. Peak Flow Rate, q_p :	$= q^* A P_{24}$	(m^3/s)	0.01	0.01	0.05	0.09	0.14
9. Runoff Depth, Q_{24} :	$= \frac{(P_{24} - Ia)2}{(P_{24} - Ia) + S}$	(mm) Pervious	7.3	4.7	37.1	76.2	129.3
		Impervious	30.0	23.6	79.1	129.0	190.0
10. Runoff Volume, V_{24} :	$= 1000 \times Q_{24} A$	(m^3) Pervious	012	008	061	125	212
		Impervious	088	069	233	379	558
		Total	100	077	293	504	771

TP10 - WATER QUALITY POND DESIGN (Low Flow Orifice)

Project: *West Coast Raod* By: WL Date: 30/06/06

Location: *42608* Checked: 0 Date: 0

Assume Shape

Permanent Water Surface RL			16.95	mRL
Base Width		na		m
Base Length		na		m
Assumed side slope		na		m(hor):m(ver)

1. Water Quality Treatment Pond Dimensions :

Assumed Depth of WQV	d	=	0.5	m		
Top Elevation of Water Quality Volume :	H	=	16.95	mRL		
Water Quality Volume :	V_d	=	661	m^3		
Permanent Water Quality Volume :	$V_{d(perm)}$	=	330	m^3		
Total Forebay Volume Requirement :	$V_{forebay}$	=	99	m^3		

2. Extended Detention Outlet Design :

Extended Detention Volume :	V_{ex}	=	878	m^3		
Average Discharge Release Rate :	Q_{avg}	=	0.0102	m^3/sec		
Top Elevation of Extended Detention Volume :	Hex	=	18.65	m		
Height of Extended Detention Volume	hex	=	1.70	m		
Maximum Discharge Release Rate :	Q_{max}	=	0.0203	m^3/sec		
Selected Orifice Diameter :	$d_{orifice}$	=	0.08	m		
Orifice Discharge Rate	Q_i	=	0.0178	m^3/sec	< Q_{max}	OK

3. 100 Year Storm Flood Routing

100 year Post Development Max Flow :	Q100	=	1.458	m^3/sec
Depth over weir:	h100	=	0.150	m
Width of Emergency Spillway	h100	=	13.94	m
			14.76	

	Orifice	Notch	Weir	Spillway
Diameter	0.08	1.45	1.05	13.94
Elevation	16.95	18.80	18.80	18.9
Coefficient	0.62	1.8	1.8	1.8

0.1 Depth	Outflow (m^3/s) Orifice	Notch	Weir	Combined
16.75	0	0	0	0
16.80	0	0	0	0
16.90	0	0	0	0
17.00	0.003087	0	0	0.003087
17.10	0.005346	0	0	0.005346
17.20	0.006902	0	0	0.006902
17.30	0.008167	0	0	0.008167
17.40	0.00926	0	0	0.00926
17.50	0.010237	0	0	0.010237
17.60	0.011129	0	0	0.011129
17.70	0.011955	0	0	0.011955
17.80	0.012727	0	0	0.012727
17.90	0.013455	0	0	0.013455
18.00	0.014145	0	0	0.014145
18.10	0.014803	0	0	0.014803
18.20	0.015434	0	0	0.015434
18.30	0.016039	0	0	0.016039
18.40	0.016622	0	0	0.016622
18.50	0.017186	0	0	0.017186
18.60	0.017732	0	0	0.017732
18.65	0.017998	0	0	0.017998
18.70	0.018261	0.029181	0	0.047442
18.75	0.01852	0.082535	0	0.101056
18.80	0.018776	0.151627	1.59444E-20	0.170403
18.90	0.019277	0.32625	0.105228271	0.450755
19.00	0.019765	0.540434	0.297630497	0.857829
19.10	0.020241	0.787879	0.546782137	1.354902
19.20	0.020706	1.064595	0.84182617	1.927128
19.25	0.020935	1.213018	1.004502927	2.238456

Copy data to HEC-HMS

Depth m	Vol 1000m3	Outflow (m3/s)	
16.75	0.00	0	0.0
16.80	0.00	0	4.0
16.90	0.02	0	15.5
17.00	0.03	0.003087	32.1
17.10	0.05	0.005346	52.8
17.20	0.08	0.006902	76.4
17.30	0.10	0.008167	102.9
17.40	0.13	0.00926	132.3
17.50	0.16	0.010237	164.7
17.60	0.20	0.011129	200.3
17.70	0.24	0.011955	239.0
17.80	0.28	0.012727	280.9
17.90	0.33	0.013455	326.1
18.00	0.37	0.014145	374.6
18.10	0.43	0.014803	426.4
18.20	0.48	0.015434	481.8
18.30	0.54	0.016039	540.7
18.40	0.60	0.016622	603.1
18.50	0.67	0.017186	669.1
18.60	0.74	0.017732	738.8
18.65	0.78	0.017998	775.5
18.70	0.81	0.047442	812.2
18.75	0.85	0.101056	850.0
18.80	0.89	0.170403	889.4
18.90	0.97	0.450755	970.4
19.00	1.05	0.857829	1050.0
19.10	1.13	1.354902	1130.0
19.20	1.22	1.927128	1220.0
19.25	1.31	2.238456	1310.0

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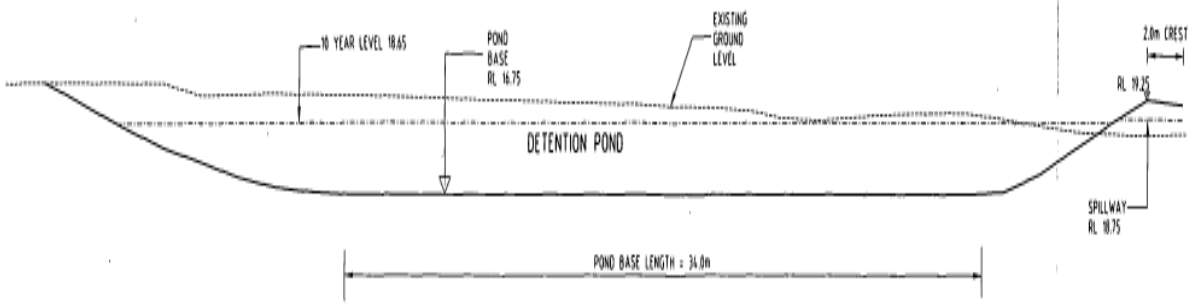
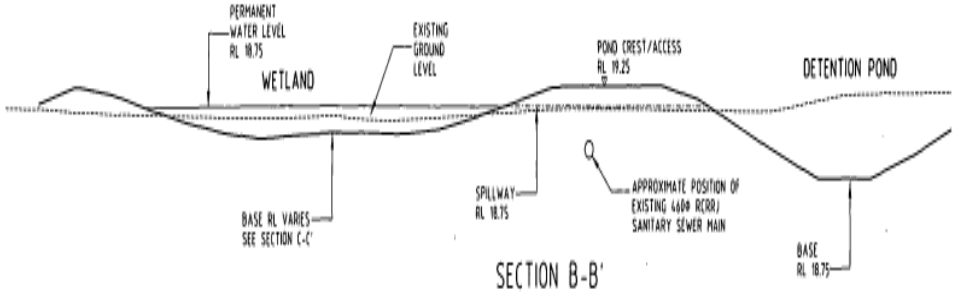
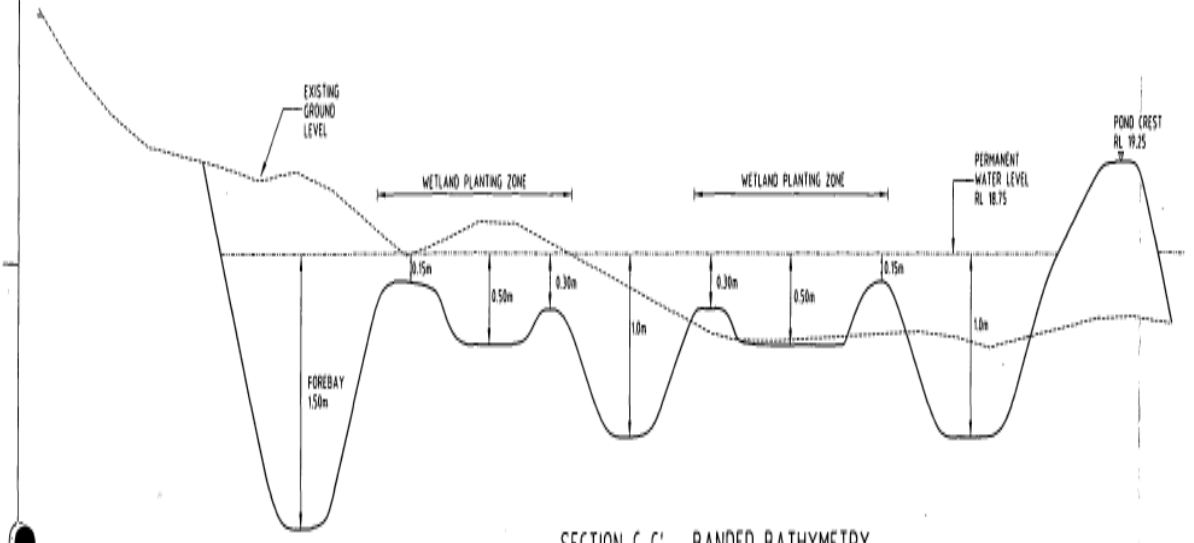
DRAWING NOTES



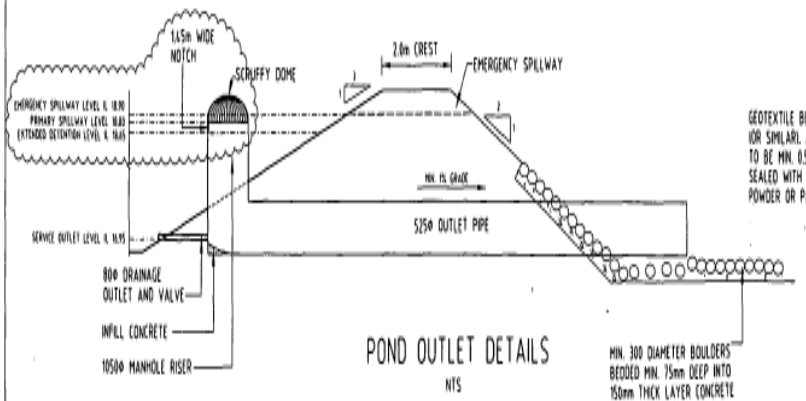
SECTION A-A'
SCALE 1:100



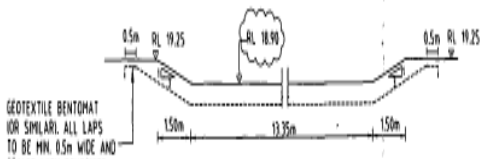
SECTION B-B'
SCALE 1:100



SECTION C-C' - BANDED BATHYMETRY
SCALE HORT 1:100 VERT 1:20



POND OUTLET DETAILS
NTS



EMERGENCY SPILLWAY DETAIL
NTS

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	20.06.06	WORDING AMENDED	DWR	

DRAWING REVISIONS

ARCHITECTS • SURVEYORS • ENGINEERS •
Babbage CONSULTANTS
109 FANSHAWE STREET
PO BOX 2027
AUCKLAND 1 · NEW ZEALAND
PHONE 09 - 379 0680 · FAX 09 - 377 1170
admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

POND DETAILS PLAN

	DATE	INITIAL
DESIGNED	JUNE 2006	DWR
DRAWN	JUNE 2006	DW
CHECKED		
APPROVED	June 06	DP

SCALE (A1)

AS SHOWN

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C18	A

30/06/2006 1:47:06 p.m. X:\dgn\42600\SI\42608C\vi\C18 POND DETAILS.dgn

Site Visit Checklist of Potential Effects

RMA No. 2006107778 Date 10/07/06 Planner FELL

Site Address 423 – 429 West Coast Road

Proposed Activity and Infringements Construct 77 resi. units, subdivide into 61 lots

HIRB, Height, Earthworks, vegetation alteration, impermeable coverage

Effect	de minimis /minor/ more than minor/	Comments/ Affected Parties/ Extent of Effect
EFFECTS ON WATER QUALITY AND QUANTITY		
Clarity, quantity, flow, natural character, flooding potential, contaminant runoff, soil/sediment runoff/damage to riparian margins, erosion, aquatic ecosystems and habitats, alteration of natural water levels, health and any other relevant matters.		- 7m riparian strip stream
EFFECTS ON NATIVE VEGETATION AND FAUNA HABITAT		
Root coverage and disturbance, stock damage, undergrowth regeneration, edge effect- exposure to wind, light, weeds, pests, bush and habitat fragmentation, loss of extent and range of linkages between fauna habitats, loss of bio diversity, quality and resilience and healthiness of the ecosystem, variety and range of species, Green Network- resilience, bio diversity and integrity, cumulative effects of additional clearance, significant/ outstanding vegetation /specimen and any other relevant matters.		- scattered vegetation along the stream. - otherwise site is clear & in pasture grass
EFFECTS ON SOIL AND LANDFORM		
• Special soils, soil loss, reduction in life supporting capacity, degradation of soil structure • Leachates, contamination by sprays/fertilisers/, health of soil • compaction, erosion, slippage, natural hazards, subsidence stability –on site and adjoining sites, flooding, landform and any other relevant matters • soil and sediment runoff		
EFFECTS ON AIR		

Effect	de minimis /minor/ more than minor/	Comments/ Affected Parties/ Extent of Effect
Ambient quality- local and global, spray drift and any other relevant matters, dust		
EFFECTS ON ECOSYSTEM STABILITY		
Variety and Extent of Species, quality of air, soils and water, isolation/ecological linkages, edge effect, cumulative effects and any other relevant matters.		
EFFECTS ON NATURAL CHARACTER OF COAST AND MARGINS OF LAKES, RIVERS AND WETLANDS		
Form, structural integrity, quality and quantity - water and vegetative cover, degradation of natural character, natural actions, natural processes altered, modification/ alteration of interfaces between land and water and any other relevant matters.		
EFFECTS ON AMENITY VALUES, HEALTH AND SAFETY- LANDSCAPES, LOCAL AREAS AND NEIGHBOURHOOD CHARACTER		
• **overshadowing**, loss of daylight and sunlight, scale, form, height, bulk, physical dominance, privacy • **visual amenity**, streetscape, sense of place, neighbourhood character, amenity values, views, on site amenity, adequate open space • landscape modification, encroachment above ridgelines, landscape values, views • connectivity, accessibility, surveillance, safety, public access • **Noise**, odour, dust, vibration, radio frequency, electromagnetic radiation, lighting, glare-cumulative lighting effects, hazardous materials, natural hazards, air base operations • **Infrastructure** capacity & availability • **Traffic** generation, on-street parking, driver safety, pedestrian safety, roading capacity and roading network, traffic noise, vehicle movements, access and driveway manoeuvring, driveway width & gradient • **Any other relevant matters.**		

Resource Consent Application Checklist

Living Environment

RMA No: 20061077/1078

Planner FELLY

Street Address: 423 - 429 West Coast Rd

Site Area: 7948m2 (Lot 3 DP 339810)
4.9336ha (Lot 2 DP 339810)

L E No: Living 4 Nat Area General Riparian margin 7m Restoration

Landscape Elements:

Hazardous Facility /Contaminated Site: -

Heritage Item

Natural Hazards: Flooding
High Pressure Natural gas pipeline

Road Hierarchy: District

General Noise Rule: - Major Road

Map Reference: F4

Designations/Scheduled Site

New vehicle crossing Yes/No
(more than one needs consent under Transport Environment)

Site File checked (Yes)/No

Within M.D.H Node, Yes/(No) outside the circle

Rule No.	Provision	OK/ Permitted	Not OK	Comments/Activity	N/A
2	Density/MDH		✓	less than 350m2 per unit	DISC
3	Building Location/ Natural landscape elements	N/A		Medium density — DISC 115mm (eastern) / 1.010m (eastern)	
4	Building height (8m)		✓	Bldgs 2A & 2B — 3.96m infring eastern internal boundaries 1.095m (western)	DISC
5	Height in relation to Boundaries			Internal boundaries	DISC
	North (2.5m & 55°)				
	South (2.5m & 35°)				
	East (2.5m & 45°)				
	West (2.5m & 45°)				
6	Front Yards (3m)	✓			
7	Building Coverage (35%)	✓			
8	Building Location/Privacy & Amenity				
9	Outdoor Space				
	25m² per bedroom				
	6.0m line				
	Bearing				
	3.0m min dim				

	Slope				
10	Non Residential Activities (NRA)	N/K			
11	Traffic Generation, NRA	N/K			
12	Carparking & Driveways				
	Number of spaces				
	Dimensions				
	Driveway access				
	Gradient				
	On site turning				
	Service strip				
13	Noise (NRA)				
14	Air Discharges, Odour, Dust, Glare & Vibration				
15	Signs				
16	Relocated Buildings				
17	Infrastructure				

1. **Height in Relation to Boundary Calculations**
   - **Northern – 2.5m + 55° or 2.5 + (1.428 x D)**
   - **Western – 2.5m + 45° or 2.5 X D**
   - **Eastern – 2.5m + 45° or 2.5 + D**
   - **Southern – 2.5m + 35° or 2.5 + (0.7 X D)**

2. **Height Calculations – Average Height Method**

City Wide Rules
Rule 1 – buildings on land known to council to be likely to be subject to inundation (flooding) Ltd DISC (criteria 1a–1g)

61 lots

53 stand alone units
14 apartments on Lot 61 (stage 3)
4 apartment units on Lot 56
77 units

60
14
4
78

Greenfields Subdivision

- Subdv. of land in the Living Environ. where subdv. is of existing sites either over 1ha in net site area or creating 10 or more new sites.

Rule 4.2 - Discretionary Activity (Lot 2 DP 339810) 4.9336 ha (Lot 3 DP 339810 - 7948 m²)

a)(i) - Subdv. of existing sites 3ha or more in net site area where the min. net site area for each proposed site comprises the net unit area specified in a resource consent

b) - Driveways serve - 10 dwellings ✓

c) provision made for treatment & disposal of stormwater ✓

d) " " " " " " " wastewater ✓

e) " " " water, electricity, gas, telecommunications ✓

(Criteria 4a - 4a0)

Resource Consent Application Checklist

General Natural Area

RMA No: 20061077/1078

Planner FELL

Street Address: 423-429 West Coast Rd

Site Area: Lot 2 DP 339810 (4.9336 ha)
Lot 3 DP 339810 (7948 m²)

Human Environment: Living

Landscape Elements:

Other Natural Areas:

Hazardous Facility /Contaminated Site:

Heritage Item:

Road Hierarchy: District

Natural Hazards: High Pressure Natural Gas Pipeline or Petroleum Product

General Noise Rule: - Major Road:

Map Reference: F9

Designations/Scheduled Site:

Site File checked (Yes)/No

Rule No.	Provision	OK/ Permitted	Not OK	Comments/Activity	N/A
1	Located within other Natural Areas	✓			
2	Vegetation Clearance - vege listed in removable vege Appendix & envir. damaging plants of more than 500m²			Controlled	
3	Earthworks 40 000m³ Check area, volume, cut, fill and slope of earthworks in context with site and Natural Area:			Discretionary	

	Check retaining structure (height/ surcharge loading etc): Check erosion and sediment control measures: Do you need to refer the application to an earthworks engineer?	Yes			
4	**Impermeable Surfaces** 1590			Ltd Discretionary	
5	**Establishment of Vegetation**				

Resource Consent Application Checklist

Riparian Margins/Coastal Edges Natural Area

RMA No: 20061077/E078

Planner FELLY

Street Address: 423-429 West Coast Rd

Site Area: 7948 m² (Lot 3 DP 339810)
4.9336 ha (Lot 2 DP 339810)

Human Environment Living E

Landscape Elements:

Other Natural Areas

Hazardous Facility /Contaminated Site

Heritage Item

Natural Hazards:

Road Hierarchy District

General Noise Rule: - Major Road

Map Reference f9

Designations/Scheduled Site

Site File checked (Yes)/No

Rule No.	Provision	OK/ Permitted	Not OK	Comments/Activity	N/A
1	Located within other Natural Areas				
2	Vegetation Clearance Not clear how much?			Ctd D13C?	
3	Earthworks				

	Check area, volume, cut, fill and slope of earthworks in context with site and Natural Area: Check retaining structure (height/ surcharge loading etc): Check erosion and sediment control measures: Do you need to refer the application to an earthworks engineer?				
4	**Impermeable Surfaces**				
5	**Stock**				
6	**Establishment of Vegetation**				
7	**Buildings**				

Waitakere City Council
Te Taiao o Waitakere

Waitakere City Council
Civic Centre
6 Waipareira Ave
Waitakere City

Private Bag 93109
Henderson
Waitakere City

Telephone
09 836 8000

Facsimile
09 836 8001

DX CX 10250 Auckland Mail Centre
Email: info@waitakere.govt.nz

Website: www.waitakere.govt.nz

6 July 2006

Matthew Paetz
Babbage Consultants Limited
P O Box 2027
Auckland

Dear Matthew

ACKNOWLEDGEMENT OF APPLICATION FOR RESOURCE CONSENT IN ACCORDANCE WITH SECTION 88 OF THE RESOURCE MANAGEMENT ACT 1991

Re: **Resource Consent Application:** RMA20061077/ RMA20061078
Proposal: To construct 77 new units and subdivide around the proposed development, requiring landuse consent for; density, height, impermeable coverage, vegetation alteration, earthworks
Site Address: 423-429 West Coast Road

I acknowledge lodgement of your resource consent application dated 26/06/06.

Your application has been allocated to Felicitas Dhliwayo who will be the handling officer for your application. This role involves:

- Being the key customer contact during the processing of the application;
- Co-ordinating the assessment of your application by other sections of Council (i.e. Ecowater, Transport Assets, Parks);
- Ensuring that the application is processed in accordance with the statutory requirements of the Resource Management Act 1991 (RMA) (including the requirements of the Resource Management Amendment Act 2003). This includes matters such as timeframes, assessment of effects, affected persons, and the serving of notices;
- Assessment of your proposal under the requirements of the District Plan and the RMA; and
- Making a recommendation in terms of notification (if your application is for a discretionary or non-complying activity) and;
- Making a recommendation to grant / decline the application.
- Estimating the development contribution for this proposal under the Local Government Act 2002 (see www.waitakere.govt.nz for details.

Please note that a copy of your application has been given to the following specialists for consideration and assessment:

- Ecowater;
- Transport Assets;
- Arborist;
- Landscape Architect;
- Urban Design;
- Parks;
- Monitoring; and
- Geotechnical/Structural Engineer.

Following a site visit and assessment of your proposal by Felicitas Dhliwayo and specialists identified above, further information may be required in accordance with Section 92 of the RMA. If this is the case, the request for further information shall be made to you in writing and the processing time for your application will be suspended until that further information is received.

While you have paid a base cost lodgement fee, the Waitakere City Council Resource Consents team is fully cost recovered (i.e. there is no ratepayer subsidy for the processing of Resource Consents), and therefore any costs incurred over and above that lodgement fee will be charged to you as the applicant.

If you have any queries regarding the above, please contact Felicitas Dhliwayo of Consent Services (phone (09) 836-8000 Ext 8352).

Yours faithfully,

Felicitas Dhliwayo

Resource Planner

Start time 9ss finish time 10os COMBO

DISTRIBUTION LIST

DATE RECEIVED 26 / 6 /2006 **Allocated to:** Felly **on** 30/6/06

ADDRESS: 423-429 West Coast Rd **Allocated by:** Jeanette

RMA: 20061077 (lue) 20061078 (sub)

SUMMARY OF INFRINGEMENTS: density, hight, impermeable, earthworks, rege.

T/L Comments:

Department	Tick If Req	Notes
Ecowater *	✓ /	Sent 03/07/06 SG2
Roading & Traffic *	✓ /	Sent 03/07/06 ✓
Parks	✓ /	~~(to send out later)~~ Sent 03/07/06
Consultancy Services (Geotech)	✓	(URS) n GHD (from 1/7/06 ✓ - Sent 03/07/06
Service Management		
Urban Design (Rekel Joyce) *	✓	(to send out later)
Natural Areas (Vegetation)	✓ /	Arborista - Sent 03/07/06 SG2
Natural Areas (Earthworks) Dept	✓	to Monitoring - Sent 03/07/06 ✓
~~Field Services (Other)~~ Landscape Architect	✓ /	GG sent 04/07/06 SG2
Field Inspector/Resource Planner		Parks - sent 04/07/06
Plumbing & Drainage		
Shared Driveways		
Building Control		
Contamination Expert	[redacted]	EES, or Kingett Mitchell (1/7) - Sent to EES on 03/07/06. (not in yet)
QV Valuations		
DLR/Transit NZ		
Waitakere Ranges Protection Area		
Other		

FEES $ 7785 **CHQ ATTACHED/CHQ TO CASHIERS**

HUMAN ENVIRONMENT Living **NATURAL AREA** General

Waitakere City Council
Te Taiao o Waitakere

WAITAKERE CITY COUNCIL
PB 93-109 HENDERSON
PH No 09 839 0400
GST No 52-211-247
OFFICIAL RECEIPT

BRIAN DONNELLY
NZ HOUSING FOUNDATION
p.o. bOX 36027
NORTHCOTE
09-4438415

Receipt No: 333
Receipt Date: 09-NOV-2006

Allocation	NEW	
RCON		545.31
Cheque		-545.31
BRIAN DONNELLY		

Receipt Amount:	545.31
Tendered Amount:	545.31
Change Issued:	
Rounding Amount:	
Total GST:	

GEMS Invoice Details for RMA20061078 Application

Processed	**26/06/2006**	**Debtor: 787747 NEW ZEALAND HOUSING FOUNDATION**		**Ledger RCON**
Invoice	**1000223**	**Application: RMA20061078**		
Fee Line	Fee Code / Description	SFL Ledger	SFL Account	Fee Amount
1	RMA20061078 157 Counter Fees	39	5930-38120-534	$31.50
2	RMA20061078 SD5 21+ block subdivisi	38	5830-38060-710	$2,718.50
	61 LOT SUB 423-429 WEST COAST ROAD, GLEN EDEN,		**Invoice Total**	**$2,750.00**

Processed	**26/06/2006**	**Debtor: 787747 NEW ZEALAND HOUSING FOUNDATION**		**Ledger RCON**
Invoice	**1000227**	**Application: RMA20061078**		
Fee Line	Fee Code / Description	SFL Ledger	SFL Account	Fee Amount
1	RMA20061078 CED Cemetery Developmen	60	8820-99590-901	$1,112.33
2	RMA20061078 LED Leisure Facilities	60	8820-99570-901	$9,181.00
3	RMA20061078 LID Libraries Developme	60	8820-99580-901	$20,390.04
4	RMA20061078 PKD Parks Assets Develo	60	8820-99550-901	$13,224.29
5	RMA20061078 PTD Public Transport De	60	8820-99540-901	$22,158.18
6	RMA20061078 RRD Roading Development	60	8820-99530-901	$107,411.09
7	RMA20061078 SWD Storm Water Develop	60	8820-99500-901	$111,327.49
8	RMA20061078 UVD Urban & Rural Villa	60	8820-99560-901	$38,058.61
9	RMA20061078 WSD Water Supply Develo	60	8820-99520-901	$11,386.90
10	RMA20061078 WWD Waste Water Develop	60	8820-99510-901	$279,407.16
	61 LOT SUB 423-429 WEST COAST ROAD, GLEN EDEN,		**Invoice Total**	**$613,657.09**

Processed	**27/06/2006**	**Debtor: 787747 NEW ZEALAND HOUSING FOUNDATION**		**Ledger RCON**
Receipt	**CT9498**	**Payer: NEW ZEALAND HOUSING FOUNDATION**		
Document	Description	Reference	Amount	Allocated Amount
CT9498		1000223	$7,785.00	($2,750.00)

Processed	30/06/2006	Debtor: 787747 NEW ZEALAND HOUSING FOUNDATION		Ledger RCON
Receipt	CU1779	Payer: NEW ZEALAND HOUSING FOUNDATION		
Document	Description	Reference	Amount	Allocated Amount
CU1779		1000227	$613,657.09	($613,657.09)

LUC 2006-1077 gtd 30/10/06 Kelly

SUB 2006-1078 gtd 25/1/07

Stage 2* -3 rcvd 6/6/08.

Stage 1 S.224 comp.

Variation LUC-2009-46 Jeannette gtd 19/2/09

Com 2007-116 #4 retaining walls

4 Pyramid

Current COM's

~~936~~ / ~~937~~ / ~~938~~ / 939 / ~~943~~.

~~1A~~, ~~1B~~, ~~1C~~, 6, ~~1E~~

S.223 signed 24/9/07.

Stages 1, 2+3.

---

lot 2 DP 339810

High Pressure Near Gas Pipeline

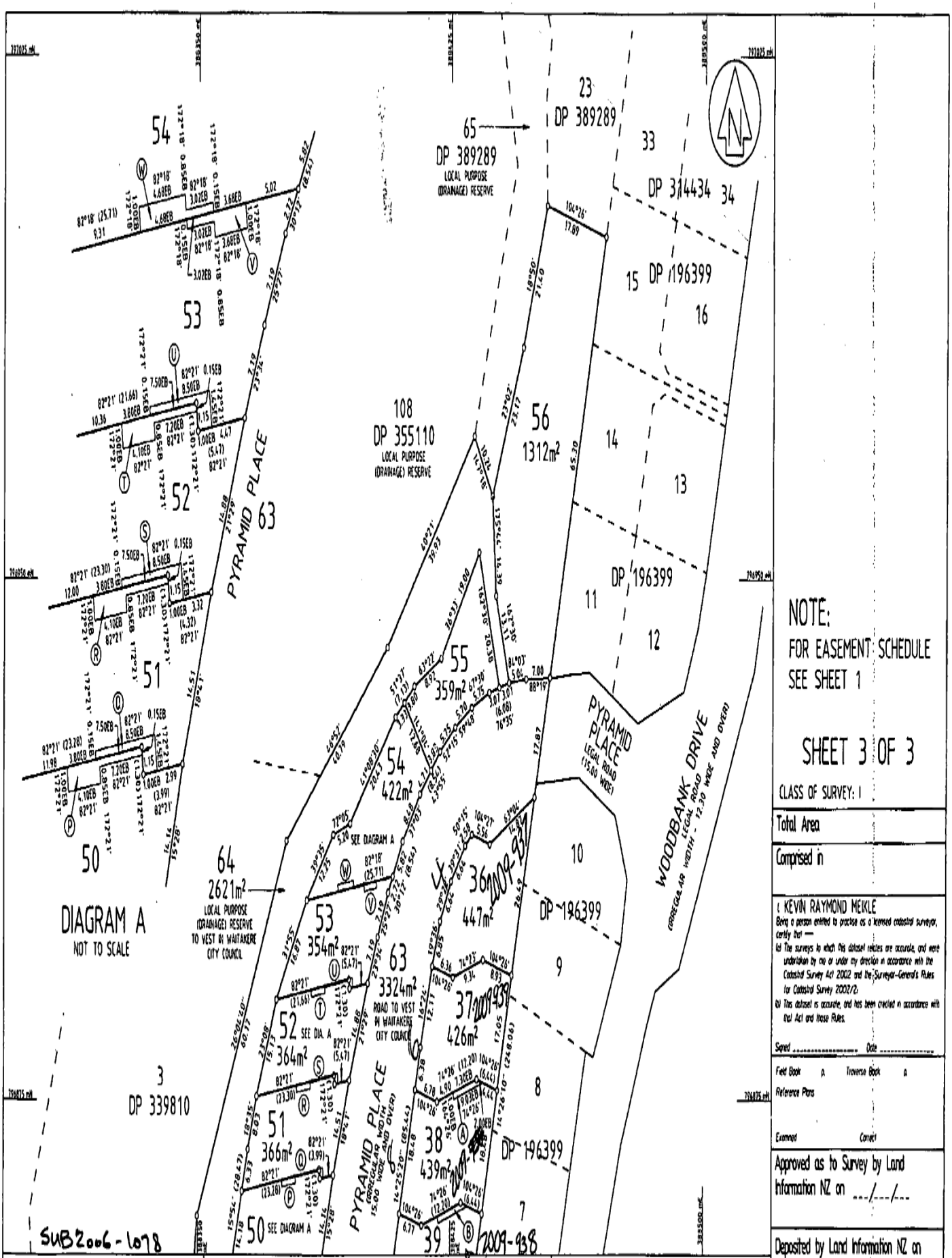
12071 / 12073 / 12076 / 12087.

RESOURCE PLANNER (R-IN-PLAN)

Application #	Task Start Date	Estimated Duration	Working Days	Overdue Days
COM-2009-881	01/07/2009	2	6	4
~~COM-2009-893~~	~~08/07/2009~~	~~2~~	~~1~~	~~0~~
COM-2009-932	08/07/2009	2	1	0
COM-2009-933	08/07/2009	2	1	0
COM-2008-1330	09/07/2009	2	0	0
COM-2009-589	09/07/2009	2	0	0
COM-2009-603	09/07/2009	2	0	0
COM-2009-922	09/07/2009	2	0	0
~~COM-2009-923~~	~~09/07/2009~~	~~2~~	~~0~~	~~0~~
COM-2009-936	09/07/2009	2	0	0
COM-2009-937	09/07/2009	2	0	0
COM-2009-938	09/07/2009	2	0	0
COM-2009-939	09/07/2009	2	0	0

TOTAL OVERDUE R-IN-PLAN TASKS:	**1**
TOTAL NOT OVERDUE R-IN-PLAN TASK	**12**
TOTAL R-IN-PLAN OPEN TASKS:	**13**

897 ✓ G
~~919~~ ✓ L



NOTE:
FOR EASEMENT SCHEDULE
SEE SHEET 1

SHEET 3 OF 3

CLASS OF SURVEY: 1

Total Area

Comprised in

I KEVIN RAYMOND MEIKLE
Being a person entitled to practise as a licensed cadastral surveyor, certify that —
(a) The surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor-General's Rules for Cadastral Survey 2002/2.
(b) This dataset is accurate, and has been created in accordance with that Act and those Rules.

Signed ..... Date .....

Field Book p Traverse Book p

Reference Plans

Examined Correct

Approved as to Survey by Land Information NZ on ---/---/---

Deposited by Land Information NZ on ---/---/---

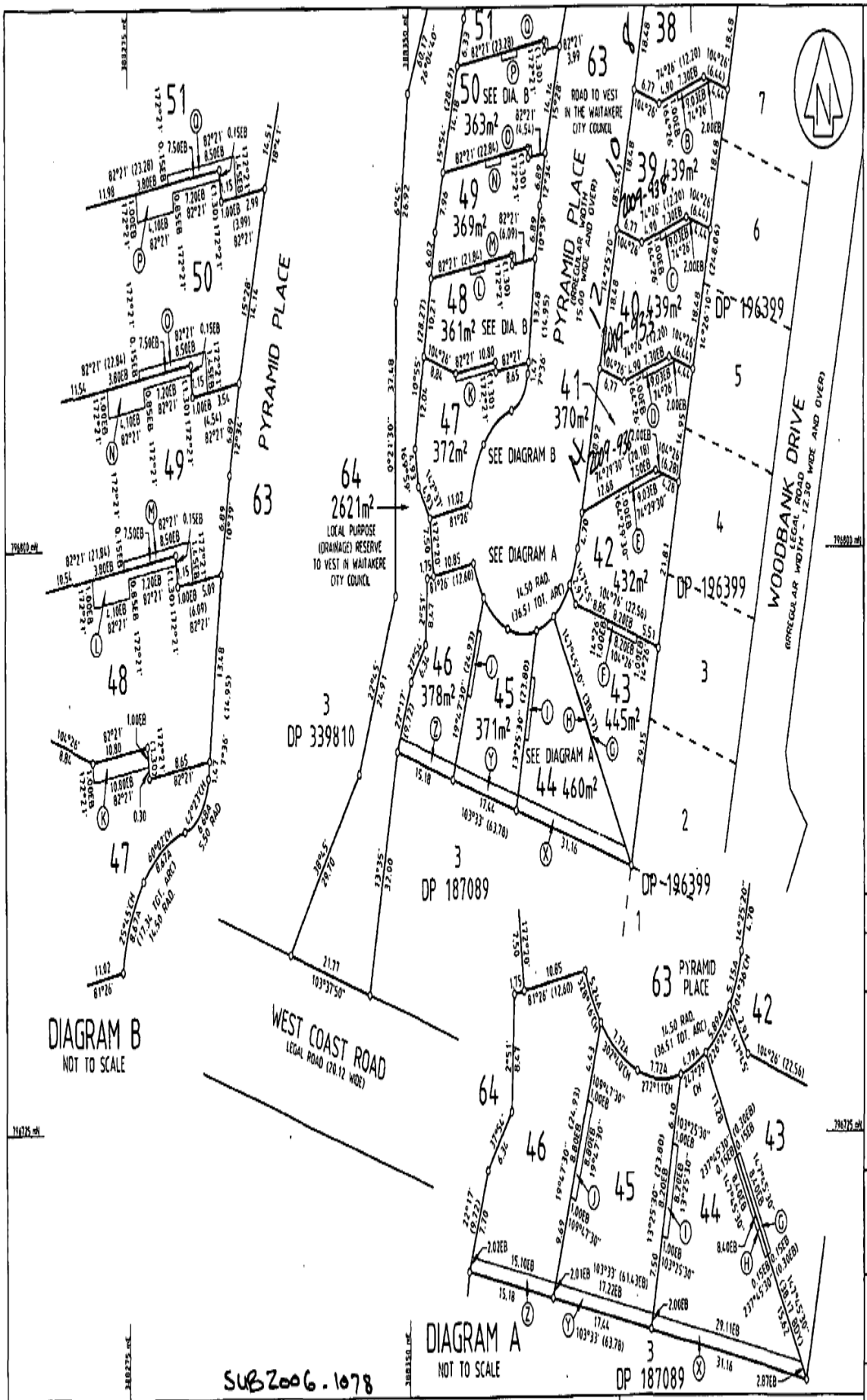
File
Received
Instructions

DP390735

LAND DISTRICT NORTH AUCKLAND

LOTS 36 - 55, 63 AND 64 BEING A SUBDIVISION OF LOT 72 DP 389289

TERRITORIAL AUTHORITY WAITAKERE CITY
42608
Surveyed by BABBAGE CONSULTANTS LTD.
Scale 1 : 500 Date MAY 2007



NOTE:
FOR EASEMENT SCHEDULE
SEE SHEET 1

SHEET 2 OF 3

CLASS OF SURVEY: 1

Total Area

Comprised in

I KEVIN RAYMOND MEIKLE
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(b) This dataset is accurate, and has been created in accordance with that Act and those Rules.

Signed _____ Date _____

Field Book p. Traverse Book p.
Reference Plans

Examined Correct

Approved as to Survey by Land Information NZ on .../.../...

Deposited by Land Information NZ on .../.../...

File
Received
Instructions

DP390735

SUB2006.1078

LAND DISTRICT NORTH AUCKLAND

LOTS 36 - 56, 63 AND 64 BEING A SUBDIVISION OF LOT 72 DP 389289

TERRITORIAL AUTHORITY WAITAKERE CITY
42608
Surveyed by BABBAGE CONSULTANTS LTD.
Scale 1 : 500 Date MAY 2007

environments | SOUL
URBAN DESIGN LANDSCAPE ARCHITECTURE ENVIRONMENTAL PLANNING
PO Box 60211 Titirangi | Auckland, New Zealand
phone 64 9 817 3788 | fax 64 9 817 3789
email contact@landscapearchitecture.co.nz
www.landscapearchitecture.co.nz

DOCUMENT ISSUE SHEET - Receiving Parties

Project: **West Coast Road Housing**

Job No: **161**

Date: **17-Aug-2006**

DOCUMENT TITLE	DOCUMENT No.	REVISION No.
Street Tree planting plan I of 2, A1	LSP05 ✓	
Street Tree planting plan 2 of 2, A1	LSP06 ✓	
Street Tree planting plan I of 2, A3	LSP05	
Street Tree planting plan 2 of 2, A3	LSP06	
Typical planting plan house type 4A	LSP07 ✓	
Typical planting plan house type 4B	LSP08 ✓	
Additional information on proposed planting - schedules		

RECEIVING PARTY	ORGANISATION	COPIES
	Waitakere city Council at meeting 17 8 06	4

OFFICE COPY	
RECORD COPY	
ISSUED BY	NR
STATUS	for planning approval
FORMAT	as shown

concept information tender construction draft
email hardcopy CD-rom fax

NZ Housing Foundation
Babbage Consultants

PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077|1078
SIGNED: DATE: 17.10.06
AUTHORISED OFFICER

423-429 West Coast Road, Henderson - Housing Development **Rev C**
Additional information on proposed planting
13-Oct-06

Plant species, stock and spacings for planting types B, C, D, E and F shown on Landscape Concept drawings LSP 01 and LSP 02

All native planting stock is to be eco-sourced from plants propagated from the Waitakere region
Plant quantities in the schedules below are indicative only, and are calcuated per 1000 square metres. The full extent of the planting areas is shown on drawings LSP 01 and 02 Rev C

Types B and C: Re-vegetation shrub and tree mixes:

Planting on higher stream bank areas
Area sq m 1000

	BOTANICAL NAME	pot size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
BC1	*Dacrycarpus dacrydioides*	PB8	150-180	10%	5 to 10	0.9	123	secondary tree species, short stake
BC2	*Cordyline australis*	PB5	30-45	10%	5 to 10	0.9	123	
BC3	*Cortaderia fulvida*	PB5	30-45	10%	10 to 20	1.2	69	Do not plant within 2.5m of paths
BC4	*Phormium tenax*	PB3	30-45	10%	20 to 30	1.0	100	
BC5	*Leptospermum scoparium*	PB3	30-45	10%	20 to 30	0.9	123	
BC6	*Hoheria populnea*	PB3	30-45	10%	20 to 30	1.0	100	
BC7	*Carpodetus serratus*	PB5	30-45	10%	5 to 10	0.9	123	plant in partial shade of existing trees
BC8	*Hedycaria arborea*	PB5	30-45	10%	5 to 10	0.9	123	plant in partial shade of existing trees
BC9	*Coprosma lucida*	PB3	30-45	20%	10 to 20	1.0	200	
TOTAL plants per 1000 sq m				**100%**			**963**	

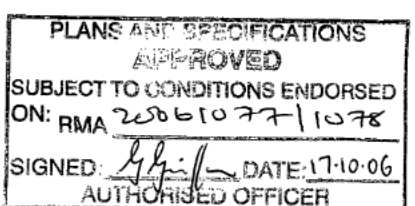
Received
16 OCT 2006

Types B and C: Re-vegetation shrub and tree mixes continued:

Riparian areas outside common flood areas

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
BC10	*Vitex lucens*	PB8	100-150	8%	20 to 30	1.0	80	secondary tree species, short stake
BC11	*Podocarpus totara*	PB8	150-180	6%	20 to 30	1.0	60	secondary tree species, short stake
BC12	*Phyllocladus trichomanoides*	PB8	150-180	5%	20 to 30	1.0	50	secondary tree species, short stake
BC13	*Coprosma robusta*	PB3	30-45	10%	10 to 20	1.2	69	
BC14	*Aristotelia serrata*	PB3	30-45	5%	5 to 10	1.2	35	
BC15	*Sophora microphylla*	PB3	30-45	5%	3 to 5	0.9	62	
BC16	*Cyathea medullaris*	PB3	30-45	3%	3 to 5	1.0	30	plant in partial shade of existing trees
BC17	*Cyathea dealbata*	PB3	30-45	4%	3 to 5	1.0	40	plant in partial shade of existing trees
BC18	*Leptospermum scoparium*	PB3	30-45	8%	10 to 30	0.9	99	
BC19	*Myrsine australis*	PB3	30-45	15%	10 to 20	0.9	185	
BC20	*Melicytus ramiflorus*	PB3	30-45	10%	10 to 20	1.2	69	
BC21	*Pseudopanax arboreus*	PB3	30-45	5%	5 to 10	1.2	35	
BC22	*Corokia buddleioides*	PB3	30-45	5%	5 to 10	0.9	62	
BC23	*Olearia furfuracea*	PB3	30-45	5%	5 to 10	1.0	50	
BC24	*Cortaderia fulvida*	PB5	30-45	6%	10 to 20	1.2	42	Do not plant within 2.5m of paths
TOTAL plants per 1000 sq m				**100%**			**736**	



Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks:

Planting on upper bank: Generally moist ground with high water table and occasional flooding

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D1	*Dianella nigra*	PB3	30 - 45	8%	10 to 20	0.8	125	plant in partial shade of existing trees
D2	*Dacrycarpus dacrydioides*	PB8	150-180	5%	5 to 10	0.6	139	secondary tree species, short stake
D3	*Cyathea dealbata*	PB3	20 - 40	5%	10 to 20	0.7	102	plant in partial shade of existing trees
D4	*Cyatea medullaris*	PB3	20 - 40	5%	10 to 20	0.7	102	
D5	*Carex flagellifera*	PB3	20 - 40	15%	10 to 20	0.7	306	
D6	*Carex lessoniana*	PB3	20 - 40	15%	10 to 20	0.7	306	
D7	*Baumea tenax*	PB3	20 - 40	15%	10 to 20	0.7	306	
D8	*Phormium tenax*	PB3	20 - 40	15%	10 to 20	0.7	306	
D9	*Cordyline australis*	PB5	30-45	9%	5 to 10	0.9	111	
D10	*Coprosma robusta*	PB3	30-45	8%	10 to 20	1.0	80	
TOTAL plants per 1000 sq m				**100%**			**1692**	

PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077/1078
SIGNED [signature] DATE: 17.10.06
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Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks continued:

Marginal emergents: marsh areas and below winter water levels

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D9	*Baumea articulata*	PB3	30 - 45	15%	10 to 20	0.8	234	
D10	*Cyperus ustulatus*	PB3	20 - 40	15%	10 to 20	0.7	306	
D11	*Baumea teretifolia*	PB3	20 - 40	15%	10 to 20	0.7	306	
D12	*Carex lessoniana*	PB3	20 - 40	10%	10 to 20	0.7	204	
D13	*Carex virgata*	PB3	20 - 40	15%	10 to 20	0.7	306	
D14	*Juncus pallidus*	PB3	20 - 40	10%	10 to 20	0.7	204	
D15	*Carex secta*	PB3	20 - 40	10%	10 to 20	0.7	204	
D+A105	*Typha orientalis*	PB3	20 - 40	10%	10 to 20	0.7	204	
TOTAL plants per 1000 sq m				**100%**			**1969**	

PLANS AND SPECIFICATIONS
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Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks continued:

Lower stream bank: ground above common water levels but subject to flooding

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D17	*Blechnum novae zelandiae*	PB3	30 - 45	20%	10 to 20	0.8	313	
D18	*Dacrycarpus dacrydioides*	PB3	30 - 45	10%	5 to 10	0.6	278	
D19	*Cyperus ustulatus*	PB3	20 - 40	5%	10 to 20	0.7	102	
D20	*Phormium tenax*	PB3	30 - 45	20%	10 to 20	1.0	200	
D21	*Cortaderia fulvida*	PB3	30 - 45	10%	5 to 10	0.8	156	
D22	*Carex virgata*	PB3	30 - 45	20%	10 to 20	0.8	313	
D23	*Dicksonia squarrosa*	PB3	30 - 45	5%	3 to 5	0.9	62	
D24	*Carex secta*	PB3	30 - 45	10%	10 to 20	0.9	123	
TOTAL plants per 1000 sq m				**100%**			**1546**	

PLANS AND SPECIFICATIONS
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Type E: Low to medium height amenity shrub planting for reserve to include following:

Planting in reserves at road sides, and adjacent to house lot boundaries							
	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants used	Plant in Groups of:	Spacing (m)	**COMMENTS**
E1	*Coprosma* 'Hawera'	PB5	30-45	15%	10to 20	0.9	
E2	*Coprosma* 'Taiko'	PB5	30-45	15%	5 to 10	0.9	
E3	*Hebe* 'First Light'	PB5	30-45	15%	3 to 5	0.7	
E4	*Hebe* 'Wiri Charm'	PB5	30-45	10%	3 to 5	0.7	
E5	*Phormium* 'Green Dwarf'	PB5	30-45	18%	3 to 5	0.9	
E6	*Hebe topiaria*	PB5	30-45	5%	3 to 5	0.6	
E7	Coleonema *'Winter Charm'*	PB5	30-45	5%	3 to 5	0.7	
E8	*Yucca filimentosa* 'Ivory'	PB5	30-45	2.5%	3 to 5	0.5	
E9	*Grevillea* 'Mt. Tambouritha'	PB5	30-45	10%	3 to 5	0.8	
E10	*Viburnum* 'Emerald Lustre'	PB*	30-45	2.5%	3 to 5	2.0	specimens and small groups with ground cover below
E11	*Luculia grandifolia*	PB8	30-45	2.5%	3 to 5	2.0	specimens and small groups with ground cover below
TOTAL plants per 1000 sq m				**100%**			

PLANS AND SPECIFICATIONS
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Type F: Mix of low growing sedges for ground cover in attenuation ponds:

Planting in areas to take flooding during periods of heavy and prolonged rainfall

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
F1	*Carex lessoniana*	1Litre	20 - 40	20%	10 to 20	0.8	313	
F2	*Carex lambertiana*	1Litre	20 - 40	10%	10 to 20	0.7	204	
F3	*Carex dipsacea*	1Litre	20 - 40	20%	10 to 20	1.0	200	
F4	*Carex flagellifera*	1Litre	20 - 40	15%	10 to 20	0.8	234	
F5	*Carex litorosa*	1Litre	20 - 40	20%	10 to 20	0.8	313	
F6	*Carex secta*	1Litre	20 - 40	15%	10 to 20	0.9	185	
TOTAL plants per 1000 sq m				**100%**			**1449**	

PLANS AND SPECIFICATIONS
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ON: RMA 20060779 | 1076
SIGNED: [signature] DATE: 17.10.06
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16 OCT 2006
Key
Soft Landscape Elements
For planting, mixes refer to accompanying report
A - Proposed Ornamental Specimen Trees mainly deciduous for streets, front yards & rear reserve boundaries
B - Proposed native, medium to large trees for stream edge and other re-vegetation areas
C - Proposed re-vegetation of native shrubs and small tree planter mix
D - Proposed grass mix, flax and herbaceous plants for wetland re-vegetation, for emergents, margenals and stream banks, wet ground
E - Proposed low to medium height shrub planting for reserve and garden areas, including ground covers
F - Proposed sedges for ground cover in attenuation ponds
Boundary of existing vegetation (refer to arborist report)
Hard Landscape Elements
Proposed fence 0.8m high for front of properties
Proposed fence 1.35m high for between properties
Proposed fence 1.8m high for rear of properties
Proposed pool type fence 1.2m high between properties and stream reserve and around storm water ponds
Proposed retaining wall (variable heights)
Proposed concrete footpath
Proposed deck/patio adjacent to houses
Proposed stepping stones
Proposed paving at entrance to houses
Proposed cluster/mailbox/outdoor utilities area
Proposed concrete driveway and paths
Proposed paving for traffic calming areas and round islands
Kerbing: All kerbing shall be in accordance with WCC standard detailing to the satisfaction of the parks consents planner.
NOTE: This landscape master plan is indicative only in relation to the layout of the typical house garden designs. Please refer to sheets LSP-03 and LSP-04 for typical house landscape designs.
C Minor changes 13/06/06 AH CH
B Retaining walls 31/05/06 AH NR
A Trees and bollards 30/05/06 AH NR
Revision Description Date Drawn Chk
Drawing Status:
SOUL
Client: NZ Housing Foundation & Babbage
Project: West Coast Road Housing Development
Drawing Title: Landscape Master Plan and Typical Garden Layout
Drawing Number: LSP-01 Rev C
Job Number: SOUL-05/06-161
Scale: 1:200@A1 1:1000@A3
Date: 16/06/06
Drawn: AH
PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077/1078
SIGNED DATE 17-10-06
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Allow for a 3m chain entry for maintenance vehicles into the stormwater area
Existing fence to be retained
Permeable pavers
Proposed fence 1.8m high
Existing native trees and shrub planting
STREAM
Titoki Approximate location
Wood management and replanting done by others in this area
Footpath in reserve to be exposed aggregate concrete finish according to WCC Code of Practice 7.3.7.3
Existing native vegetation to be retained
Approximate location of existing trees to be retained
Proposed boardwalk
Kerbing is to be WCC Standard Detail
Mulch in gardens is to be bio-degradable bark mulch to WCC standard
15% Batter
Retain existing fence
WEST COAST RD

Key

N

Soft Landscape Elements

For planting issues refer to accompanying report

A - Proposed Ornamental Specimen Trees mostly deciduous for streets, front yards & rear property boundaries

B - Proposed native, medium to large trees for stream edge and other re-vegetation areas

C - Proposed re-vegetation of native shrubs and small tree planting mix

D - Proposed grass like, flax and herbaceous plants for wetland re-vegetation for emergents, marginals and stream banks, wet ground

D - Proposed grass like, flax and herbaceous plants for wetland re-vegetation for emergents, marginals and stream banks, wet ground

E - Proposed low to medium height shrub planting for reserve and garden areas including ground covers.

F - Proposed sedges for ground cover in attenuation ponds

Boundary of existing vegetation (refer to arborist report)

Hard Landscape Elements

Proposed fence 0.8m high for front of properties

Proposed fence 1.35m high for between properties

Proposed fence 1.8m high for rear of properties

Proposed post type fence 1.2m high between properties and stream reserve and around storm water ponds

Proposed retaining wall (variable heights)

Proposed concrete footpath

Proposed dushpaic adjacent to houses

Proposed stepping stones

Proposed paving at entrance to houses

Proposed shelved recreation shelter area

Proposed concrete driveway and paths

Proposed paving for traffic calming areas and round about

Kerbing: All kerbing shall be in accordance with WCC standard detailing to the satisfaction of the parks consents planner.

NOTE: This landscape master plan is indicative only in relation to the layout of the typical house garden designs. Please refer to sheets LPS-03 and LPS-04 for typical house landscape designs.

Revision	Description	Date	Drawn	Chkd
C	Minor changes	13/10/06	AH	CH
B	Retaining walls	31/8/06	AH	NR
A	Trees and bollards	28/8/06	AH	NR

Drawing Status:

SOUL environments
PO Box 46011 Herne Bay, Auckland, New Zealand
phone or fax 0-9-377 2784 | mobile 0-21-377 2784
email soulenvironments@xtra.co.nz
www.landscapearchitects.co.nz

Client:	NZ Housing Foundation & Babbage
Project:	West Coast Road Housing Development
Drawing Title:	Landscape Master Plan
Drawing Number:	LSP-02 Rev C
Job Number:	SOUL-05/06-161
Scale:	1:500@A1 1:1000@A3
Date:	16/06/06
Drawn:	AH

Street Tree Planting Key

(Refer to LSP-06 for Schedule)

CODE	BOTANICAL NAME	COMMON NAME
Bn	*Betula nigra*	River Birch
Cv	*Callistemon viminalis*	Callistemon
Ca	*Camellia sasanqua 'Setsugekka'*	Camelia
Fe	*Fraxinus excelsior 'Aurea'*	Golden Ash
Hf	*Hymenosporum flavum*	Australian Frangipani
Ls	*Liquidambar styriciflua*	American Sweet Gum
Mm	*Magnolia x loebneri 'Merrill'*	Magnolia
MsR	*Magnolia x soulangeana 'Rustica Rubra'*	Magnolia
MsL	*Magnolia x soulangeana 'Lennei Alba'*	Magnolia
Ma	*Melia azederach*	Melia
PA	*Prunus 'Awanui'*	Flowering Cherry
Sm	*Sophora microphylla var. microphylla*	Kowhai

Key

N

Soft Landscape Elements

A - Proposed Ornamental Specimen Trees. Refer to schedule for sizes and quantities on LSP-06.

Centre line of drawing LSP-06

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO CONDITIONS ENDORSED ON CONSENT FORM 2006 1077 | 1078

SIGNED ... DATE 17/10/06

AUTHORISED OFFICER

NOTE:
Read this drawing in conjunction with LSP-06

All trees shall be planted in a minimum 600mm diameter weed free circle with 75mm woodchip mulch and shall be planted in a pit of 600x600x500 deep of good quality friable loamy topsoil or Living Earth Garden Mix.

Rev	Description	Date	Drawn	Chk
B	Minor changes	13/10/06	AH	CH
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

SOUL

Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Street Tree Planting Plan 1 of 2

Drawing Number:	LSP-05 Rev B	Job Number:	SOUL-05/06-161
Scale:	1:500@A1 1:1000@A3	Date:	15/08/06
Drawn:	AH		

Street Tree Planting Schedule

For Drawings LSP05 and LSP06

CODE	BOTANICAL NAME	COMMON NAME	SIZE	Stock Height (min) m	Calipar (min) cm	QUANTITY
Bn	*Betula nigra*	River Birch	PB95	3.5m	2-3cm	11
Cv	*Callistemon viminalis*	Callistemon	PB40	1.5-2m	1.5-2cm	4
Cs	*Camellia sasanqua* 'Setsugekka'	Camelia	PB40	1-2m	1.5-2cm	4
Fe	*Fraxinus excelsior* 'Aurea'	Golden Ash	PB95	2m	4cm	15
Hf	*Hymenosporum flavum*	Australian Frangipani	PB95	1.7-3m	2-3cm	11
Ls	*Liquidambar styriciflua*	American Sweet Gum	PB95	2-2.5m	3-4cm	13
Mm	*Magnolia loebneri* 'Merrill'	Magnolia	PB40	1-1.5m	2cm	2
Ms	*Magnolia x soulangeana* Rustica Rubra'	Magnolia	PB40	1-1.5m	3cm	2
Mf	*Magnolia x soulangeana* 'Lennei Alba'	Magnolia	PB95	2m	4cm	25
Ma	*Melia azederach*	Melia	PB95	2.5-4m	4cm	13
Pa	*Prunus* 'Awanui'	Flowering Cherry	PB95	2m	3-4cm	28
Sf	*Sophora microphylla* var.*microphylla*	Kowhai	PB40	1m	2cm	15

Key

N

Soft Landscape Elements

A - Proposed Ornamental Specimen Trees. Refer to schedule for sizes and quantities

NOTE:
Read this drawing in conjunction with LSP-05

All trees shall be planted in a minimum 600mm diameter weed free circle with 75mm woodchip mulch and shall be planted in a pit of 600x600x500 deep of good quality friable loamy topsoil or Living Earth Garden Mix.

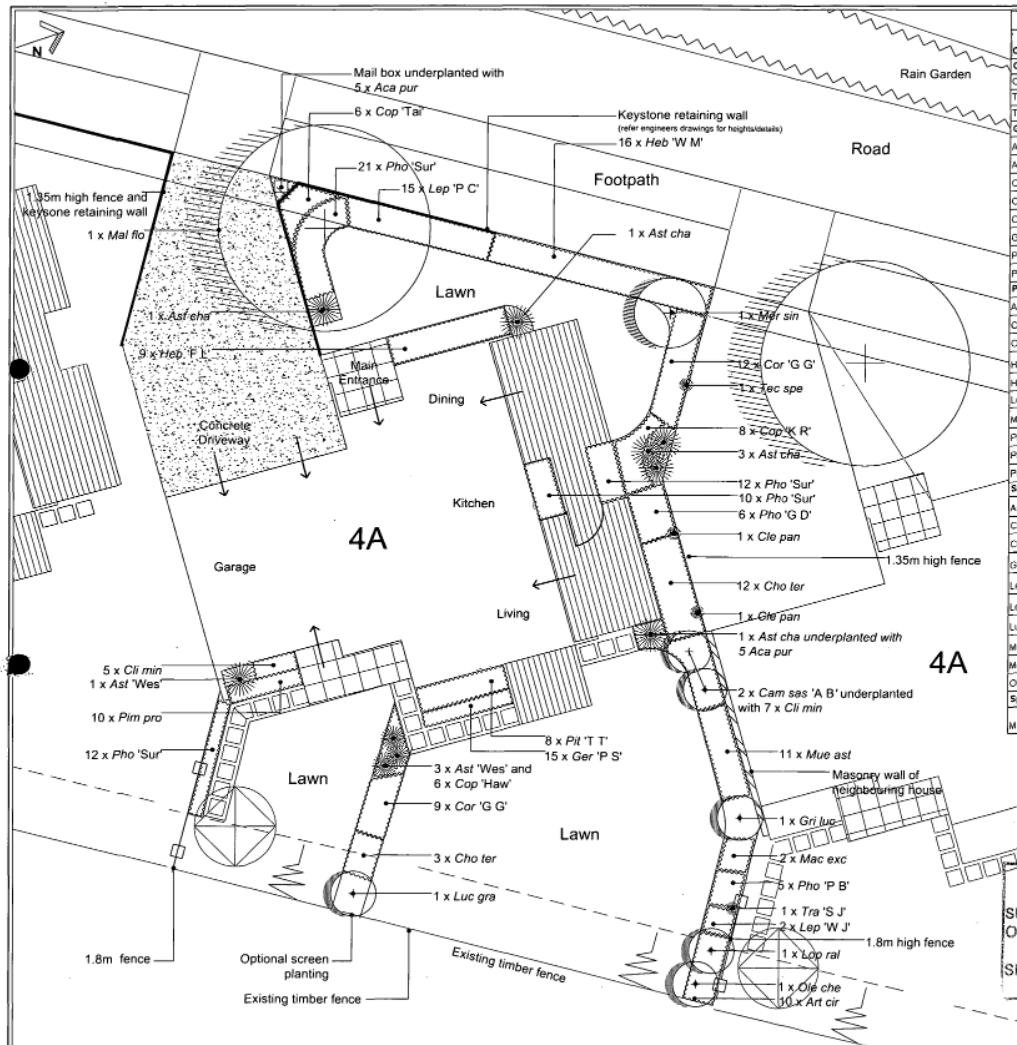
Rev	Description	Date	Drawn	Chk
B	Minor changes	13/10/06	AH	CH
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

PLANS AND SPECIFICATIONS APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061078/1078
SIGNED [signature] DATE 17.10.06
AUTHORISED OFFICER

SOUL environments

Client:	NZ Housing Foundation & Babbage Consultants Ltd
Project:	West Coast Road Housing Development
Drawing Title:	Street Tree Planting Plan 2 of 2
Drawing Number:	LSP-06 Rev B
Job Number:	SOUL-05/06-161
Scale:	1:300@A1 1:1300@A3
Date:	15/08/06
Drawn:	AH



Planting Schedule House Type 4A

CODE	BOTANICAL NAME	COMMON NAME	SIZE	STOCK HEIGHT (min)	SPACING	QUANTITY
Climbers						
Cle pan	*Clematis paniculata*	Clematis	PB5	0.3m	As Shown	2
Tec spe	*Tecomanthe speciosa*	Tecomanthe	PB5	0.3m	As Shown	1
Tra 'S J'	*Trachelospermum 'Star Jasmine'*	Star Jasmine	PB5	0.3m	As Shown	1
Ground covers and low growing plants up to 0.5m						
Aca pur	*Acaena pupurea*	Piri piri	PB3	0.1m	0.3m	10
Art cir	*Arthropodium cirratum*	Renga Renga Lily	PB3	0.2m	0.4m	10
Cli min	*Clivia miniata*	Kaffir Lily	PB3	0.2m	0.4m	12
Cop 'Haw'	*Coprosma 'Hawera'*	Sand Coprosma	PB3	0.2m	0.6m	6
Cop 'Tai'	*Coprosma "Taiko'*	Sand Coprosma	PB3	0.2m	0.6m	6
Ger 'P S'	*Geranium 'Pink Spice'*	Geranium 'Pink Spice'	PB3	0.1m	0.3m	15
Pho 'Sur'	*Phormium 'Surfer'*	Flax	PB3	0.2m	0.4m	55
Pim pro	*Pimelea prostrata*	Pinatoro	PB3	0.1m	0.6m	10
Plants 0.5-1m for mixed garden beds or hedging						
Ast 'Wes'	*Astelia 'Westland'*	Westland Red	PB8	0.3m	As Shown	4
Cor 'G G'	*Cordia 'Geentys Green'*	Komkio	PB5	0.4m	0.7m	21
Cop 'K R'	*Coprosma 'Karo Red'*	Coprosma 'Karo Red'	PB5	0.3m	0.5m	9
Heb 'F L'	*Hebe 'First Light'*	Hebe	PB3	0.3m	0.5m	9
Heb 'W M'	*Hebe 'Wiri Mist'*	Hebe	PB3	0.3m	0.5m	16
Lep 'P C'	*Leptospermum 'Pink Cascade'*	Manuka	PB3	0.3m	0.5m	15
Mue ast	*Muehlenbeckia astonii*	Shrubby Tororaro	PB5	0.4m	0.8m	11
Pho 'G D'	*Phormium cookianum 'Green Dwarf'*	Mountain Flax	PB5	0.4m	0.8m	6
Pho 'P B'	*Phormum 'Platts Black'*	Flax cultivar	PB8	0.5m	0.6m	5
Pit 'T T'	*Pittosporum Tom Thumb'*	Kohuhu cultivar	PB5	0.4m	0.7m	9
Specimen plants 1-2m for garden beds						
Ast cha	*Astelia chathamica*	Silver Spear	PB8	0.5m	As Shown	6
Cam sas 'A B'	*Camellia sasanqua 'Apple Blossom'*	Camellia	PB12	0.8m	As Shown	2
Cho ter	*Choisya ternata 'Aztec Pearl'*	Mexican Orange	PB8	0.5m	0.8m	15
Gri luc	*Griselinia lucida*	Puka	PB8	0.7m	1m	1
Lep 'W J'	*Leptospermum 'Wiri Joan'*	Manuka	PB12	0.8m	0.8m	2
Lop ral	*Lophomyrtus x ralphi 'Kathryn'*	Ramarama	PB12	0.8m	As Shown	1
Luc gra	*Lucuila grandifolia*	Lucuila	PB12	0.8m	As Shown	1
Mac exc	*Macropiper excelsum*	Kawakawa	PB12	0.7m	1m	2
Mor sin	*Meryta sinclarii*	Puka	PB12	0.8m	As Shown	1
Ole che	*Olearia cheesemanii*	Tree Daisy	PB12	0.8m	As Shown	1
Specimen Trees						
Mal flo	*Malus floribunda*	Japanese Flowering Crabtree	PB95	2m	As Shown	1

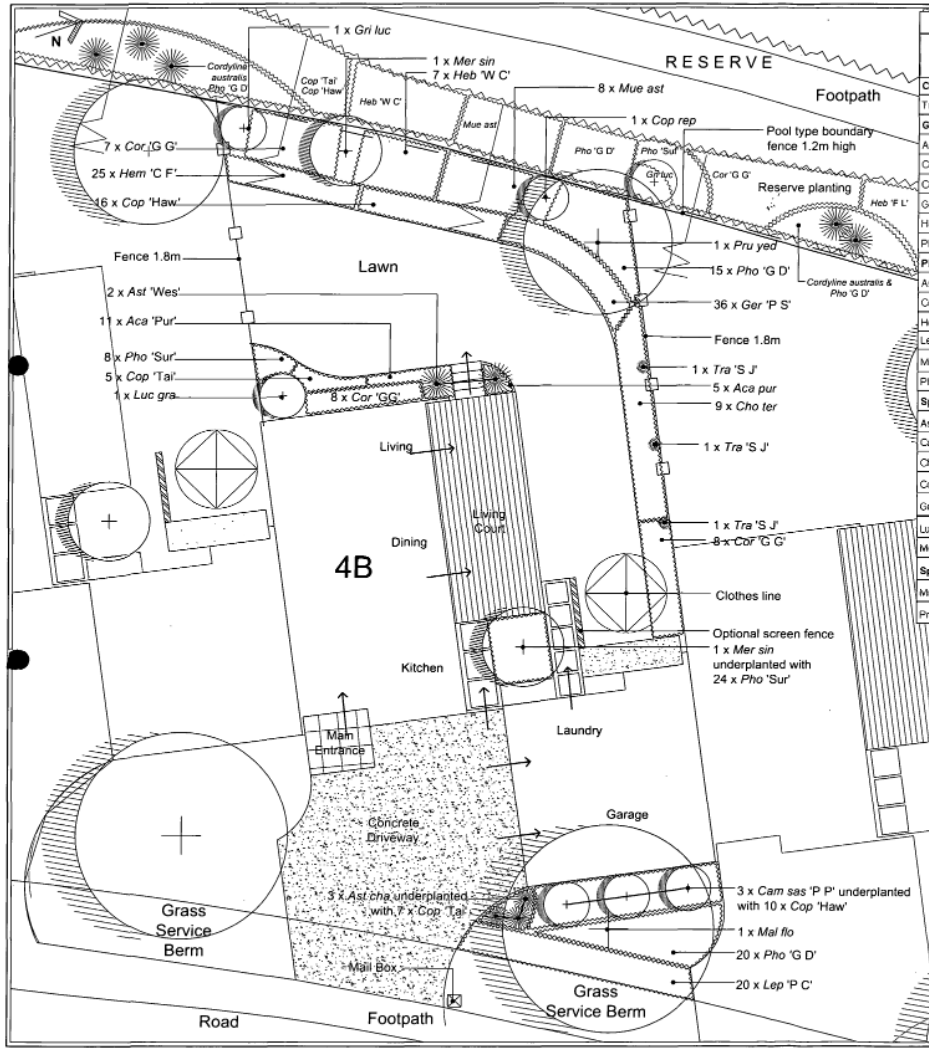
PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077 | 1078
SIGNED DATE 17.10.06
AUTHORISED OFFICER

Revision	Description	Drawn	Checked

Drawing Statust: DRAFT

SOUL
environments
PO Box 60211 Titirangi | Auckland, New Zealand
phone 64 9 817 2083 fax 64 9 817 2084
email consent@soulenvironments.co.nz
www.landscapearchitecture.co.nz

Client:	NZ Housing Foundation & Babbage Consultants Ltd
Project:	West Coast Road Housing Development
Drawing Title:	Typical Planting Plan House Type 4A
Drawing Number:	LSP-07
Job Number:	SOUL-05/06-161
Scale:	1:125@A3
Date:	07/08/06
Drawn:	AH



Planting Schedule House Type 4B

CODE	BOTANICAL NAME	COMMON NAME	SIZE	STOCK HEIGHT (min)	SPACING	QUANTITY
Climbers						
Tra 'S J'	*Trachelospermum 'Star Jasmine'*	Star Jasmine	PB5	0.3	As Shown	3
Ground covers and low growing plants up to 0.5m						
Ace pur	*Acaena purpurea*	Piri piri	PB3	0.1	0.3m	16
Cop 'Haw'	*Coprosma 'Hawera'*	Sand Coprosma	PB3	0.2	0.6m	26
Cop 'Tai'	*Coprosma "Taiko"*	Sand Coprosma	PB3	0.2	0.6m	12
Ger 'P S'	*Geranium 'Pink Spice'*	Geranium	PB3	0.2	0.3m	36
Hem 'C F'	*Hemerocallis 'Cabbage Flower'*	Day Lily	PB3	0.2	0.4m	25
Pho 'Sur'	*Phormium 'Surfer'*	Flax	PB3	0.2	0.4m	32
Plants 0.5-1m for mixed garden beds or hedging						
Ast 'Wes'	*Astelia 'Westland'*	Westland Red	PB8	0.4	As Shown	2
Cor 'G G'	*Corokia 'Geentys Green'*	Korokio	PB5	0.4	0.7m	23
Heb 'W C'	*Hebe 'Wiri Charm'*	Hebe cultiver	PB5	0.4	0.6m	7
Lep 'P C'	*Leptospermum 'Pink Cascade'*	Manuka	PB5	0.4	0.5m	20
Mue ast	*Muehlenbeckia astonii*	Shrubby Tororaro	PB5	0.5	0.8m	8
Pho 'G D'	*Phormium cookianum 'Dwarf Green'*	Mountain Flax	PB5	0.5	0.9m	35
Specimen plants 1-2m for garden beds						
Ast cha	*Astelia chathemica*	Silver Spear	PB8	0.5	As Shown	3
Cam sas 'P P'	*Camellia sasanqua 'Paradise Petite'*	Camellia	PB12	0.6	As Shown	3
Cho ter	*Choisya ternata 'Aztec Pearl'*	Mexican Orange Blossom	PB8	0.5	0.8m	9
Cop rep	*Coprosma repens*	Taupata	PB8	0.6	As Shown	1
Gri luc	*Grisellinia lucida*	Puka	PB8	0.7	As Shown	1
Luc gra	*Luculia grandifolia*	Luculia	PB12	0.8	As Shown	1
Mer sin	*Meryta sinclarii*	Puka	PB12	0.8	As Shown	2
Specimen Trees						
Mal flo	*Malus floribunda*	Japanese Flowering Crebtree	PB95	2m	As Shown	1
Pru yed	*Prunus yedoensis*	Flowering Cherry	PB40	0.5m	As Shown	1

NOTE: Reserve planting is not reflected in this Schedule

PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077 | 1076
SIGNED: DATE: 17.10.06
AUTHORISED OFFICER

Revision	Description	Drawn	Checked

Drawing Statust: DRAFT

SOUL environments
URBAN DESIGN LANDSCAPE ARCHITECTURE ENVIRONMENTAL PLANNING
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email contact@landscapearchitecture.co.nz
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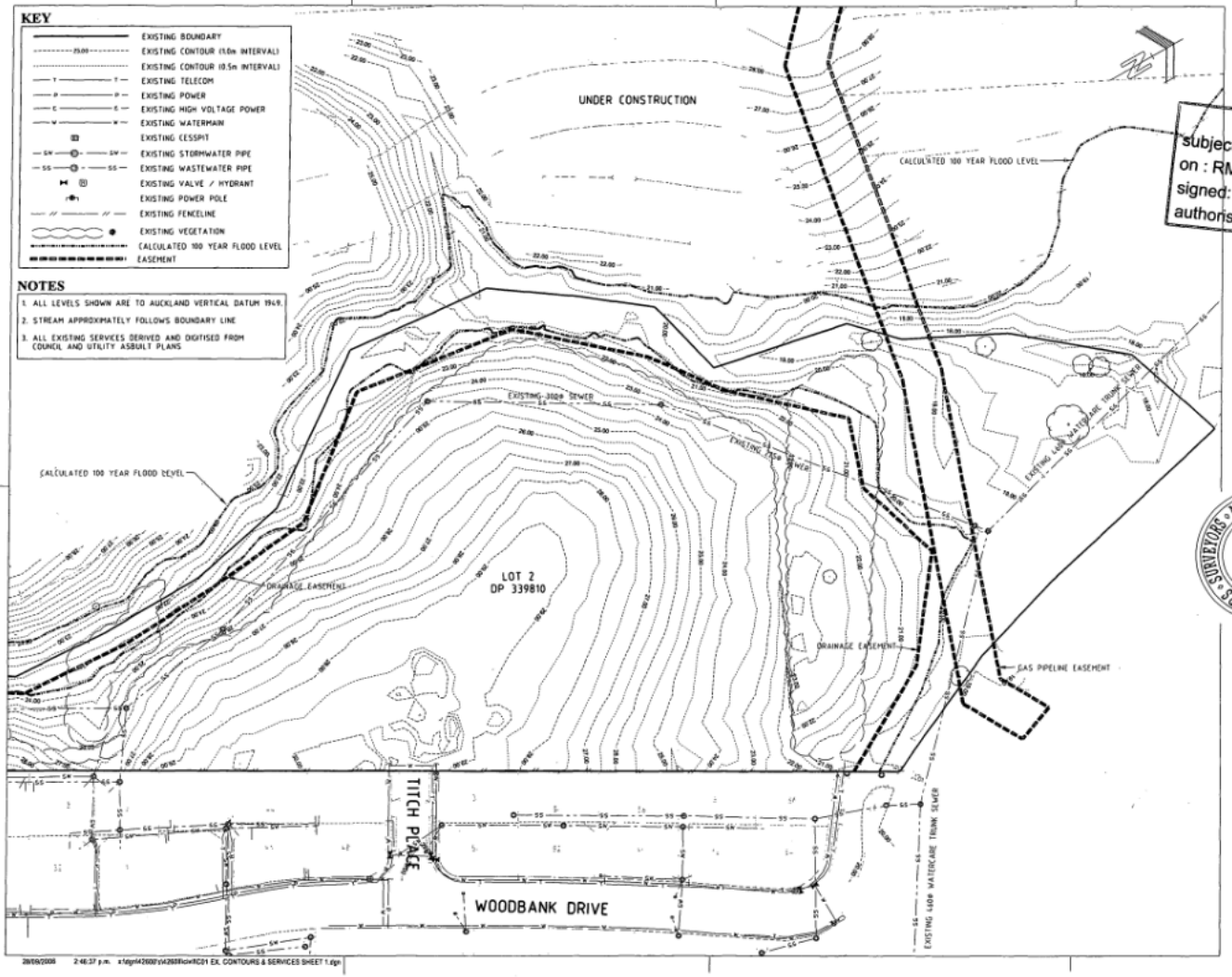
Client:	NZ Housing Foundation & Babbage Consultants Ltd
Project:	West Coast Road Housing Development
Drawing Title:	Typical Garden Layout House Type 4B
Drawing Number:	LSP-08
Job Number:	SOUL-05/06-161
Scale:	1:125@A3
Date:	15/08/06
Drawn:	AH



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REV	DATE	DESCRIPTION	DRAWN	CHECK
A	7.09.06	CONTOURS AMENDED	FK	SMR

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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
TOPOGRAPHICAL PLAN
(SHEET 1)

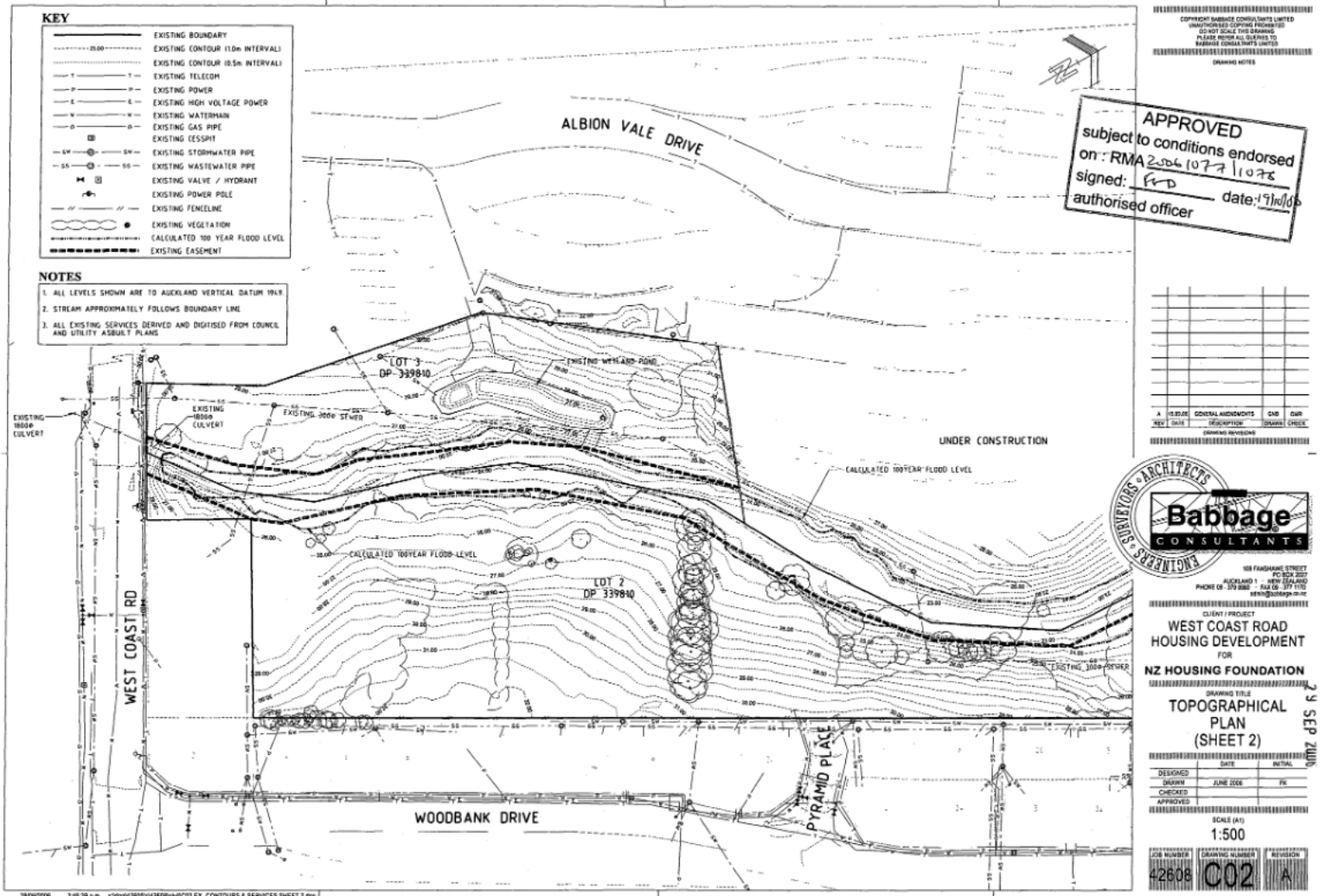
29 SEP 2006

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C01	A

28/09/2006 2:46:37 p.m. x:\dgn\42600\s\42608rev#C01 EX. CONTOURS & SERVICES SHEET 1.dgn



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signed: _____ date: 19/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	15.03.06	GENERAL AMENDMENTS	GAD	DAR

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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
TOPOGRAPHICAL
PLAN
(SHEET 2)

25 SEP 2006

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C02	A

28/09/2006 2:48:39 p.m. x:\dgn\42600's\42608\civil\C02 EX. CONTOURS & SERVICES SHEET 2.dgn

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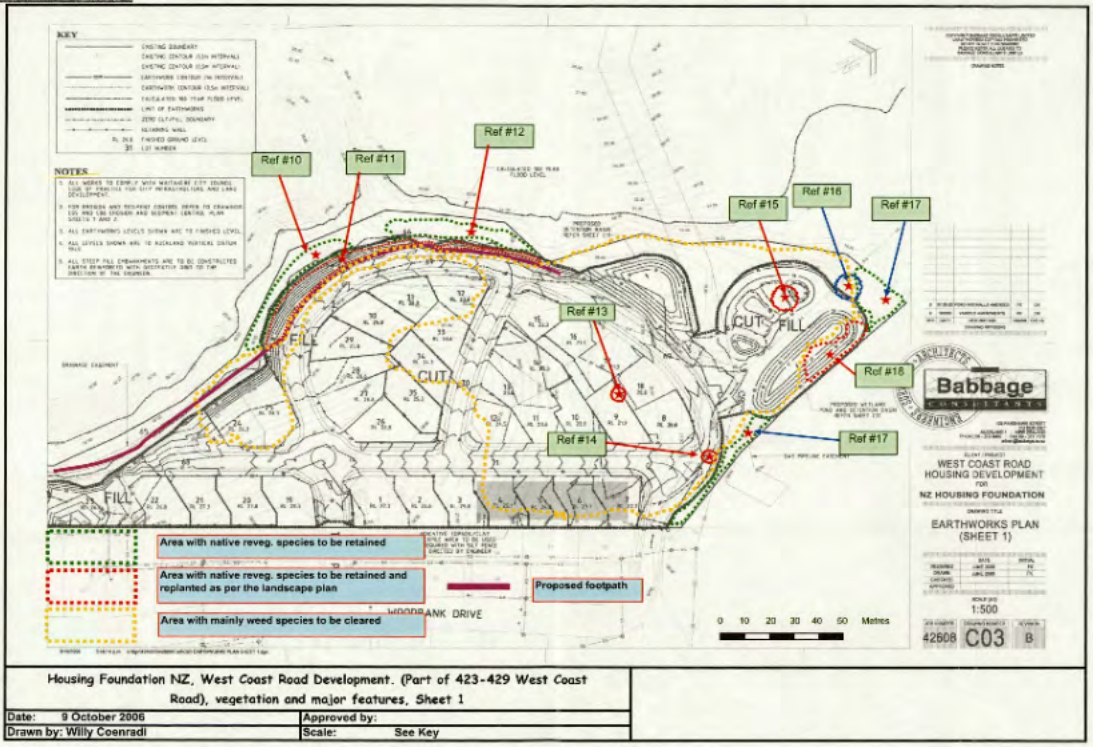
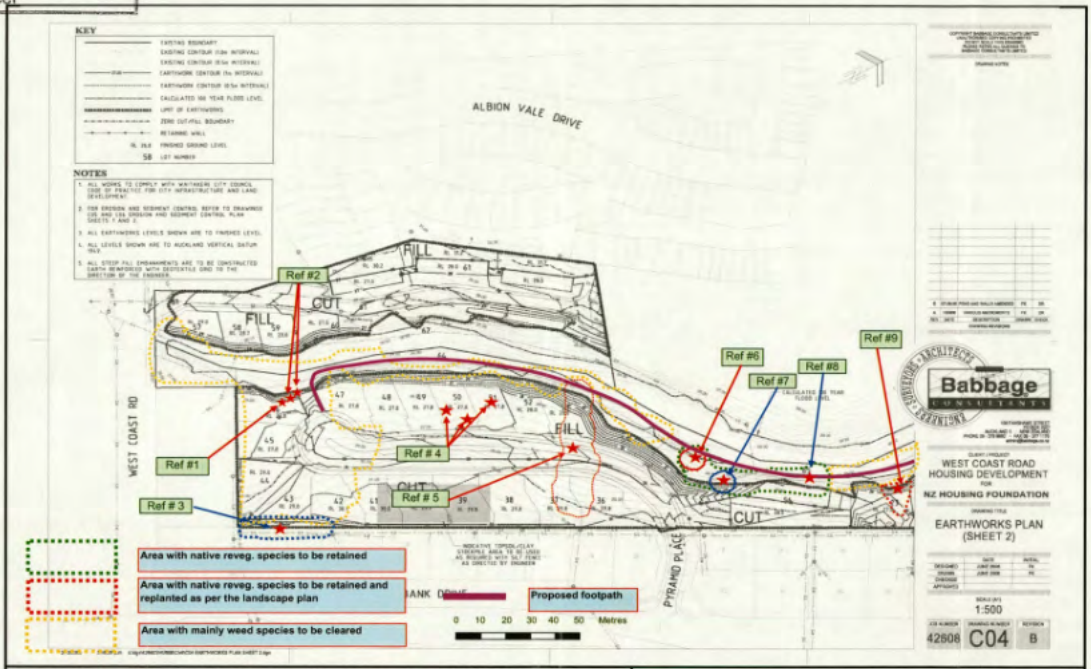
on : RMA 20061077/1078
signed: [signature] date: 19/10/06
authorised officer



Housing Foundation NZ, West Coast Road Development. (Part of 423-429 West Coast Road), vegetation and major features, Sheet 1

Date: 9 October 2006	Approved by:
Drawn by: Willy Coenradi	Scale: See Key

APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: _____ date: 19/10/06
authorised officer



Housing Foundation NZ, West Coast Road Development. (Part of 423-429 West Coast Road), vegetation and major features plan, Sheet 2

Date: 9 October 2006	Approved by:
Drawn by: Willy Coenradi	Scale: See Key

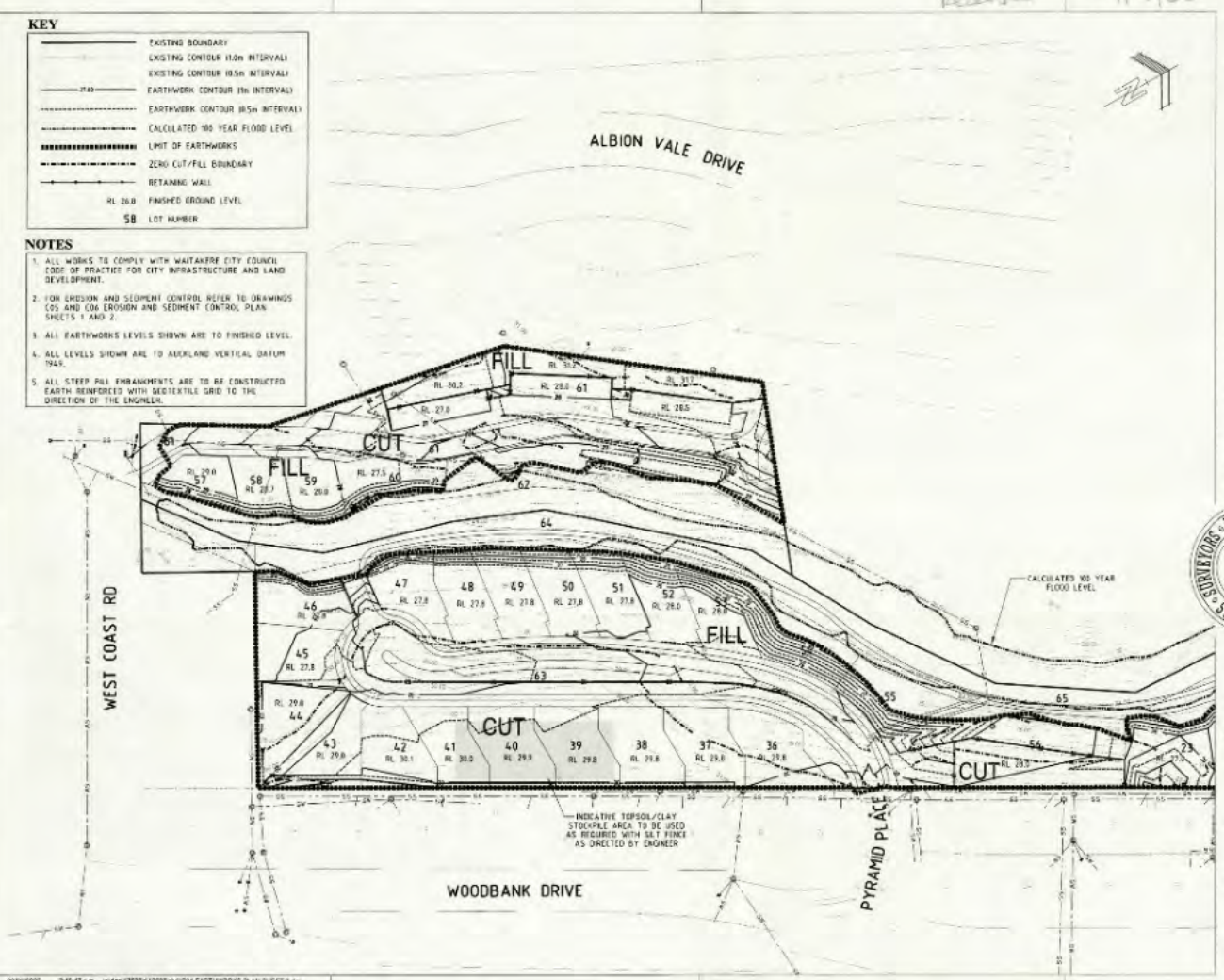
Received 29/9/06

KEY

- EXISTING BOUNDARY
- EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- 27.00 EARTHWORK CONTOUR (1m INTERVAL)
- EARTHWORK CONTOUR (0.5m INTERVAL)
- CALCULATED 100 YEAR FLOOD LEVEL
- LIMIT OF EARTHWORKS
- ZERO CUT/FILL BOUNDARY
- RETAINING WALL
- RL 26.0 FINISHED GROUND LEVEL
- 58 LOT NUMBER

NOTES

1. ALL WORKS TO COMPLY WITH WAITAKERE CITY COUNCIL CODE OF PRACTICE FOR CITY INFRASTRUCTURE AND LAND DEVELOPMENT.
2. FOR EROSION AND SEDIMENT CONTROL REFER TO DRAWINGS C05 AND C06 EROSION AND SEDIMENT CONTROL PLAN SHEETS 1 AND 2.
3. ALL EARTHWORKS LEVELS SHOWN ARE TO FINISHED LEVEL.
4. ALL LEVELS SHOWN ARE TO AUCKLAND VERTICAL DATUM 1949.
5. ALL STEEP FILL EMBANKMENTS ARE TO BE CONSTRUCTED EARTH REINFORCED WITH GEOTEXTILE GRID TO THE DIRECTION OF THE ENGINEER.



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REV	DATE	DESCRIPTION	DRAWN	CHECK
B		RT ON BUILDING AND WALLS AMENDED	FK	DS
A		VARIOUS AMENDMENTS	FK	DS

ISSUED REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

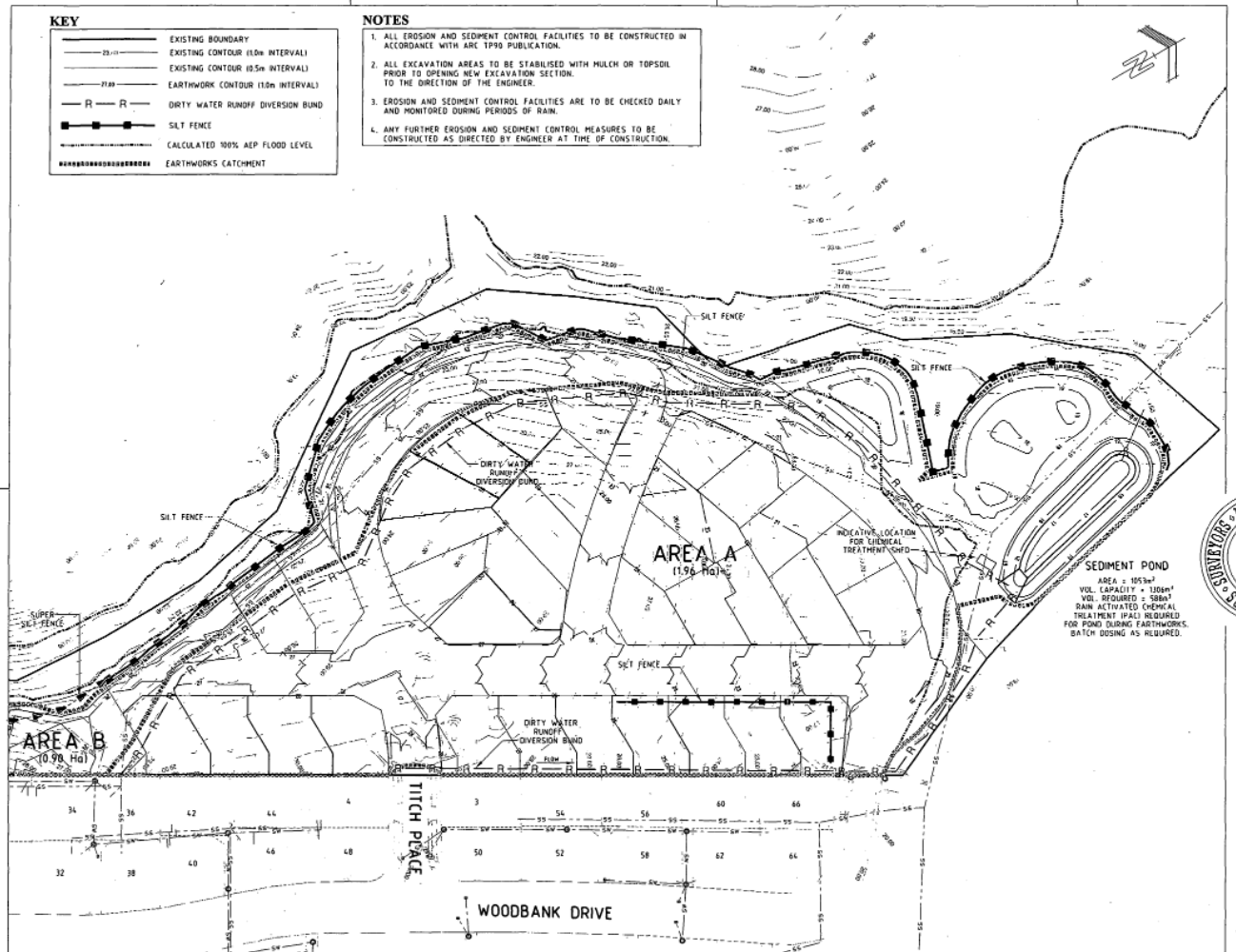
EARTHWORKS PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C04	B



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Rev	Date	Description	Drawn	Check
B	07.09.06	POND & LEVELS AMENDED	TK	DR
A	1/08/06	VARIOUS AMENDMENTS	RK	DR

(Observed) eby40a7ach

SURVEYORS • ARCHITECTS • ENGINEERS
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	GW
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C05	B

28/09/2006 2:48:49 p.m. x:\dgn\42600\s\42608sw\RC05 EROSION & SEDIMENT CONTROL SHEET 1.dgn

KEY

- EXISTING BOUNDARY
- EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- EARTHWORK CONTOUR (1.0m INTERVAL)
- DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION. TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EROSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.

APPROVED
subject to conditions endorsed
on : RMA 20061077|1078
signed: _____ date: 19/10/06
authorised officer

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REV	DATE	DESCRIPTION	DRAWN	CHECK
B	07.09.06	POND & LEVELS AMENDED	FK	DR
A	150806	VARIOUS AMENDMENTS	FK	DR

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT
CONTROL PLAN
(SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	GW
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
426 08	C05	B

SHEET 2 OF 4

28/09/2006 2:48:49 p.m. x:\dgn\426\08\civil\C05 EROSION & SEDIMENT CONTROL SHEET 1.dgn

KEY

- EXISTING BOUNDARY
- 13.00 EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- 27.00 EARTHWORK CONTOUR (1.0m INTERVAL)
- R — R — DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT
- SUPER SILT FENCE
- C — C — CLEAN WATER RUNOFF DIVERSION BUND
- DECANT EARTH BUND

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION. TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EROSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.

APPROVED
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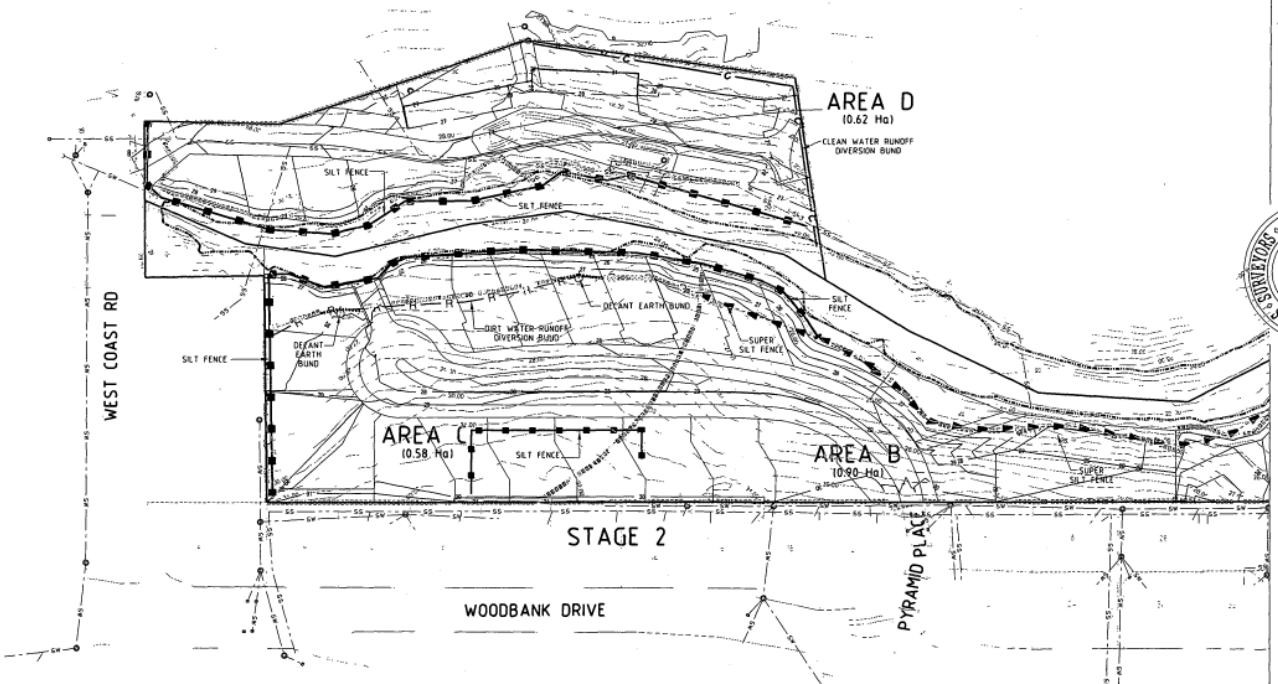
on : RMA 2006-1077 | 1078
signed: [signature] date: 19/10/06
authorised officer



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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	07.09.06	LEVELS AMENDED	FK	DR
A	150606	VARIOUS AMENDMENTS	FK	DR

DRAWING REVISIONS

Babbage CONSULTANTS
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	GW
CHECKED	JUNE 2006	GW
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C06	B

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subject to conditions endorsed
on : RMA 2006 1077 1078
signed: _____ date: 19/10/06
authorised officer

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DRAWING NOTES

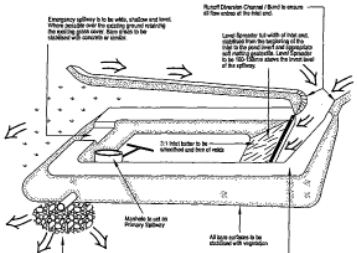
1. EROSION AND SEDIMENT CONTROL MEASURES MUST BE ADDITIONAL PRIOR TO ANY OTHER WORKS BEGINNING ON SITE, THE CONTRACTOR SHALL ARRANGE AND ATTEND A PRELIMINARY SEDIMENT CONTROL MEETING WITH THE ENGINEER AND COUNCIL.

2. A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE ON SITE DURING WORK HOURS AND ALL PERSONNEL INVOLVED IN THE EARTHWORKS ACTIVITIES ON SITE INCLUDING SUB-CONTRACTORS SHALL BE FAMILIAR WITH THE CONTENT AND PLAN REQUIREMENTS AS THE RELATE TO EROSION AND SEDIMENT CONTROL.

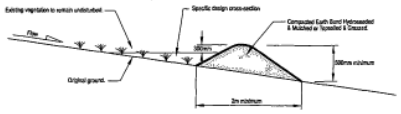
3. ALL "CLEAN WATER" RUNOFF FROM THE STABILISED SURFACES, INCLUDING CATCHMENT AREAS AROUND THE SITE, SHALL BE DIVERTED AWAY FROM THE EARTHWORKS AREAS VIA A STABILISED SYSTEM SO AS TO PREVENT ERODING.

4. ALL EROSION AND SEDIMENT CONTROL SHALL COMPLY WITH "EROSION AND SEDIMENT GUIDELINES FOR LAND DISTURBING ACTIVITIES: ARC TECHNICAL PUBLICATION No.90, UPDATED MARCH 1999 AND ANY AMENDMENTS TO THIS DOCUMENT. DIVERSION OF "CLEAN WATER" FROM THE UPSTREAM CATCHMENTS AROUND THE EARTHWORKS AREA SHALL BE BY MEANS OF DIVERSION DRAINS AND / OR OTHER APPROVED METHODS.

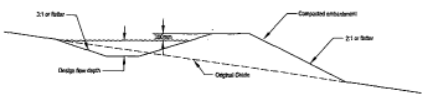
5. FURTHER SEDIMENT CONTROL WORKS MAY BE REQUIRED BY THE ENGINEER AS THE PROJECT ADVANCES. THESE WILL BE INSTALLED AS AND WHERE REQUIRED BY THE ENGINEER. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT THE SITE HAS EFFECTIVE SILT DETENTION FACILITIES OPERATING AT ALL TIMES.



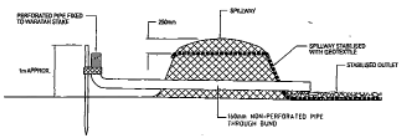
LAYOUT



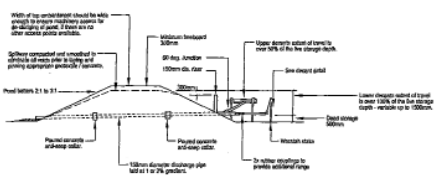
CLEANWATER RUNOFF DIVERSION BUND CROSS-SECTION



DIRTY WATER DIVERSION BUND CROSS-SECTION



CROSS SECTION OF DECANT EARTH BUND



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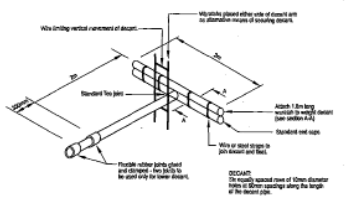
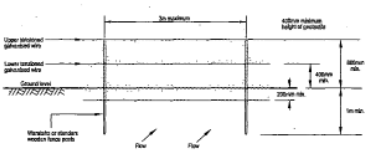
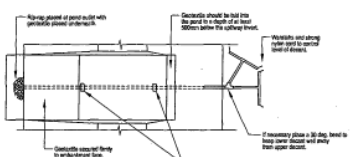


PERSPECTIVE VIEW

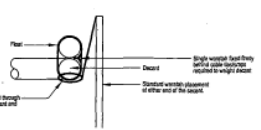


ELEVATION



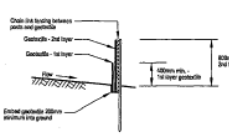
PLAN

SEDIMENT RETENTION POND



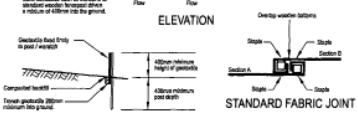
SECTION A - A

DECANT DETAIL



CROSS SECTION

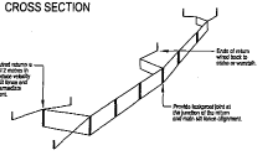
SUPER SILT FENCE DETAIL



ELEVATION

CROSS SECTION

STANDARD FABRIC JOINT



PERSPECTIVE VIEW

SILT FENCE DETAIL

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	160906	SUPER SILT FENCE DETAILS ADDED	GD	FK

DRAWING REVISIONS

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

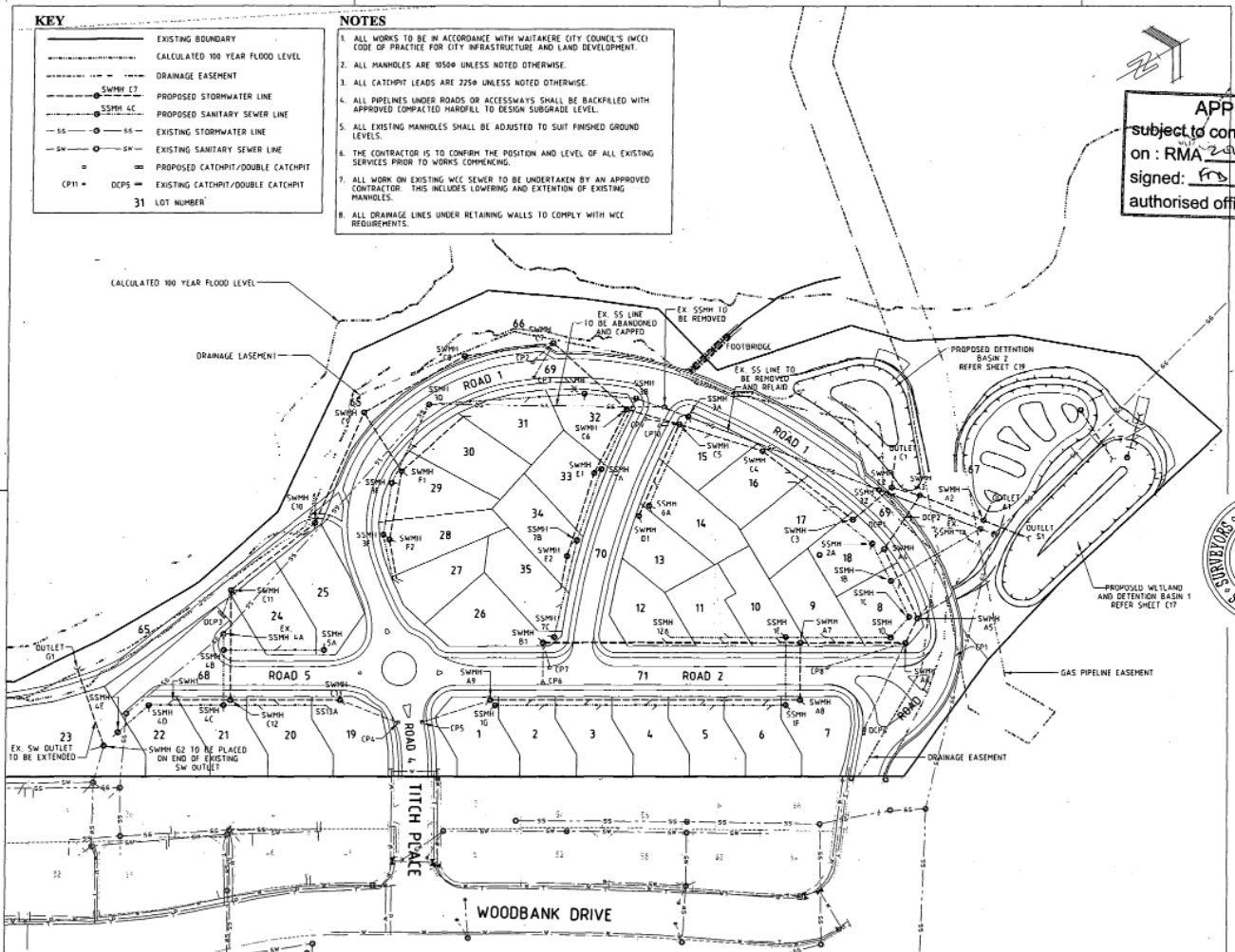
SEDIMENT
CONTROL
DETAILS

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

29 SEP 2006

SCALE (A1)
NTS

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C07	A



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C	210806	SSMH 3E ADDED	FK	DR
B	130806	ROAD widths	FK	DR
A	150806	VARIOUS AMENDMENTS	FK	DR
ISPU	DATE	DESCRIPTION	DRAWN	CHECK

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WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
DRAINAGE PLAN (SHEET 1)

25 SEP 2006

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
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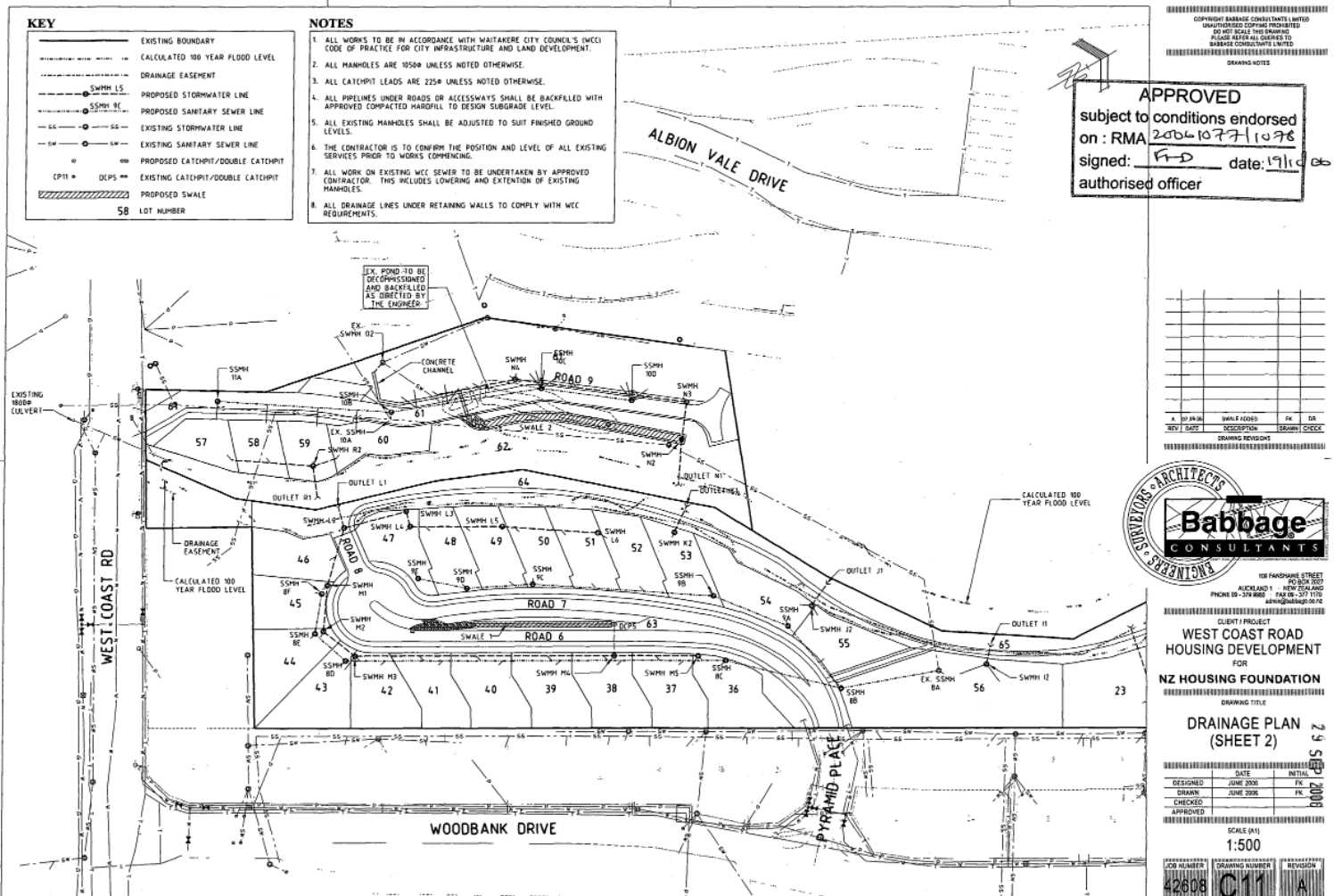

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authorised officer

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A	10.04.06	SWALE ADDED	FK	DR

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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
DRAINAGE PLAN
(SHEET 2)

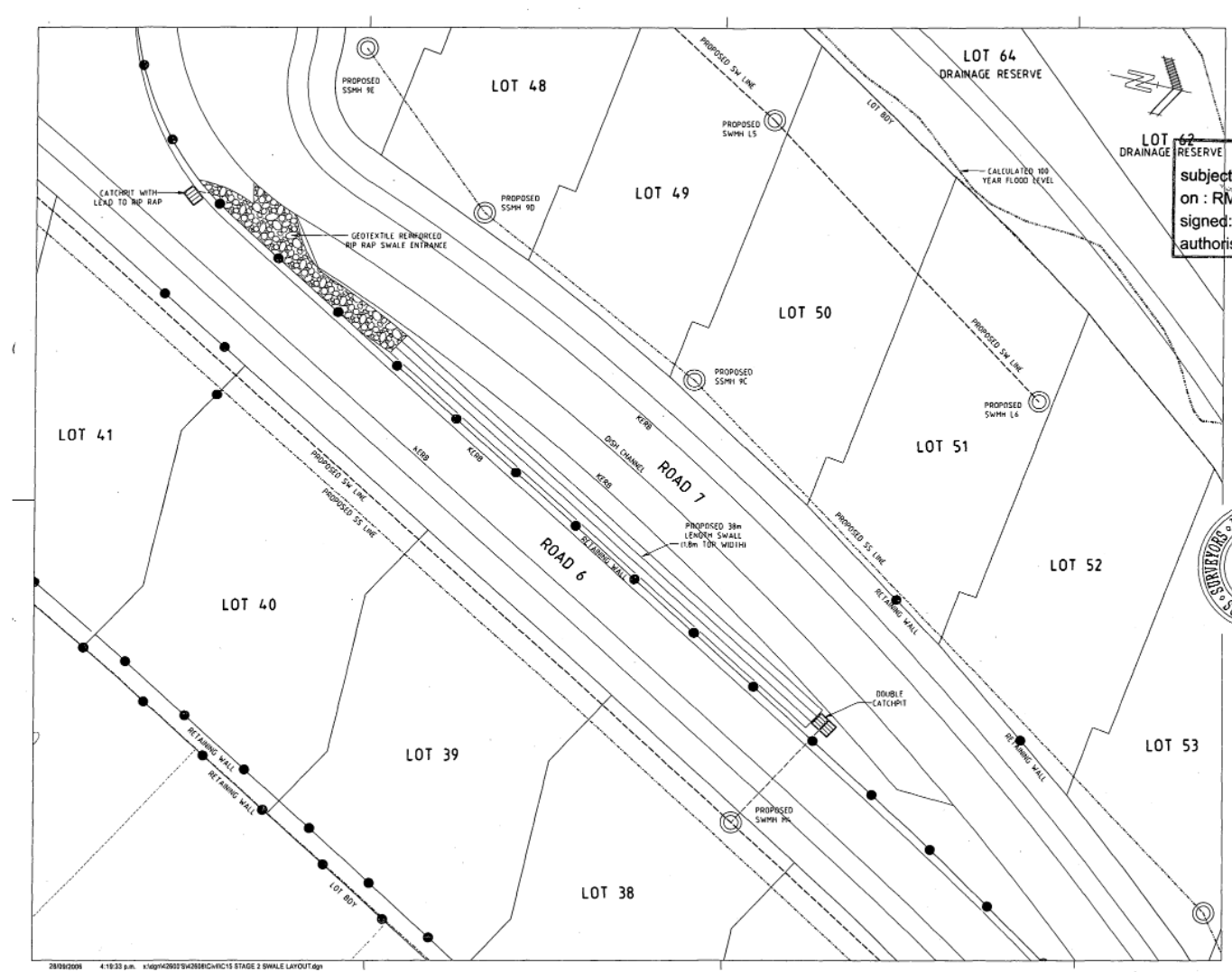
	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

26 SEP 2006

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C11	A

28/09/2006 2:46:15 p.m. x:\dgn\42600's\42608\dcs\RC11 DRAINAGE PLAN SHEET 2.dgn



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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
STAGE 2
SWALE LAYOUT

	DATE	INITIAL
DESIGNED	SEPT 2006	FK
DRAWN	SEPT 2006	FK
CHECKED		
APPROVED		

SCALE (A1)
1:125

JOB NUMBER	DRAWING NUMBER	REVISION
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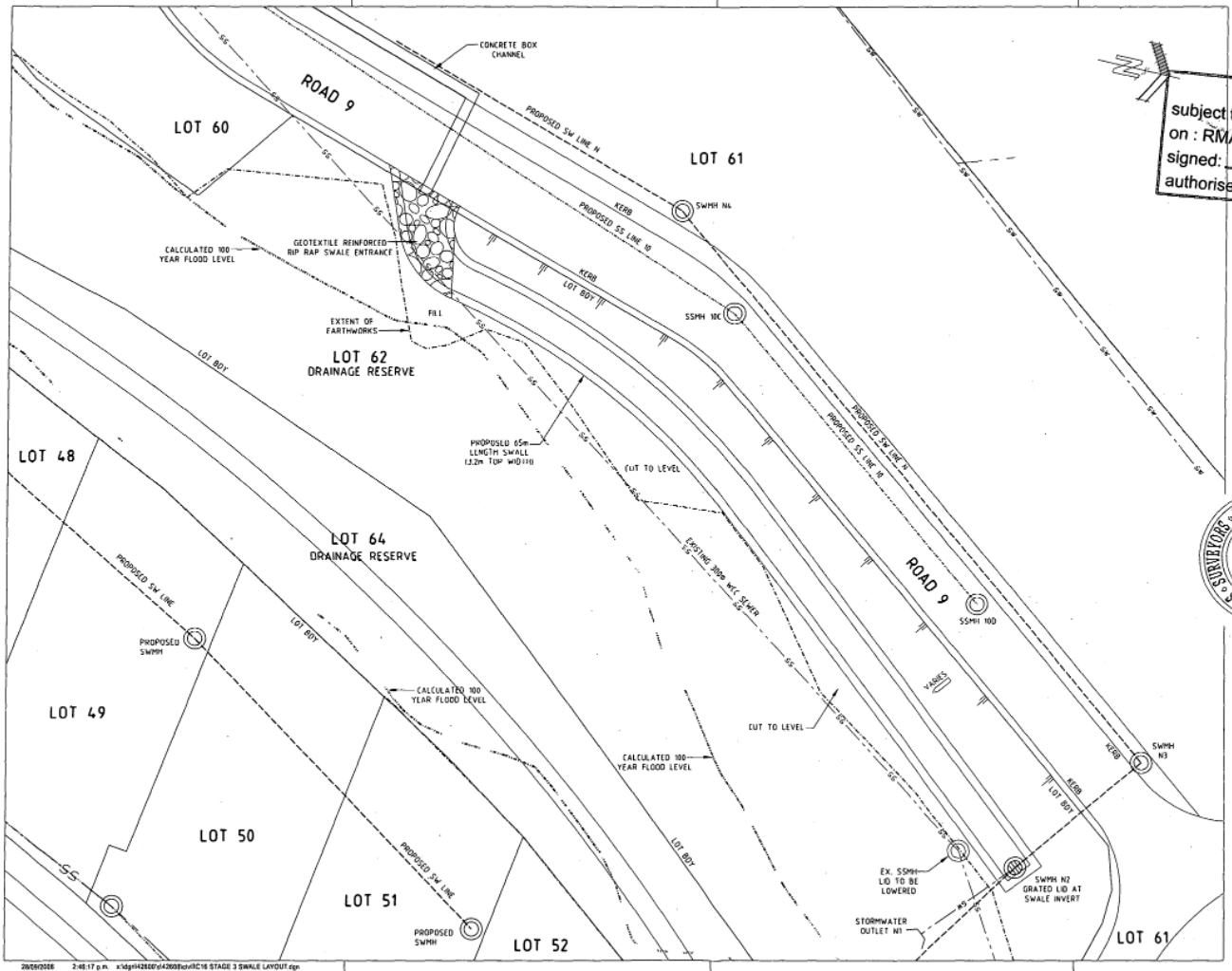

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REV	DATE	DESCRIPTION	DRAWN	CHECK
A	01.07.06	SWALE REPLACED RCmp	EK	DMR

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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
STAGE 3
SWALE LAYOUT

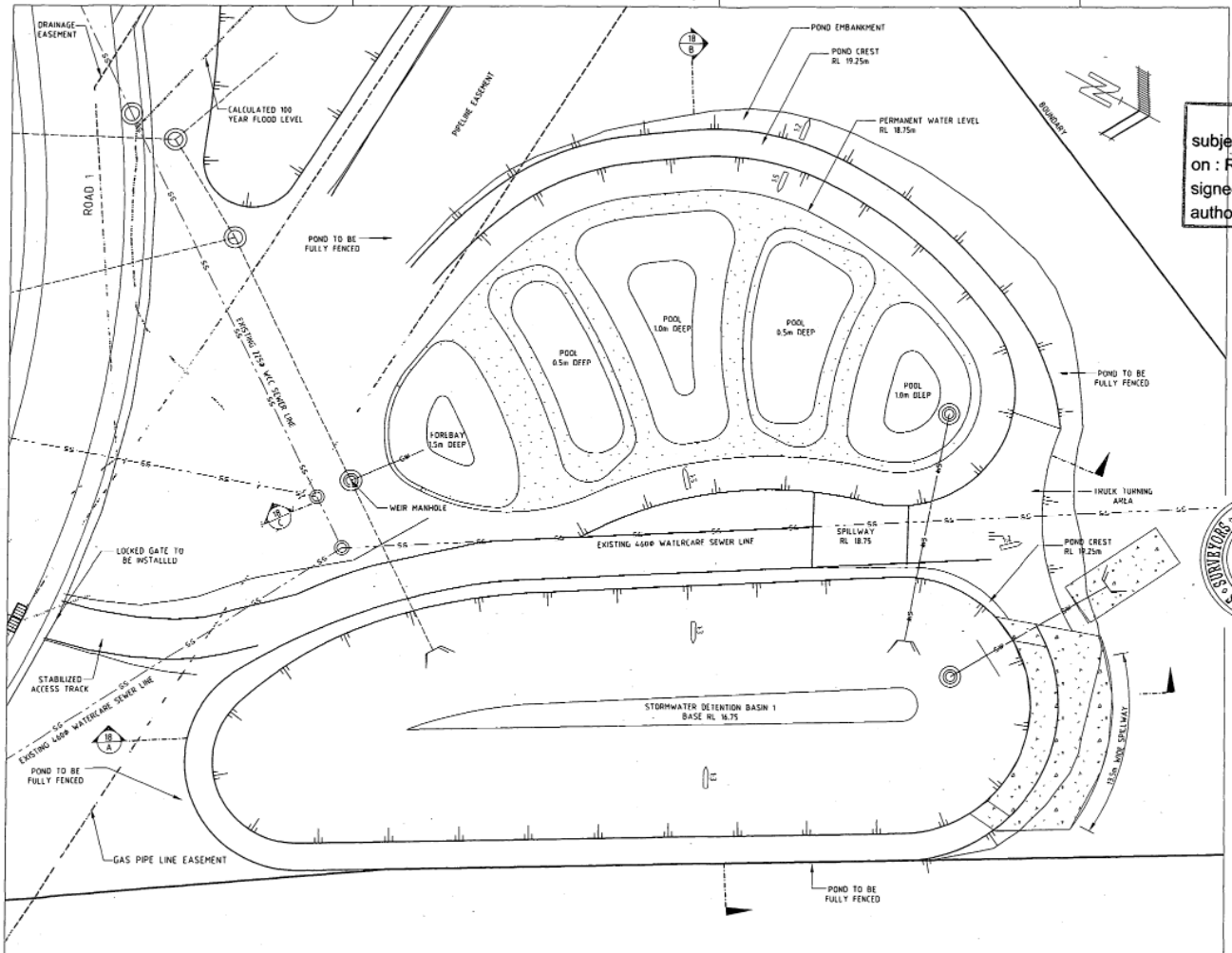
	DATE	INITIAL
DESIGNED	JUNE 2006	DMR
DRAWN	JUNE 2006	NJD
CHECKED		
APPROVED		

SCALE (A1)
1:125

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C16	A

26 SEP 2006

28/09/2006 2:46:17 p.m. x:\dgn\42600\pl42608\civil\C16 STAGE 3 SWALE LAYOUT.dgn



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A	0906	VARIOUS AMENDMENTS	PA	

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admin@babbage.co.nz

CLIENT / PROJECT
WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
WETLAND & DETENTION BASIN 1 LAYOUT

	DATE	INITIAL
DESIGNED	JUNE 2006	DMR
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

29 SEP 2006

SCALE (A1)
1:125

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C17	A

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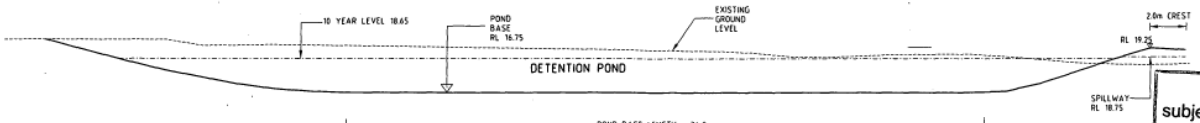

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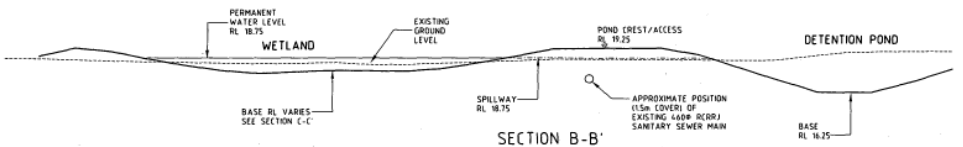

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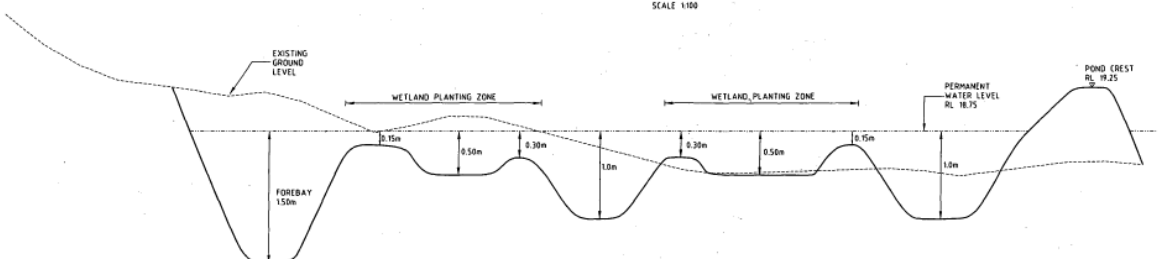
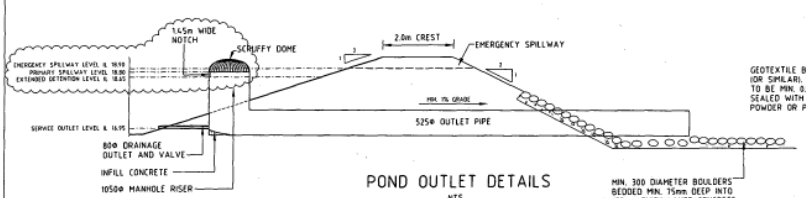
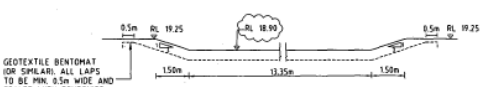
SCALE 1:100



SECTION C-C' - BANDED BATHYMETRY
SCALE HORT 1:100 VERT 1:20



POND OUTLET DETAILS
NTS



EMERGENCY SPILLWAY DETAIL
NTS

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subject to conditions endorsed
on : RMA 2006 1077 | 1078
signed: _____ date: 19/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	16.08.06	WORDING AMENDED	FK	
A	20.06.06	WORDING AMENDED	DMR	

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mail@babbage.co.nz

CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

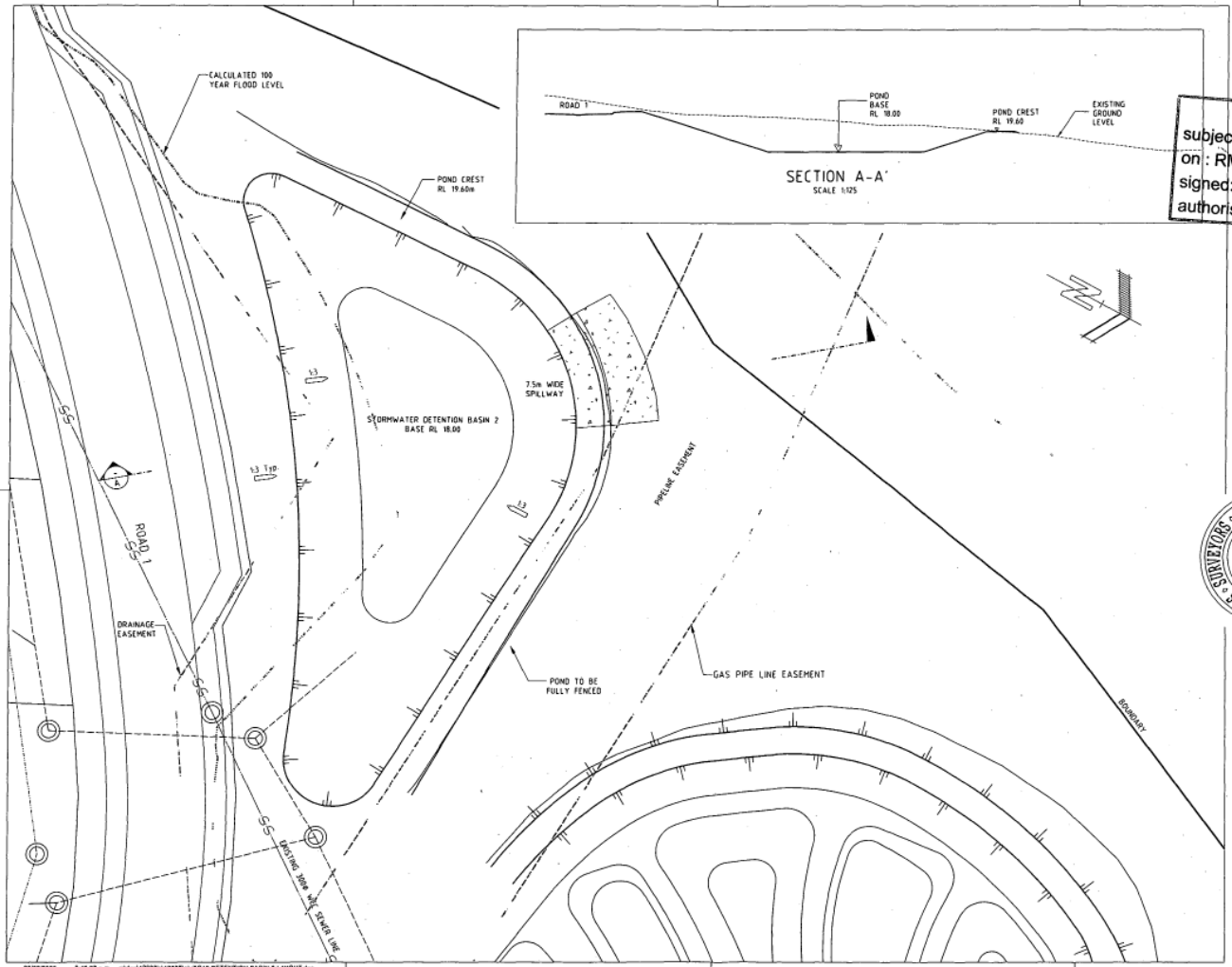
DRAWING TITLE
POND
DETAILS PLAN

	DATE	INITIALS
DESIGNED	JUNE 2006	DMR
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
AS SHOWN

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C18	B

29 SEP 2006



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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

DETENTION BASIN 2 LAYOUT

29 SEP 2006

	DATE	INITIAL
DESIGNED	AUG 2006	GMR
DRAWN	AUG 2006	FK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C19	H

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authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	27.09.06	INTERSECTIONS AMENDED	FK	DMR

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AUCKLAND 1 NEW ZEALAND
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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

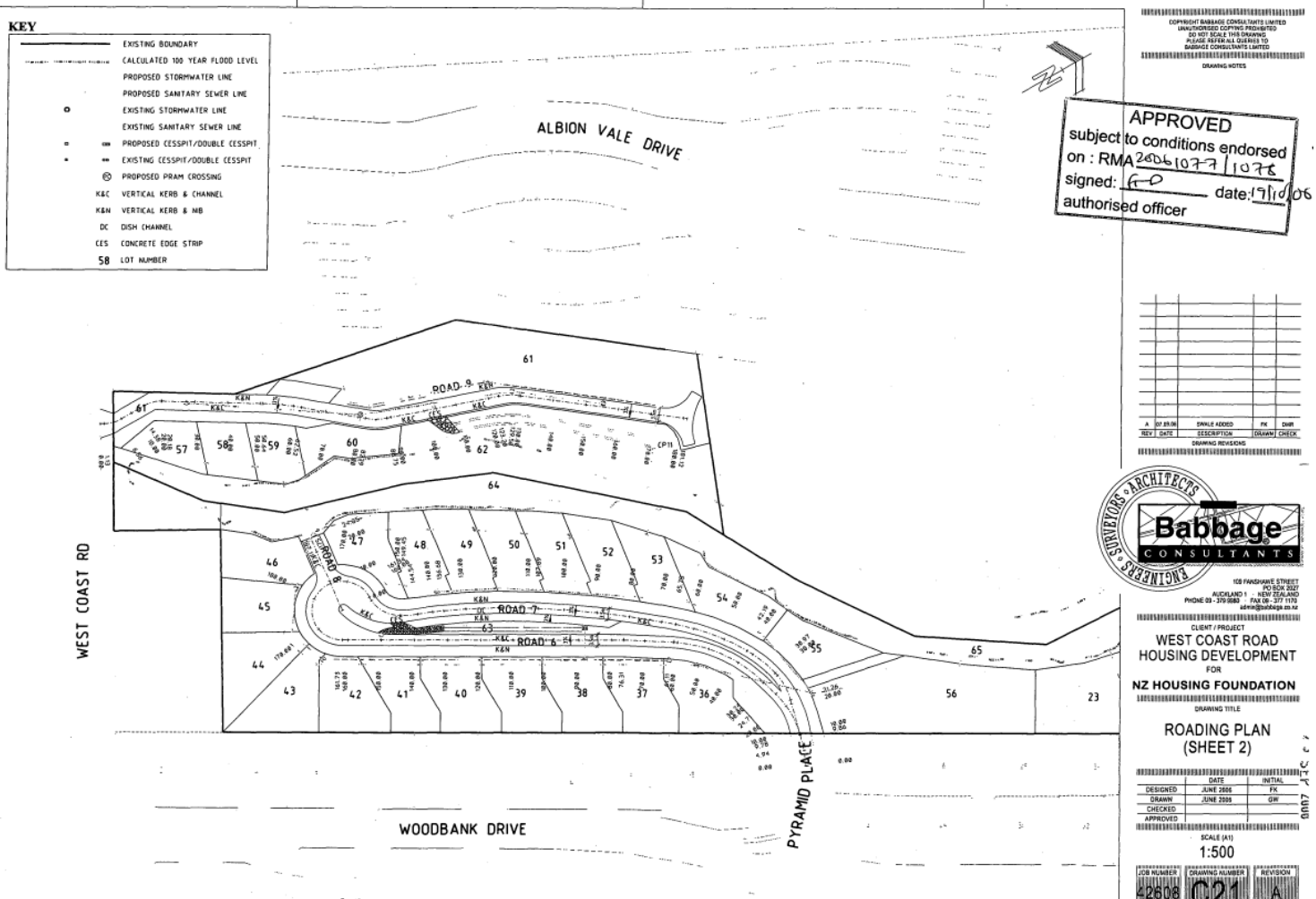
DRAWING TITLE

ROADING PLAN
(SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C20	A



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on : RMA 20061077 | 1076
signed: [signature] date: 19/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.09.06	SWALE ADDED	PK	DMR

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

ROADING PLAN
(SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	PK
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
22608	C21	A

28/09/2006 2:47:01 p.m. x:\dgn\A2600\s\a22608a\s\C21 ROADING PLAN SHT 2.dgn

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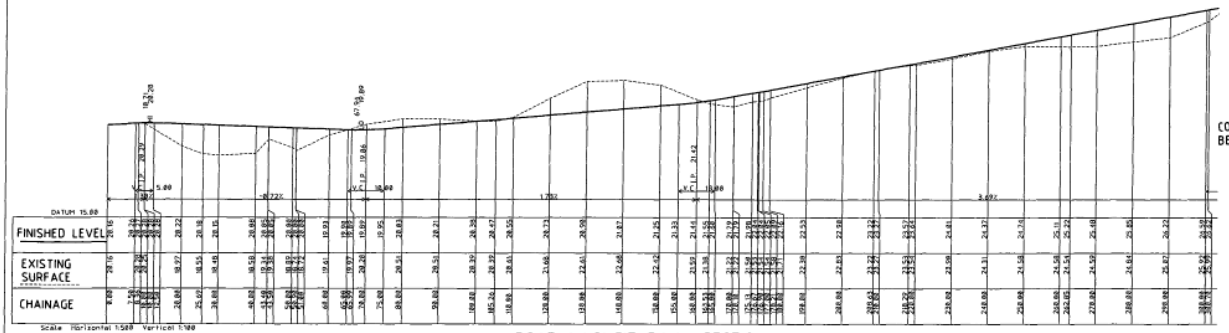
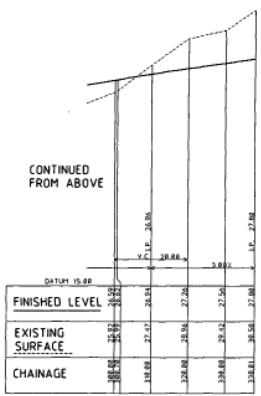
signed: GD date: 17/10/06
authorised officer



ROAD 1 LONGITUDINAL SECTION



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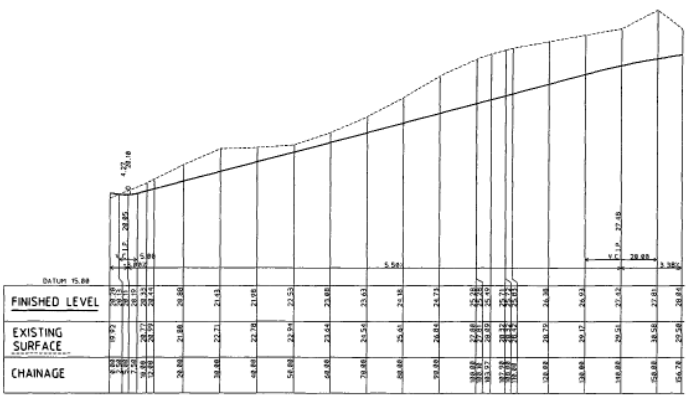

ROAD 2 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

Babbage CONSULTANTS
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

ROAD LONGITUDINAL SECTIONS (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 06	PK
DRAWN	JUNE 06	GW
CHECKED		
APPROVED		

SCALE (A1)

HORT 1:500 VERT 1:100

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C22	

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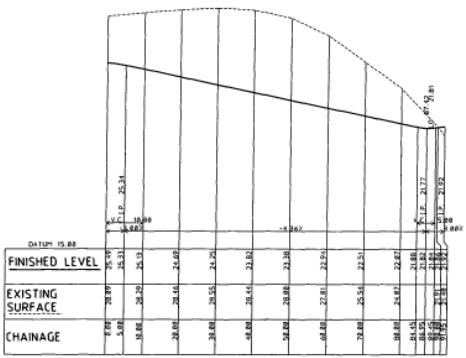
signed: _____ date: 19/10/06
authorised officer



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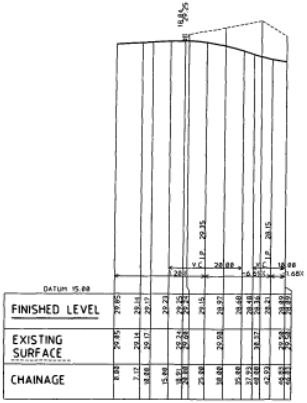

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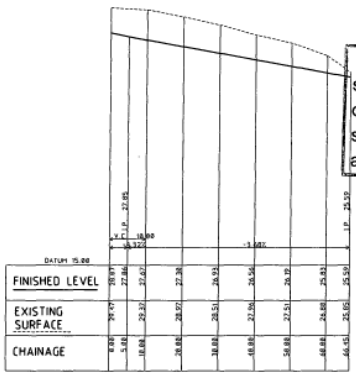

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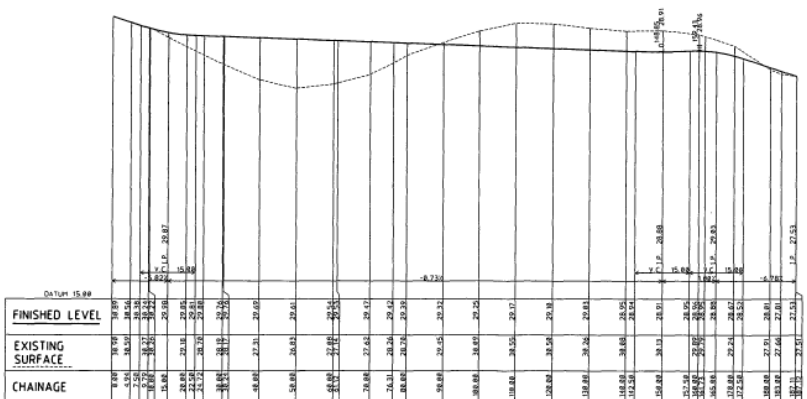

ROAD 6 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

ROAD LONGITUDINAL SECTIONS (SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 06	FK
DRAWN	JUNE 06	GW
CHECKED		
APPROVED		

SCALE (A1)
HORT 1:500 VERT 1:100

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C23	

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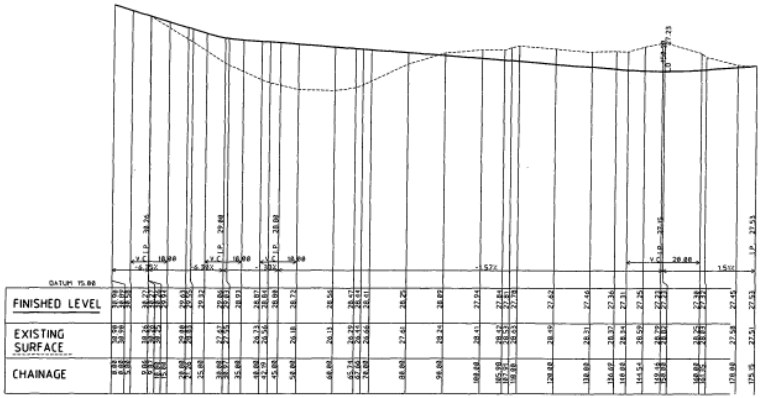

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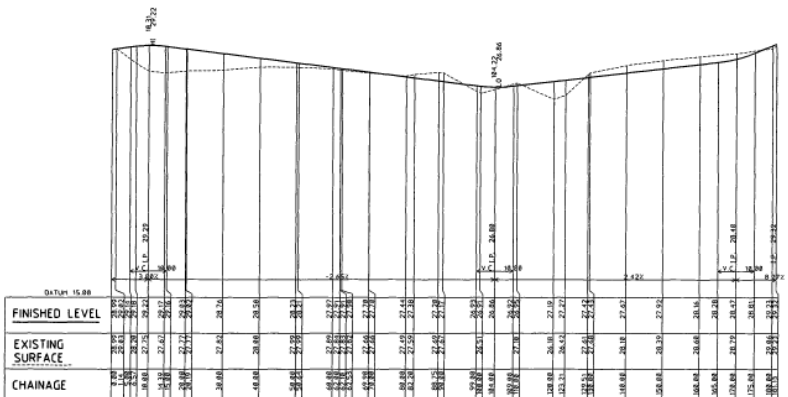

ROAD 9 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

ROAD LONGITUDINAL SECTIONS (SHEET 3)

	DATE	INITIAL
DESIGNED	JUNE 06	FK
DRAWN	JUNE 06	GW
CHECKED		
APPROVED		

SCALE (A1)

HORT 1:500 VERT 1:100

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C24	

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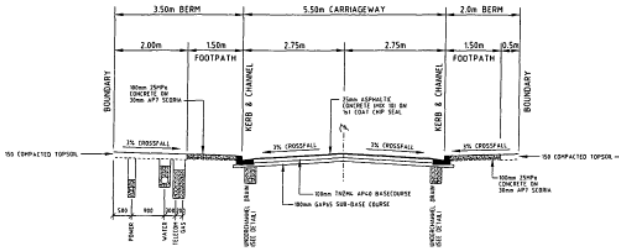
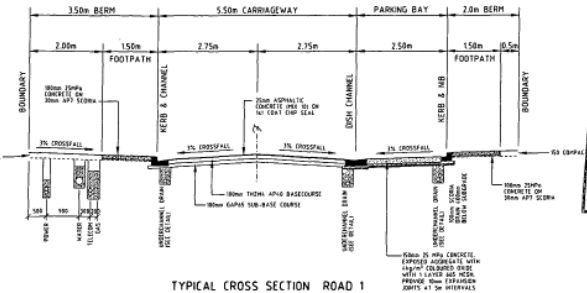
1. PAVEMENT CONSTRUCTION DEPTHS HAVE BEEN CALCULATED USING AN ASSUMED CBR VALUE OF 3. FINAL PAVEMENT CONSTRUCTION DEPTHS TO BE CONFIRMED FOLLOWING ON SITE SUBGRADE TESTING.

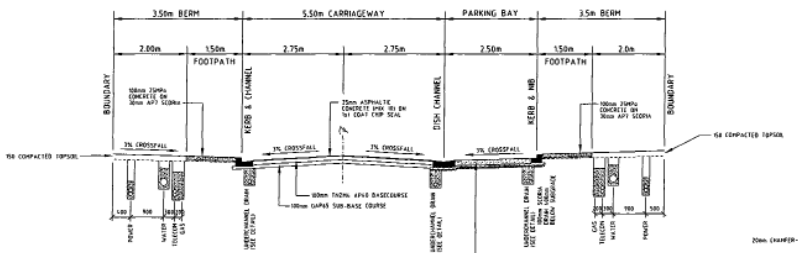
APPROVED
subject to conditions endorsed
on: RMA 20061077 | 1078
signed: _____ date: 19/10/06
authorised officer



TYPICAL CROSS SECTION ROAD 1
WITHOUT PARKING BAY



TYPICAL CROSS SECTION ROAD 1
WITH PARKING BAY



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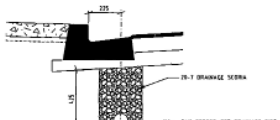
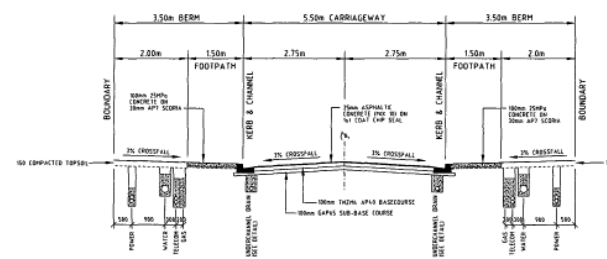


UNDERCHANNEL DRAIN



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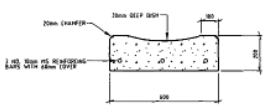

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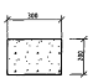

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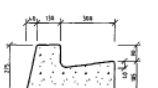
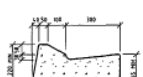


VERTICAL KERB & CHANNEL



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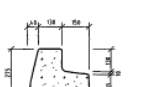
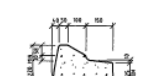


VERTICAL KERB & NIB



MOUNTABLE KERB & NIB

INSITU KERB DETAILS
SCALE 1:10

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	7.06.06	VARIOUS	FK	

DRAWING REVISIONS

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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
ROAD
CROSS SECTIONS
(SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GB
CHECKED		
APPROVED		

SCALE (A1)
1:50

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C25	A

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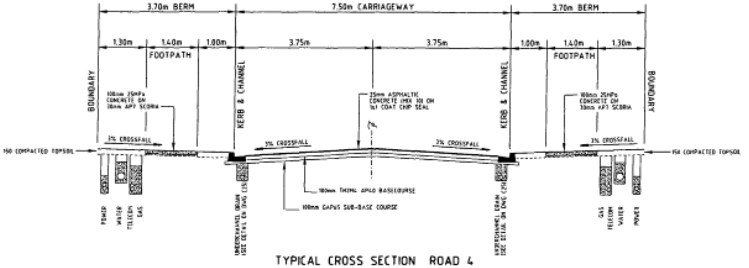
on : RMA 20061077 1 07
signed: [signature] date: 19/10/06
authorised officer



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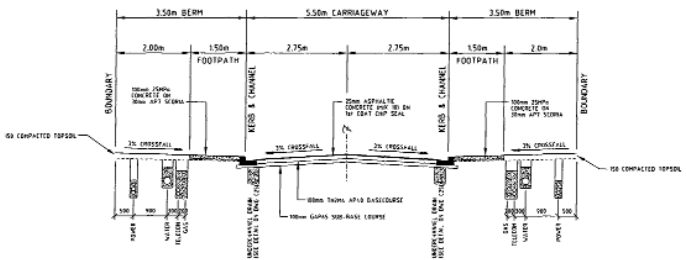

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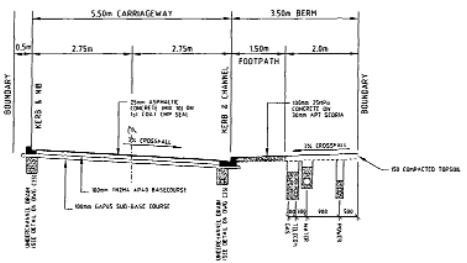

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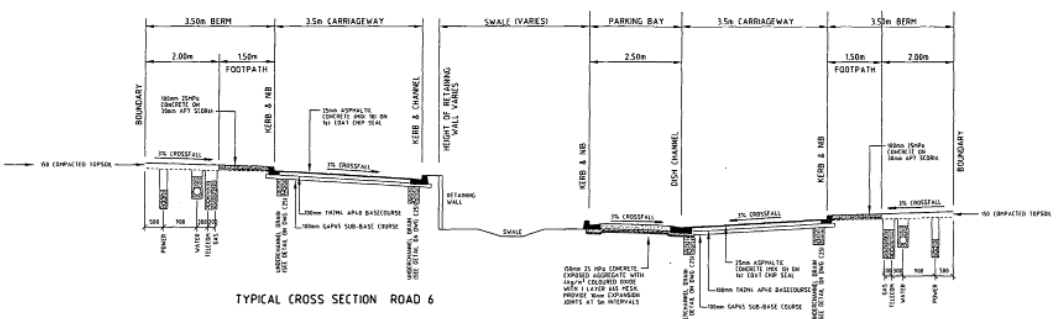

TYPICAL CROSS SECTION ROAD 6

TYPICAL CROSS SECTION ROAD 7

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.09.06	VARIOUS AMENDMENTS	FK	DMR

DRAWING REVISIONS

Babbage CONSULTANTS
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AUCKLAND 1 · NEW ZEALAND
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admin@babbage.co.nz

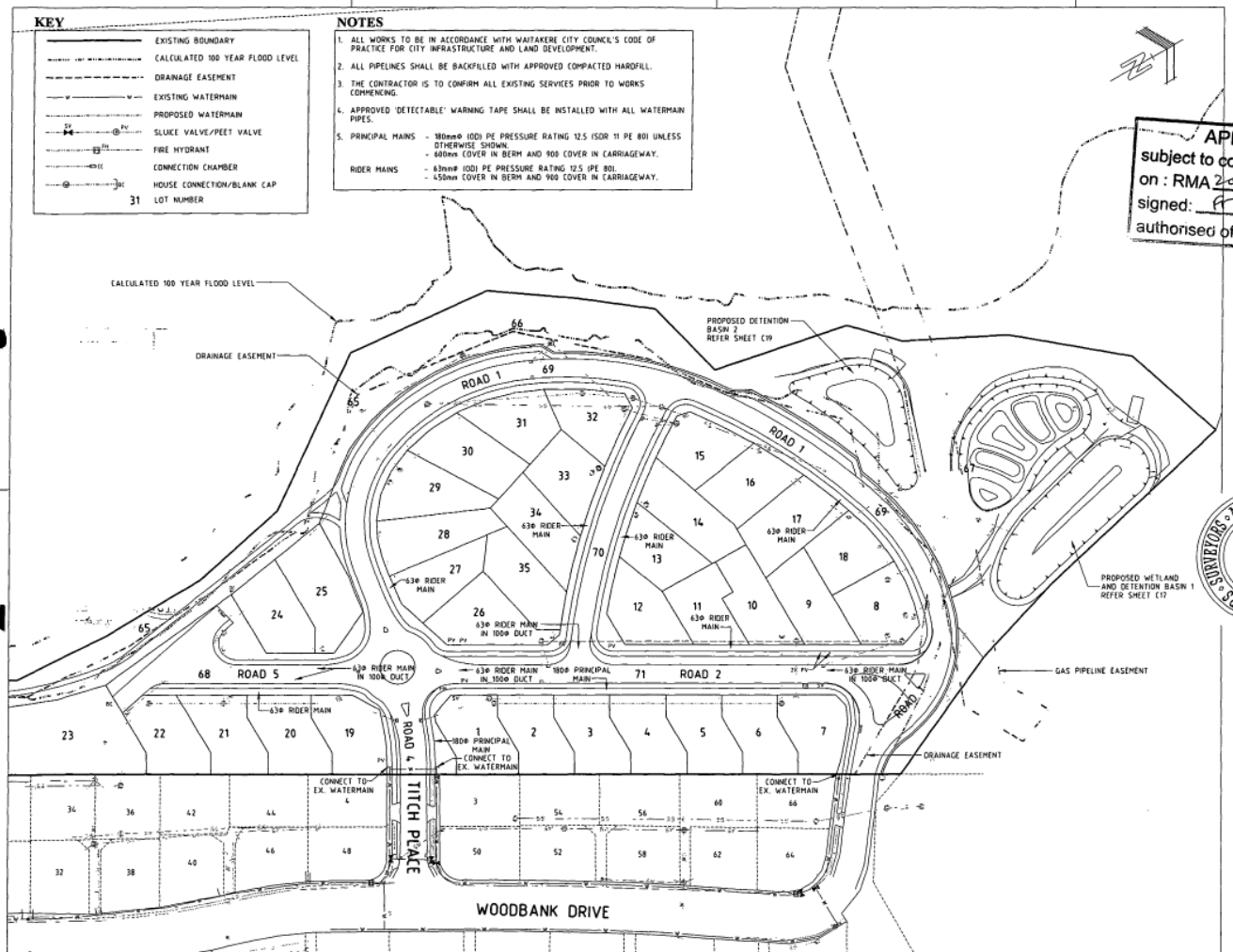
CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
ROAD
CROSS SECTIONS
(SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GB
CHECKED		
APPROVED		

SCALE (A1)
1:50

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C26	A



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REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.09.06	RC/GONG AMENDED	PK	DMR

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

SERVICES PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C35	A

28/09/2006 2:46:29 p.m. k:\dgn\42600\d\42608civ\RC35 SERVICES PLAN SHEET 1.dgn

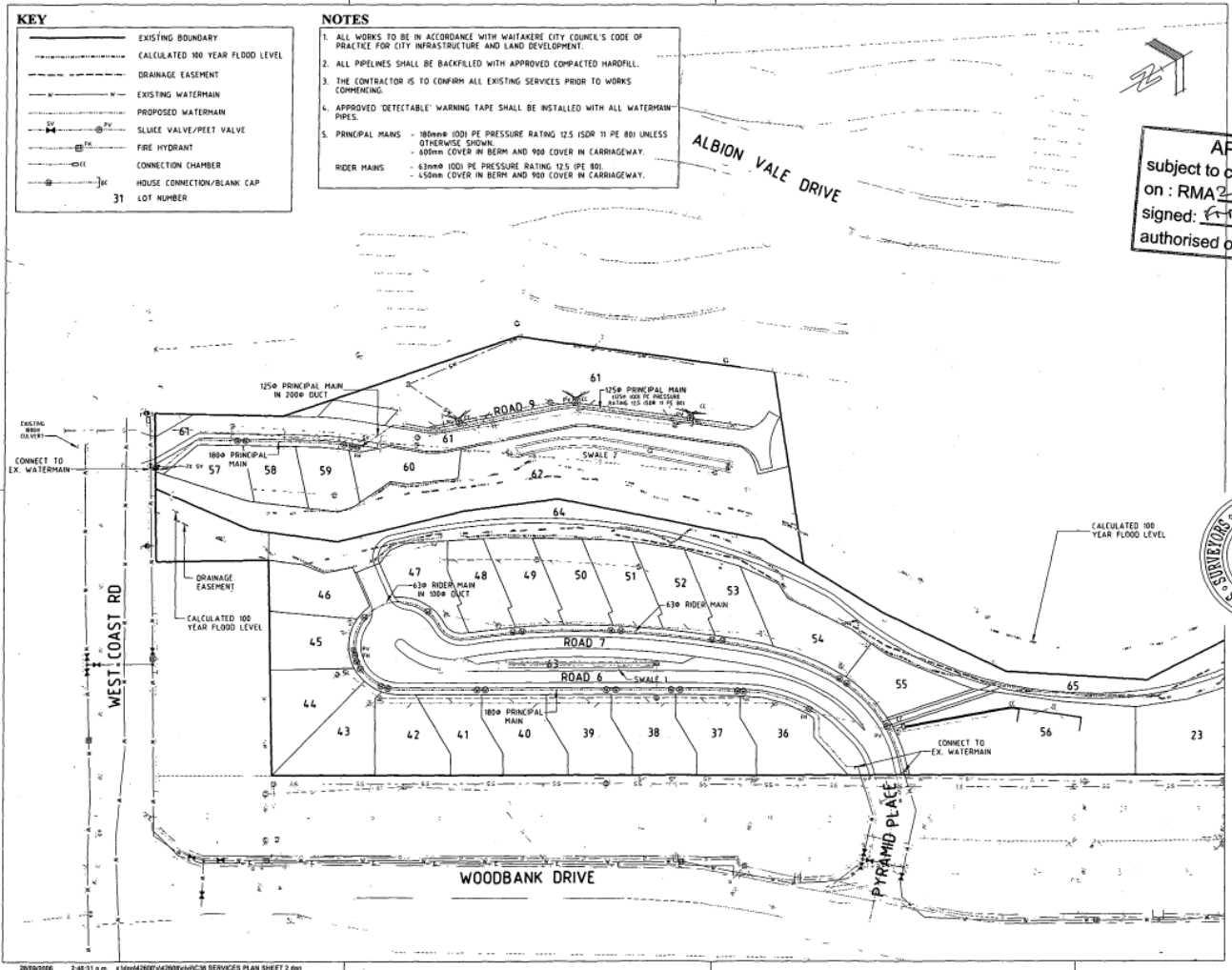
KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- DRAINAGE EASEMENT
- W — W — EXISTING WATERMAIN
- PROPOSED WATERMAIN
- SV — SLUICE VALVE/PEET VALVE
- FH — FIRE HYDRANT
- CC — CONNECTION CHAMBER
- HC — HOUSE CONNECTION/BLANK CAP
- 31 — LOT NUMBER

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAITAKERE CITY COUNCIL'S CODE OF PRACTICE FOR CITY INFRASTRUCTURE AND LAND DEVELOPMENT.
2. ALL PIPELINES SHALL BE BACKFILLED WITH APPROVED COMPACTED HARDFILL.
3. THE CONTRACTOR IS TO CONFIRM ALL EXISTING SERVICES PRIOR TO WORKS COMMENCING.
4. APPROVED 'DETECTABLE' WARNING TAPE SHALL BE INSTALLED WITH ALL WATERMAIN PIPES.
5. PRINCIPAL MAINS - 180mmØ (OD) PE PRESSURE RATING 12.5 (SDR 11 PE 80) UNLESS OTHERWISE SHOWN.
   - 600mm COVER IN BERM AND 900 COVER IN CARRIAGEWAY.

   RIDER MAINS - 63mmØ (OD) PE PRESSURE RATING 12.5 (PE 80).
   - 450mm COVER IN BERM AND 900 COVER IN CARRIAGEWAY.



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signed: [signature] date: 7/10/06
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A	31.05.06	ROADING AMENDED	PK	DMR

DRAWING REVISIONS

Babbage CONSULTANTS
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

SEVICES PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	PK
DRAWN	JUNE 2006	PK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C36	A

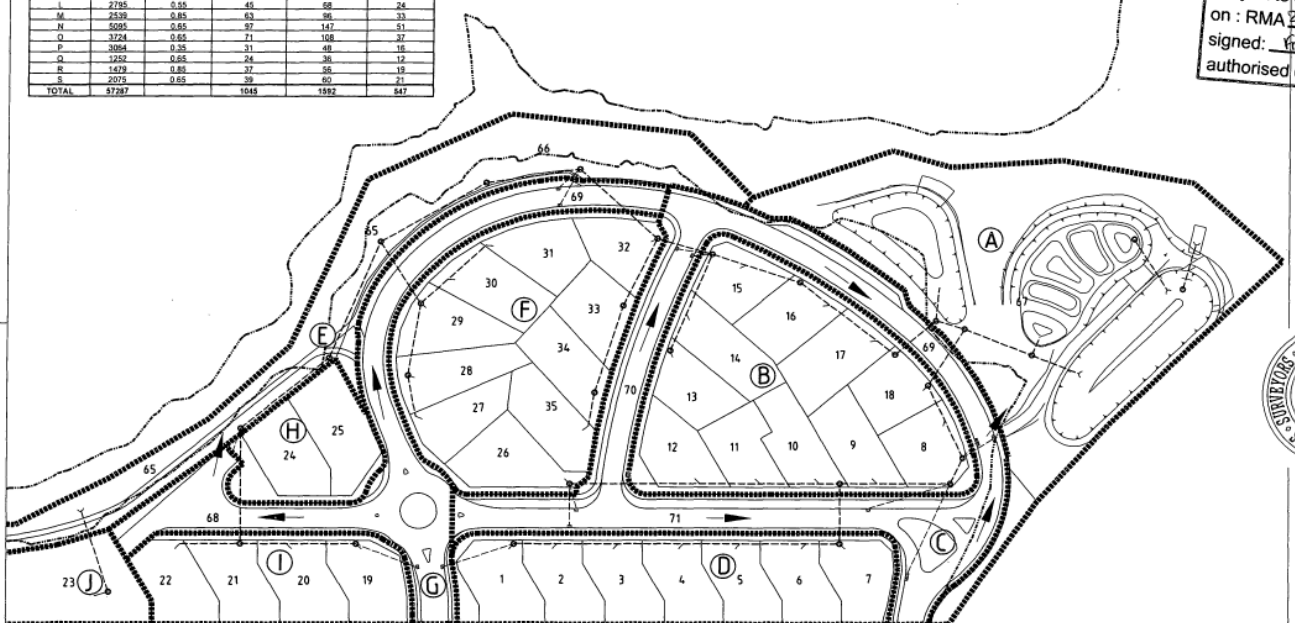
28/09/2006 2:48:31 p.m. k:\dgn\42600's\42608\chiVC36 SERVICES PLAN SHEET 2.dgn

CATCHMENT SCHEDULE

CATCHMENT	AREA (m^2)	COMPOSITE C	DISCHARGE 10% AEP (l/sec)	DISCHARGE 1%AEP (l/sec)	DIFFERENCE
A	7141	0.35	73	111	38
B	4888	0.85	93	141	49
C	4338	0.85	108	164	56
D	3047	0.65	58	88	30
E	3427	0.55	55	84	29
F	4260	0.85	83	126	43
G	2810	0.85	70	106	37
H	1143	0.65	22	33	11
I	1803	0.65	34	52	18
J	840	0.65	16	24	8
K	1467	0.65	28	42	15
L	2795	0.55	45	68	24
M	2539	0.85	63	96	33
N	5095	0.65	97	147	51
O	3724	0.65	71	108	37
P	3084	0.35	31	48	16
Q	1252	0.65	24	36	12
R	1479	0.85	37	56	19
S	2075	0.65	39	60	21
TOTAL	57287		1048	1592	847

KEY

- CALCULATED 100 YEAR FLOOD LEVEL
- CATCHMENT BOUNDARY
- (A) CATCHMENT DESIGNATION
- OVERLAND FLOW PATH



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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

Babbage CONSULTANTS
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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

STORMWATER
CATCHMENT PLAN
(SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C45	1

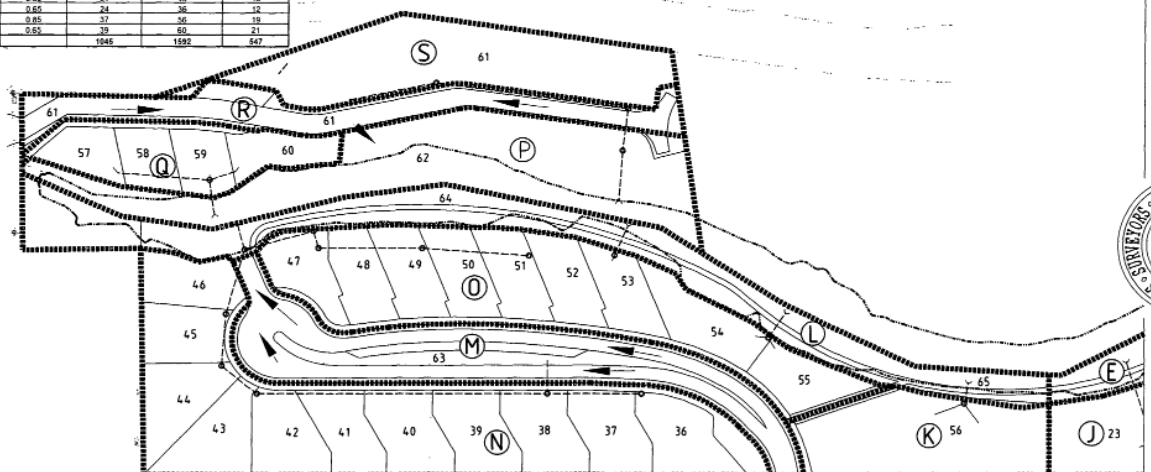
28/09/2006 2:47:24 p.m. x:\dgn\42600\41426081sw\C45 SW CATCHMENT PLAN SHT 1.dgn

KEY

- CALCULATED 100 YEAR FLOOD LEVEL
- CATCHMENT BOUNDARY
- (A) CATCHMENT DESIGNATION
- OVERLAND FLOW PATH

CATCHMENT SCHEDULE

CATCHMENT	AREA (m^2)	COMPOSITE C	DISCHARGE 10% AEP (l/sec)	DISCHARGE 1%AEP (l/sec)	DIFFERENCE
A	7141	0.38	73	111	38
B	4888	0.65	93	141	49
C	4338	0.85	108	164	56
D	3047	0.65	58	88	30
E	3427	0.55	55	84	29
F	4350	0.65	83	126	43
G	2810	0.85	70	106	37
H	1143	0.65	22	33	11
I	1803	0.65	34	52	18
J	840	0.65	16	24	8
K	1467	0.65	28	42	15
L	2791	0.55	45	68	24
M	2539	0.85	63	96	33
N	5095	0.65	97	147	51
O	3724	0.65	71	108	37
P	3084	0.35	31	48	16
Q	1252	0.65	24	36	12
R	1478	0.85	37	56	19
S	2075	0.65	39	60	21
TOTAL	57287		1046	1592	547



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signed: _____ date: 9/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK

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159 FANSHAWE STREET
PO BOX 2027
AUCKLAND 1 - NEW ZEALAND
PHONE 09 - 378 9850 FAX 09 - 377 1170
admin@babbage.co.nz

CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

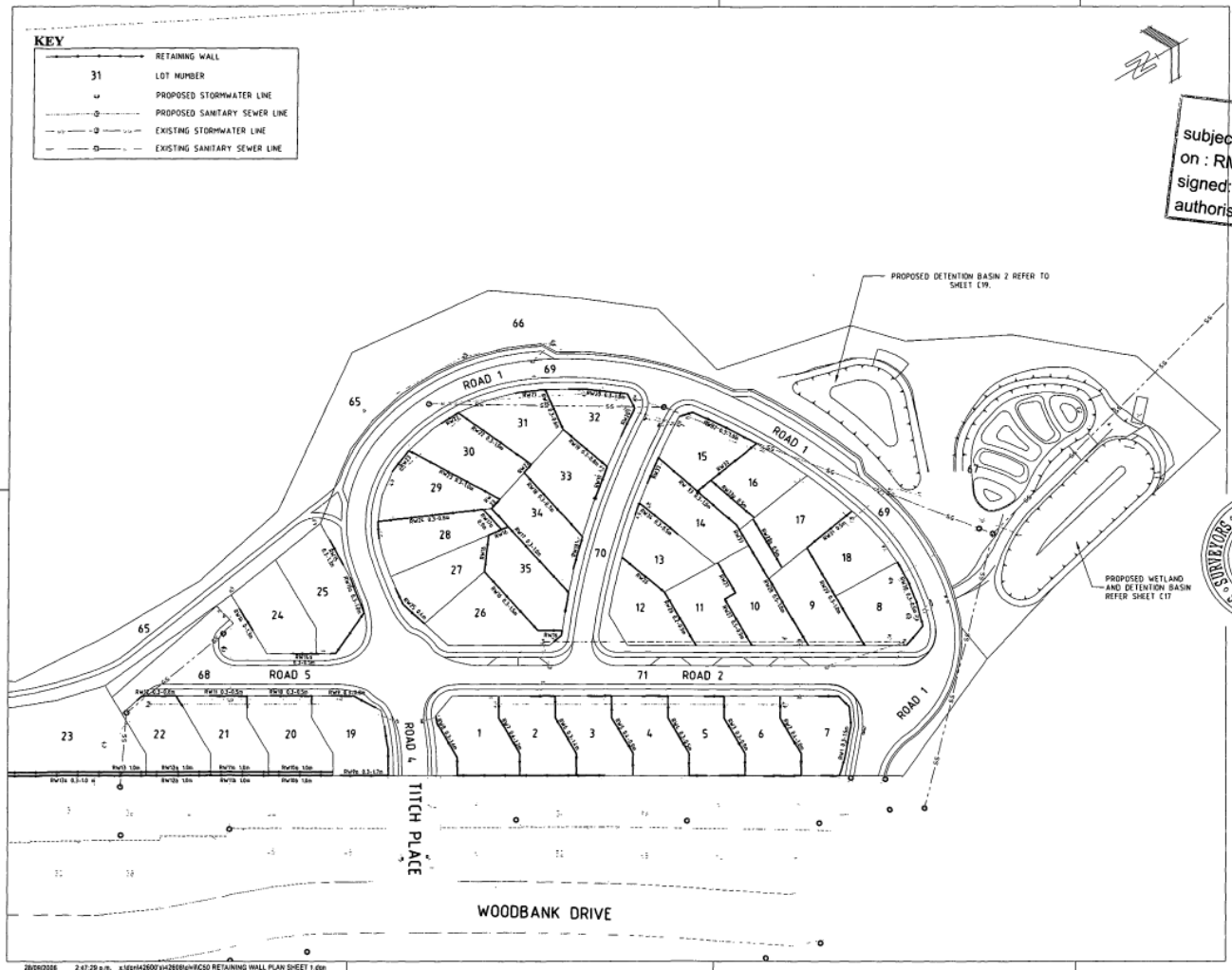
DRAWING TITLE
STORMWATER
CATCHMENT PLAN
(SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C46	

28/09/2006 2:47:27 p.m. k:\dgn\42600's\42608\sch\C46 SW CATCHMENT PLAN SHT 2.dgn



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solo@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

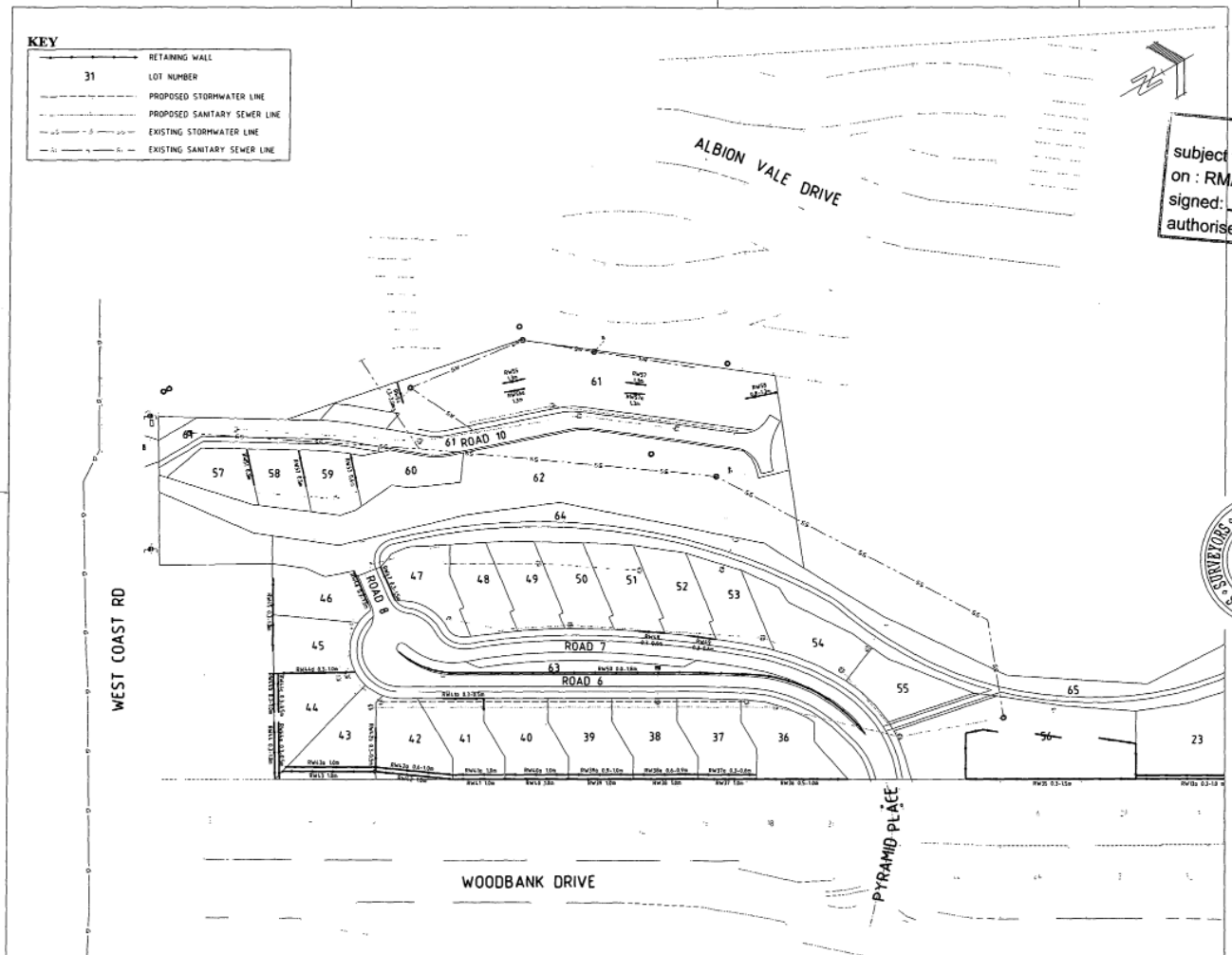
DRAWING TITLE

RETAINING WALL
PLAN
(SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	PK
DRAWN	JUNE 2006	PK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C50	H



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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
RETAINING WALL
PLAN
(SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	PK
DRAWN	JUNE 2006	PK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C51	

28/09/2006 2:47:31 p.m. K:\dgn\42600\W\42608\dwg\C51 RETAINING WALL PLAN SHEET 2.dgn

Received
14/10/06

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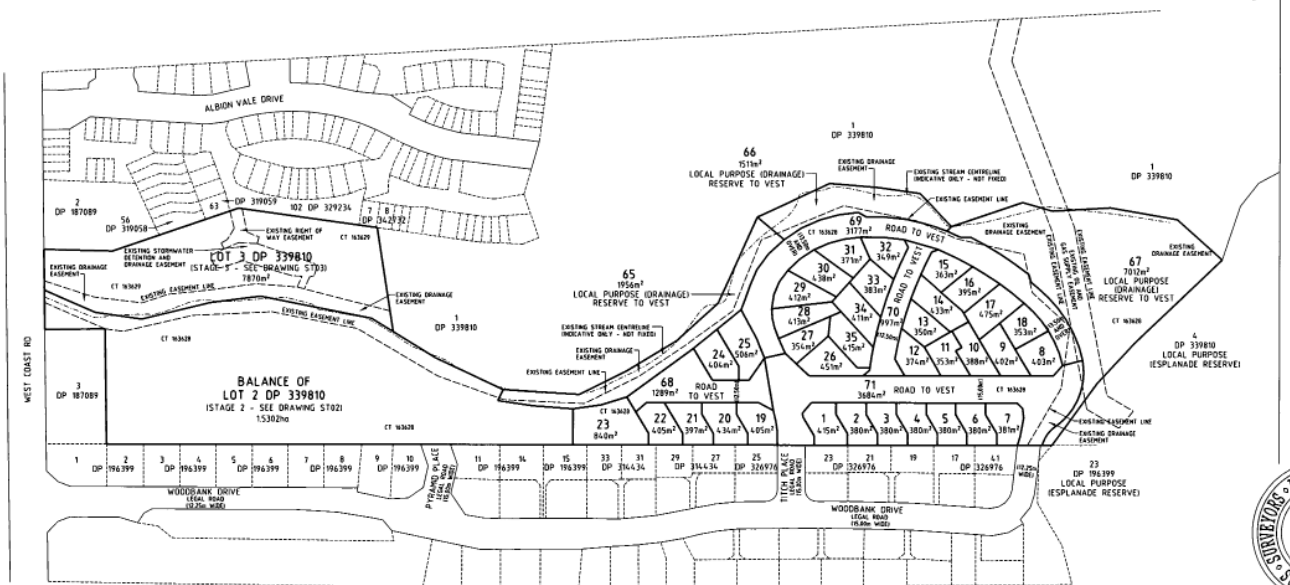

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

PROPOSED SUBDIVISION
OF LOTS 2 AND 3 DP 339810
STAGE 1
(LOTS 1 - 35 INCL.,
65 - 67 INCL. AND 68 - 71 INCL.)

	DATE	INITIAL
DESIGNED		
DRAWN	OCT. 2006	MJD
CHECKED		
APPROVED		

SCALE (A1)
1:1000

JOB NUMBER	DRAWING NUMBER	REVISION
42608	ST01	-

EXISTING EASEMENTS IN GROSS

PURPOSE	SERVIENT TENEMENT	CREATED BY	GRANTEE
OIL AND GAS SUPPLY	LOT 2 DP 339810	B344219.1	NATURAL GAS CORPORATION OF NEW ZEALAND LTD.
DRAINAGE	LOTS 2 AND 3 DP 339810	6135712.4	WAITAKERE CITY COUNCIL
STORMWATER DETENTION AND DRAINAGE	LOT 3 DP 339810	6070221.2	
RIGHT OF WAY	LOT 3 DP 339810	6070221.1	

AREA SCHEDULE - STAGE ONE

LOTS 1 - 35 INCL.	RESIDENTIAL	1.4373ha
LOTS 65 - 67 INCL.	LOCAL PURPOSE (DRAINAGE) RESERVE TO VEST	1.0479ha
LOTS 68 - 71 INCL.	ROAD TO VEST	0.9147ha
	TOTAL	= 3.3999ha

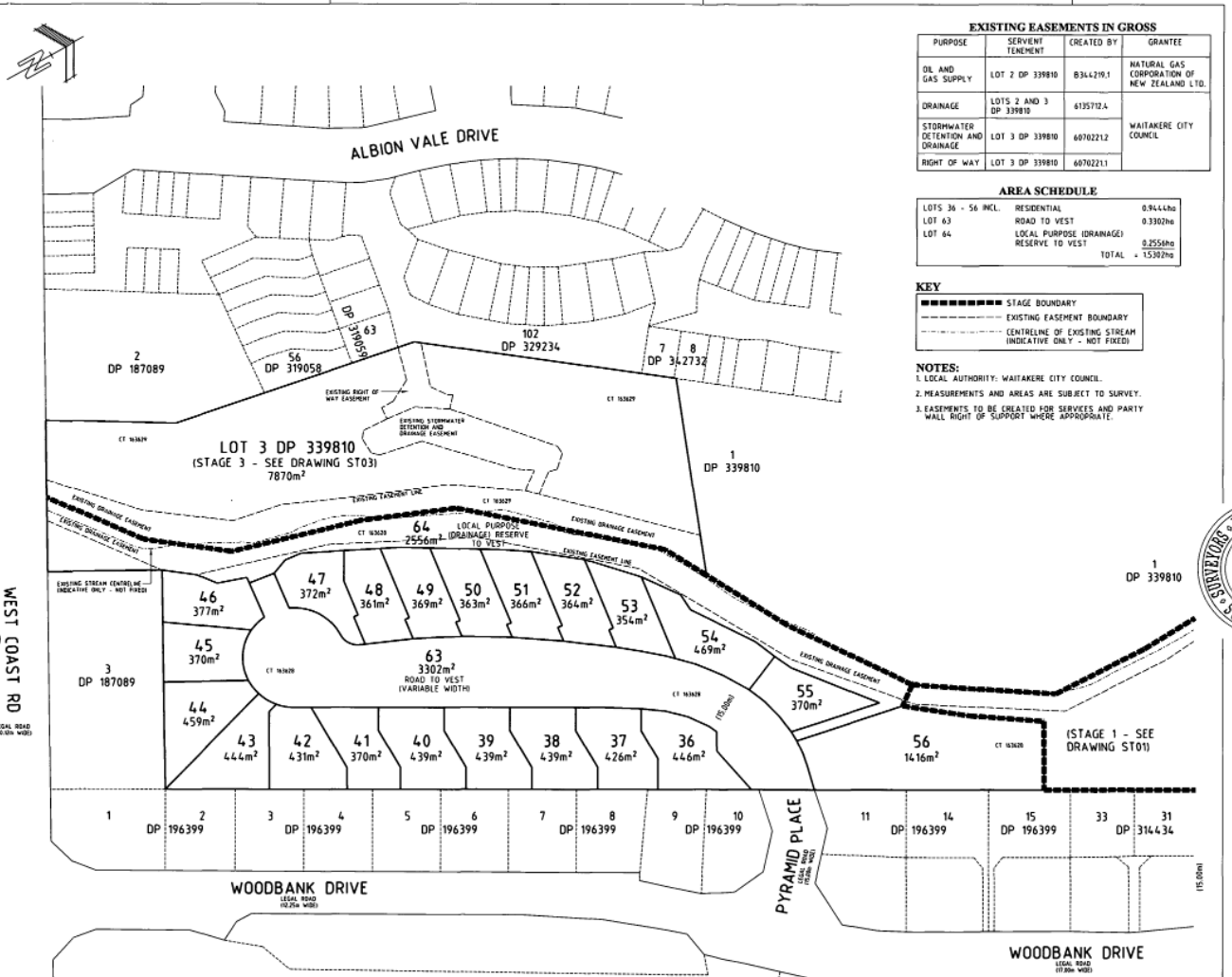
KEY

EXISTING EASEMENT BOUNDARY

CENTRELINE OF EXISTING STREAM (INDICATIVE ONLY - NOT FIXED)

NOTES:

1. LOCAL AUTHORITY: WAITAKERE CITY COUNCIL.
2. MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
3. EASEMENTS TO BE CREATED FOR SERVICES AND PARTY WALL RIGHT OF SUPPORT WHERE APPROPRIATE.



EXISTING EASEMENTS IN GROSS

PURPOSE	SERVIENT TENEMENT	CREATED BY	GRANTEE
OIL AND GAS SUPPLY	LOT 2 DP 339810	B344219.1	NATURAL GAS CORPORATION OF NEW ZEALAND LTD.
DRAINAGE	LOTS 2 AND 3 DP 339810	6135712.4	WAITAKERE CITY COUNCIL
STORMWATER DETENTION AND DRAINAGE	LOT 3 DP 339810	6070221.2	
RIGHT OF WAY	LOT 3 DP 339810	6070221.1	

AREA SCHEDULE

LOTS 36 - 56 INCL.	RESIDENTIAL	0.9444ha
LOT 63	ROAD TO VEST	0.3302ha
LOT 64	LOCAL PURPOSE (DRAINAGE) RESERVE TO VEST	0.2556ha
	TOTAL ±	1.5302ha

KEY

- STAGE BOUNDARY
- EXISTING EASEMENT BOUNDARY
- CENTRELINE OF EXISTING STREAM (INDICATIVE ONLY - NOT FIXED)

NOTES:

1. LOCAL AUTHORITY: WAITAKERE CITY COUNCIL.
2. MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
3. EASEMENTS TO BE CREATED FOR SERVICES AND PARTY WALL RIGHT OF SUPPORT WHERE APPROPRIATE.

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

PROPOSED SUBDIVISION OF LOTS 2 AND 3 DP 339810 STAGE 2 (LOTS 36 - 56 INCL., 63 AND 64)

	DATE	INITIAL
DESIGNED		
DRAWN	OCT. 2006	MJD
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	ST02	-

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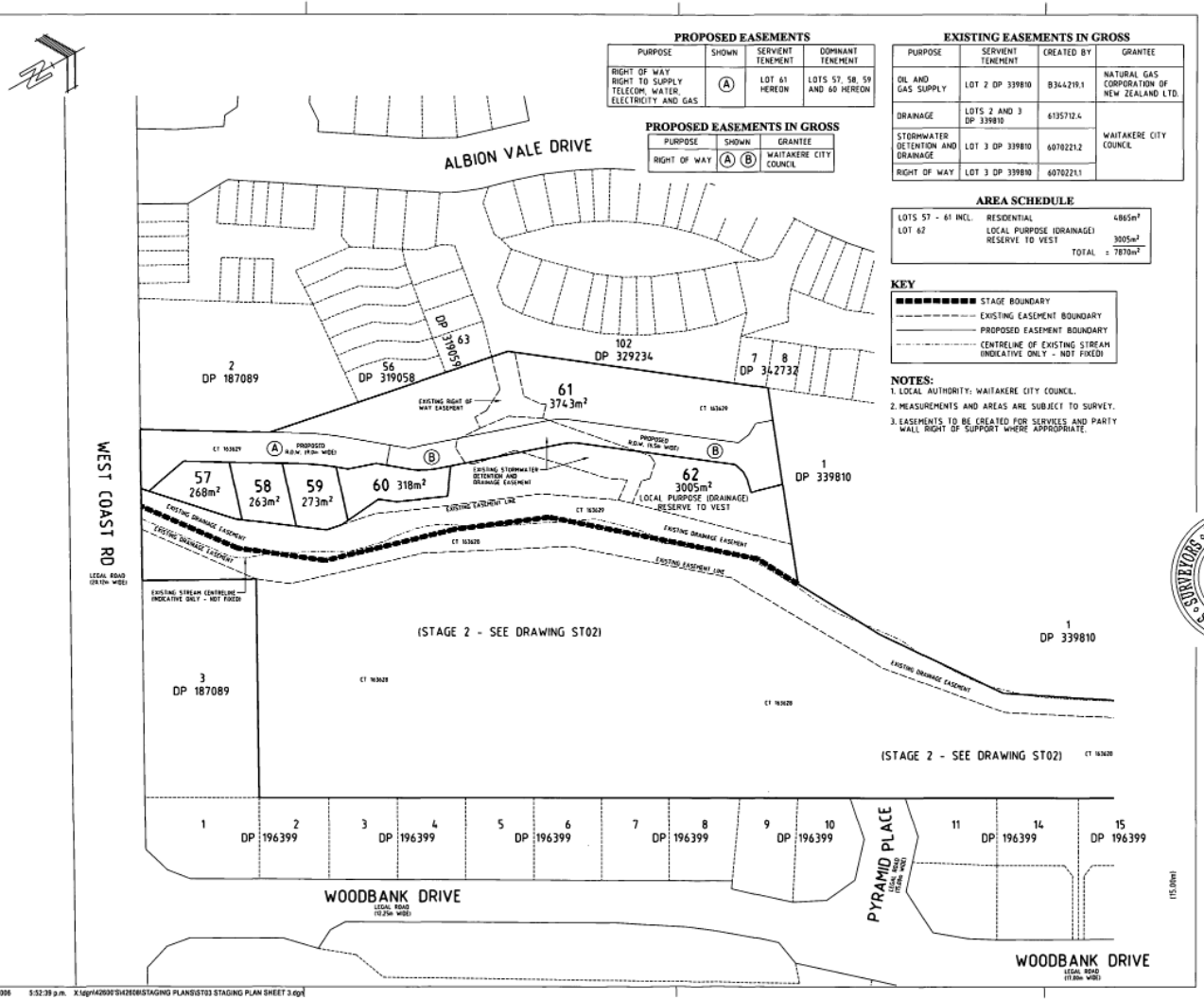

PROPOSED EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT OF WAY RIGHT TO SUPPLY TELECOM, WATER, ELECTRICITY AND GAS	A	LOT 61 HEREON	LOTS 57, 58, 59 AND 60 HEREON

PROPOSED EASEMENTS IN GROSS

PURPOSE	SHOWN	GRANTEE
RIGHT OF WAY	A B	WAITAKERE CITY COUNCIL

EXISTING EASEMENTS IN GROSS

PURPOSE	SERVIENT TENEMENT	CREATED BY	GRANTEE
OIL AND GAS SUPPLY	LOT 2 DP 339810	B344219.1	NATURAL GAS CORPORATION OF NEW ZEALAND LTD.
DRAINAGE	LOTS 2 AND 3 DP 339810	6135712.4	WAITAKERE CITY COUNCIL
STORMWATER DETENTION AND DRAINAGE	LOT 3 DP 339810	6070221.2	
RIGHT OF WAY	LOT 3 DP 339810	6070221.1	

AREA SCHEDULE

LOTS 57 - 61 INCL.	RESIDENTIAL	4865m²
LOT 62	LOCAL PURPOSE (DRAINAGE) RESERVE TO VEST	3005m²
	TOTAL :	7870m²

KEY

- STAGE BOUNDARY
- EXISTING EASEMENT BOUNDARY
- PROPOSED EASEMENT BOUNDARY
- CENTRELINE OF EXISTING STREAM (INDICATIVE ONLY - NOT FIXED)

NOTES:

1. LOCAL AUTHORITY: WAITAKERE CITY COUNCIL.
2. MEASUREMENTS AND AREAS ARE SUBJECT TO SURVEY.
3. EASEMENTS TO BE CREATED FOR SERVICES AND PARTY WALL RIGHT OF SUPPORT WHERE APPROPRIATE.

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

PROPOSED SUBDIVISION OF LOTS 2 AND 3 DP 339810 STAGE 3 (LOTS 57 - 62 INCL.)

	DATE	INITIAL
DESIGNED		
DRAWN	OCT. 2006	MJD
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	ST03	-

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on : RMA 20061077 | 20061
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authorised officer

1 / A002 Site 1A
1 : 500

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42608

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 1A & 1B

06/02/06

rev. A002

Site 1B
A003 1 : 500

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42608

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 1C & 1D

06 JUN 2006

rev. A003

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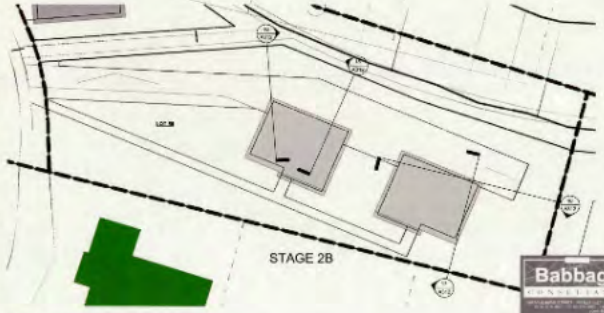
subject to conditions endorsed
on : RMA20061077/1078
signed: [signature] date: 19/10/06
authorised officer

1 A003 Site 2 1 : 500



2 A004 Site 2 - Lot 56 1 : 500

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WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 2A & 2B

05/06/06

rev. A004

1 / A005 Site 3
1 : 500

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WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 3

06/14/06

rev. A005

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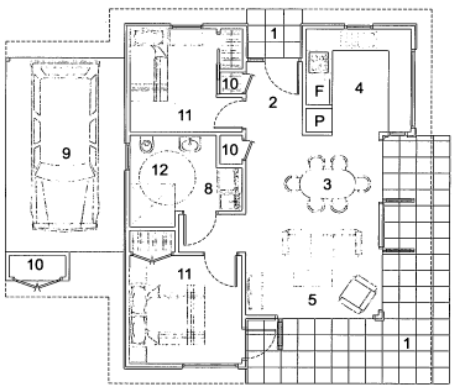
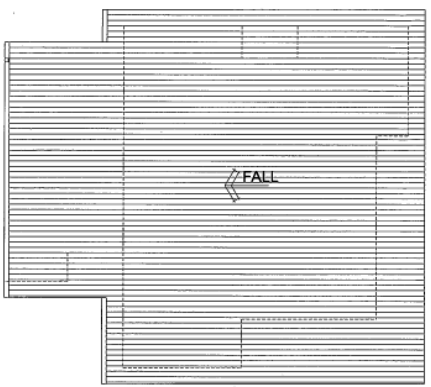
authorised officer



GROUND FLOOR PLAN



ROOF PLAN

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 1 HOUSE - 2 BEDROOM SENIOR / CARPORT

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A101

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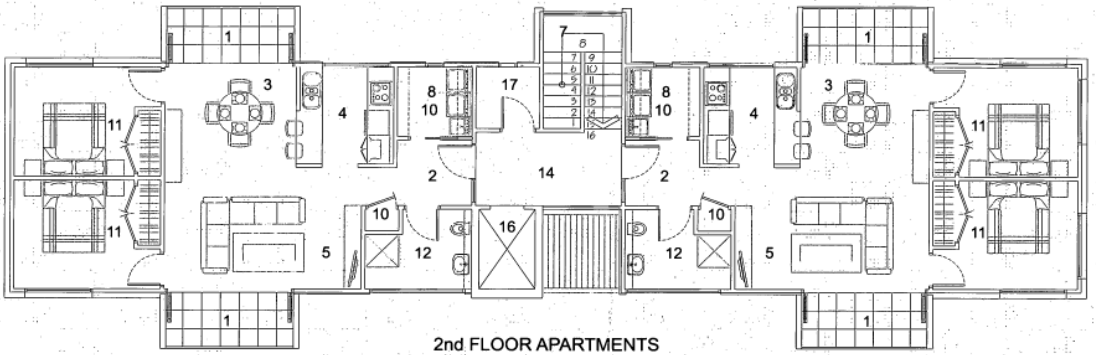
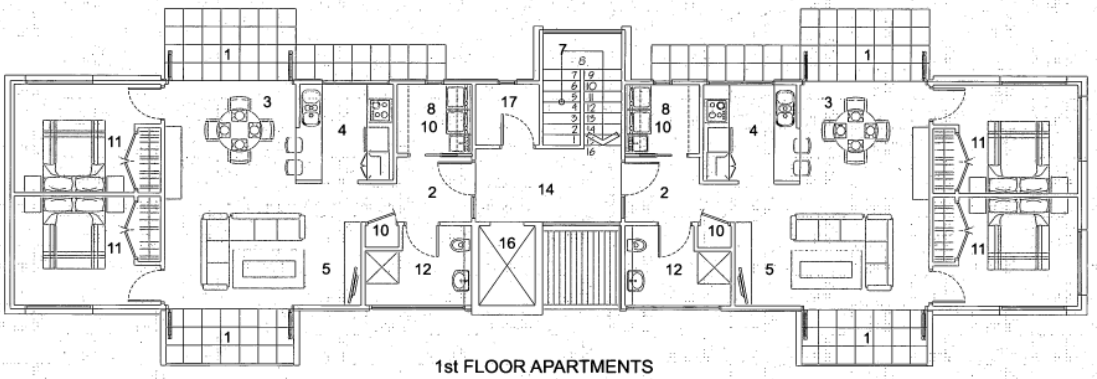


2nd FLOOR APARTMENTS



1st FLOOR APARTMENTS

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

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signed: _____ date: 27/10/06
authorised officer

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A102-1

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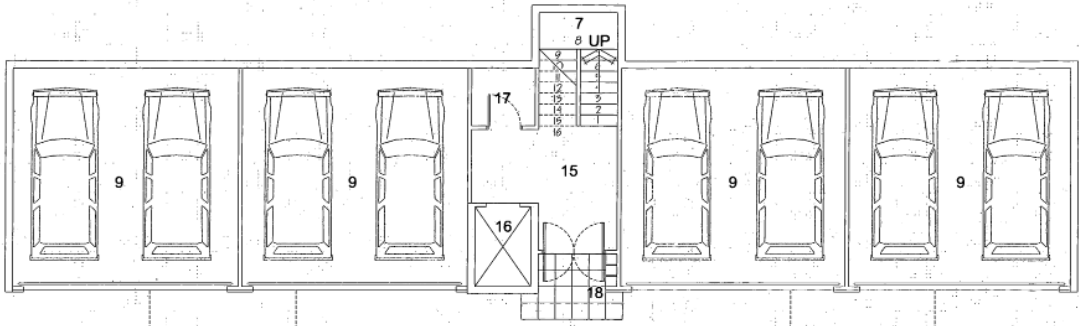

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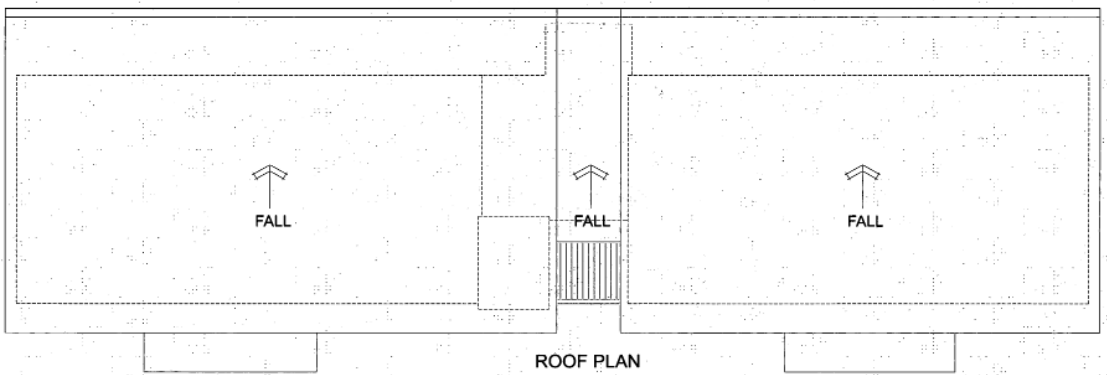

ROOF PLAN

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

FLOOR PLAN
scale @ A1 1:100
scale @ A3 1:200
14 JUN 2006
A102-2

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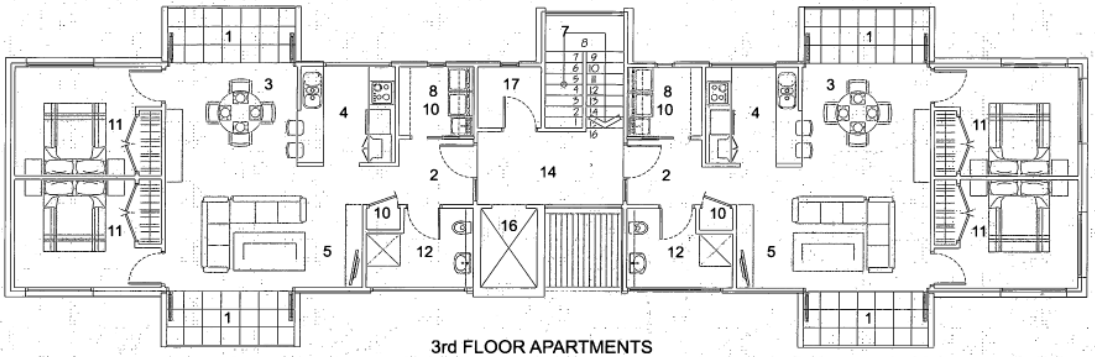
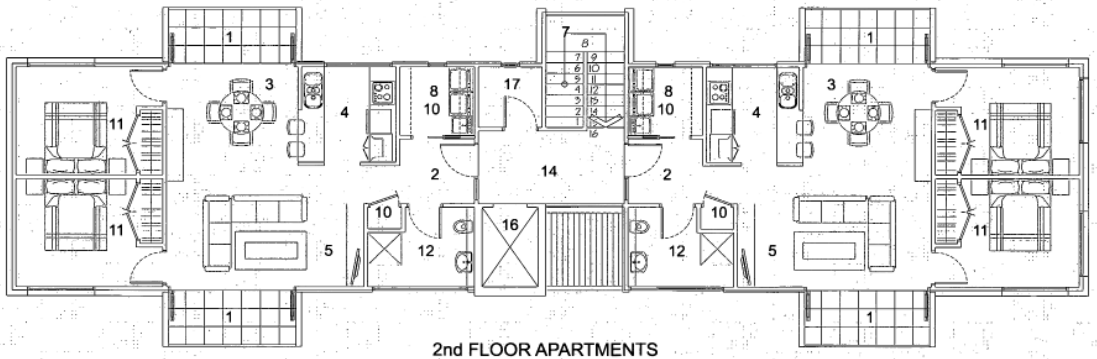
subject to conditions endorsed
on : RMA 2061077 | 1078
signed: [signature] date: 7/11/06
authorised officer



3rd FLOOR APARTMENTS



2nd FLOOR APARTMENTS

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A103-1

APPROVED
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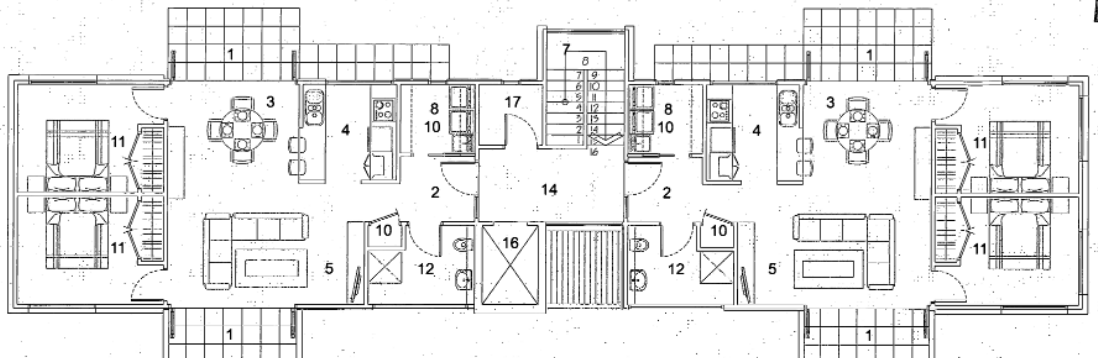
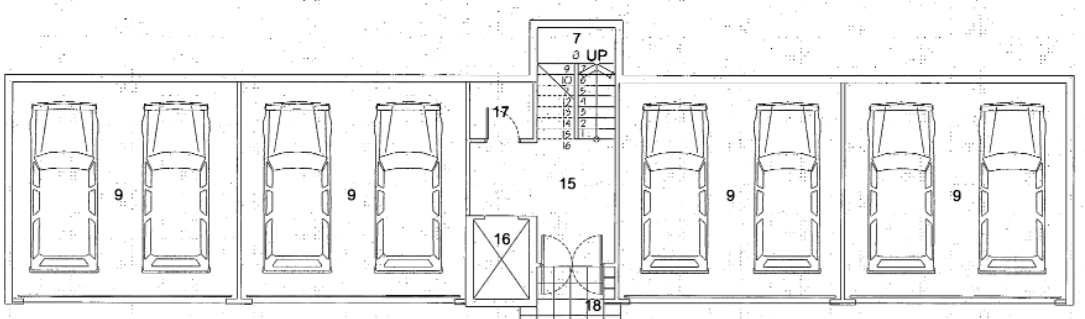
on : RMA 20061077/1078
signed: [signature] date: 19/10/06
authorised officer



1st FLOOR APARTMENTS



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

NOTE: ROOF PLAN SAME AS TYPE 2A APARTMENTS

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42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14JUN 2006
A103-2

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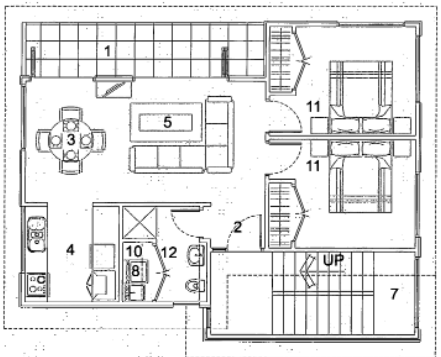
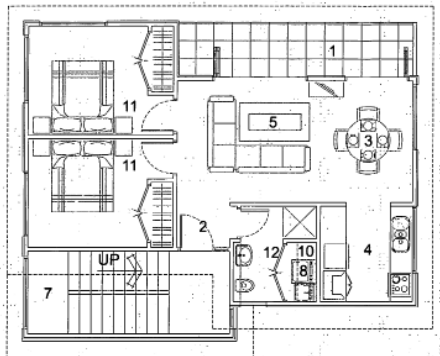
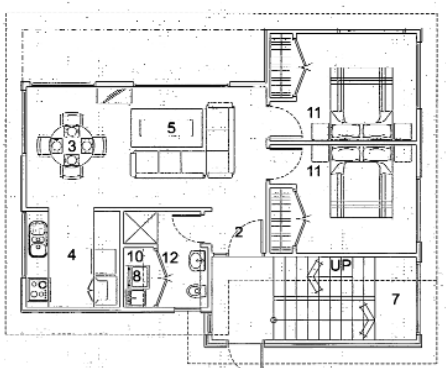
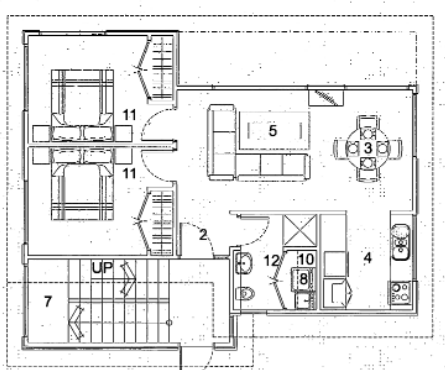




1st FLOOR APARTMENT





UPPER GROUND FLOOR APARTMENT

APPROVED
subject to conditions endorsed
on : RMA 2006 1077/1078
signed: [signature] date 19/10/06
authorised officer.

N

PLAN KEY

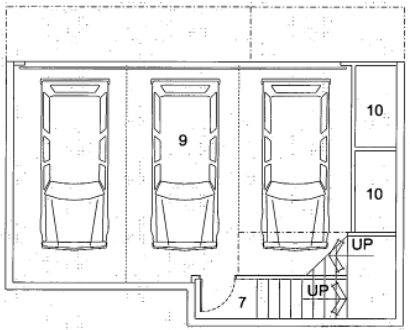
1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

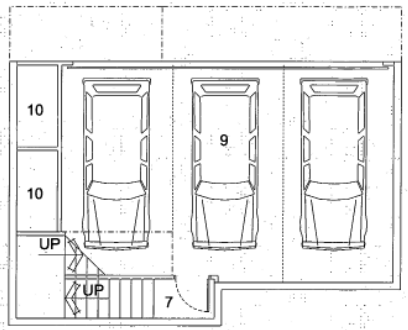
Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

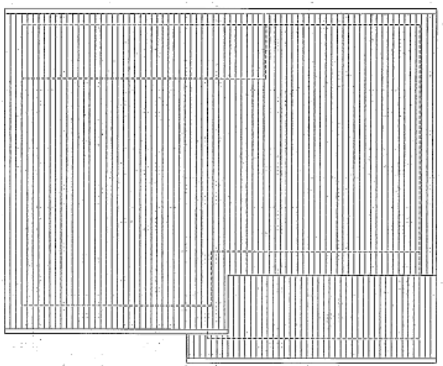
TYPE 2C HOUSE - 2 BEDROOM APARTMENT / UNDERCROFT GARAGE

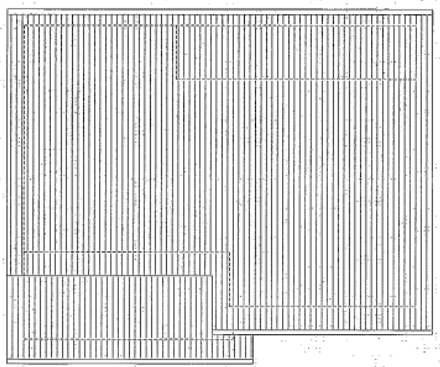
FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A104-1





LOWER GROUND FLOOR GARAGE





ROOF PLAN

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 17/10/06
authorised officer

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / UNDERCROFT GARAGE

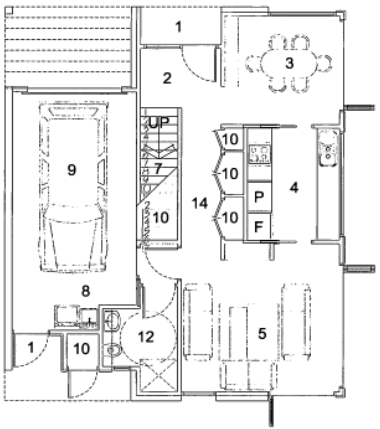
FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A104-2

(optimal orientation)

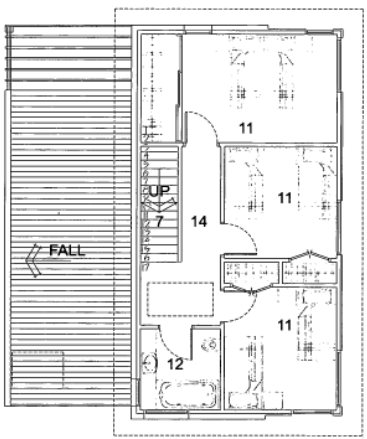
N

PLAN KEY

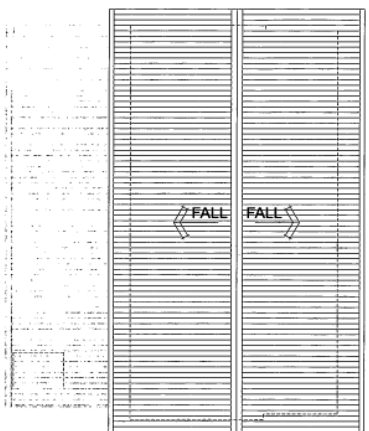
1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway



GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 19/10/06
authorised officer

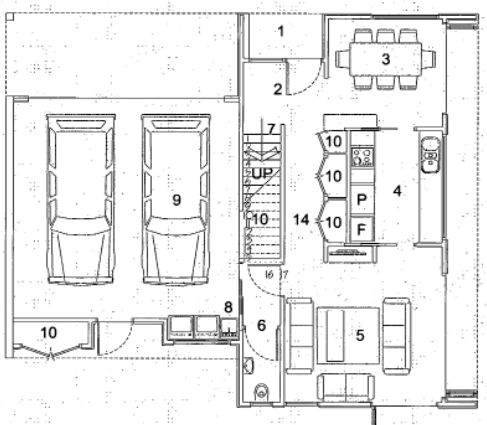
Babbage CONSULTANTS 42608

WEST COAST RD HOUSING DEVELOPMENT

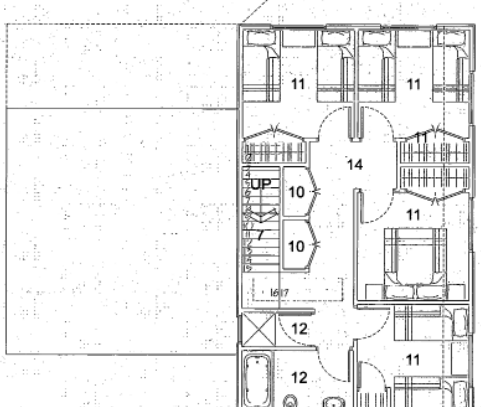
TYPE 3 HOUSE - 3 BEDROOM / SINGLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
A105

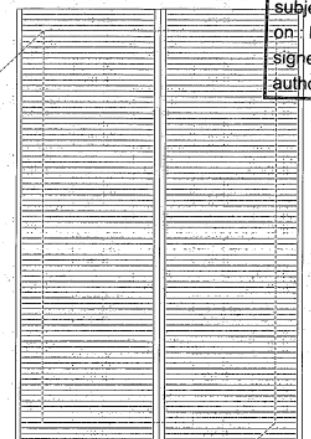
APPROVED
subject to conditions endorsed
on: RMA 20061079/1078
signed: _____ date: 15/6/06
authorised officer



GROUND FLOOR PLAN

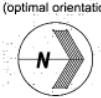


UPPER FLOOR PLAN



ROOF PLAN

(optimal orientation)



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 4A HOUSE - 4 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A106

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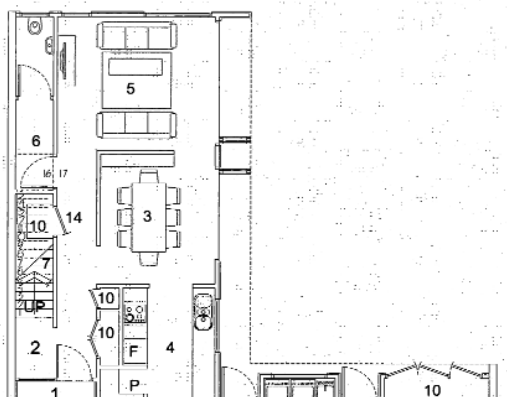
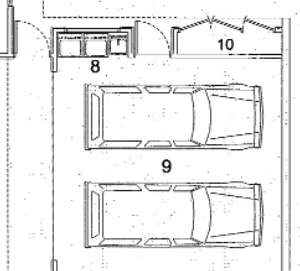
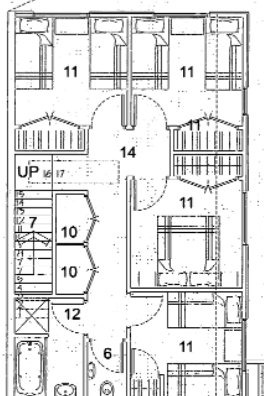
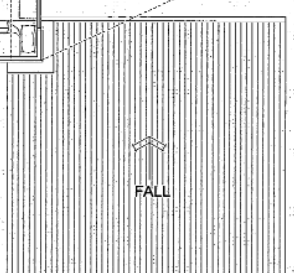


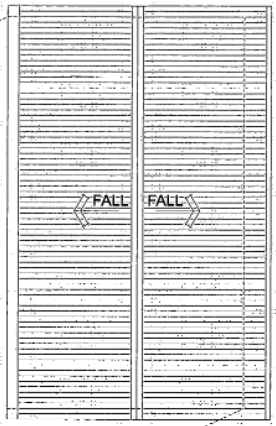
GROUND FLOOR PLAN





UPPER FLOOR PLAN





ROOF PLAN

(optimal orientation)

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 107E
signed: _____ date: 15/6/07
authorised officer

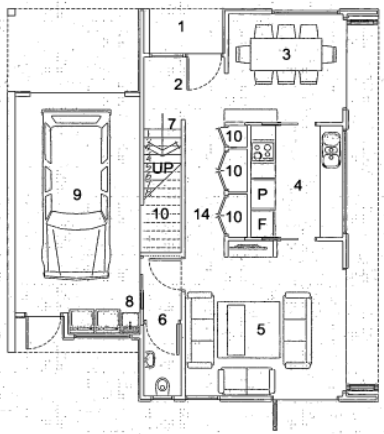
Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

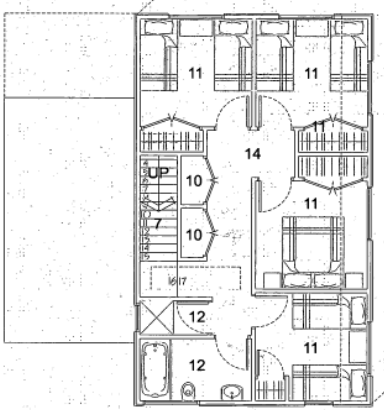
TYPE 4B HOUSE - 4 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A107

6/23/2006 10:46:59 AM s:\dgn\42600\s\42608 - west coast rd\sketch\sheet\A107_4B.dgn



GROUND FLOOR PLAN



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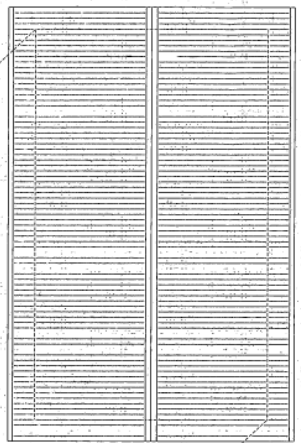

ROOF PLAN

(optimal orientaion)

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

APPROVED
subject to conditions endorsed
on : RMA20061077| 1078
signed: _____ date: 17/11/06
authorised officer

Babbage CONSULTANTS

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 4C HOUSE - 4 BEDROOM / SINGLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
PLAN NO.
A108

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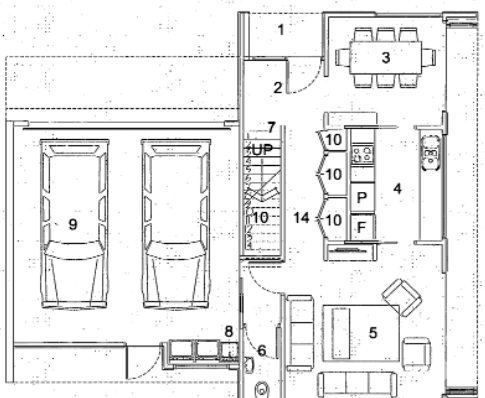
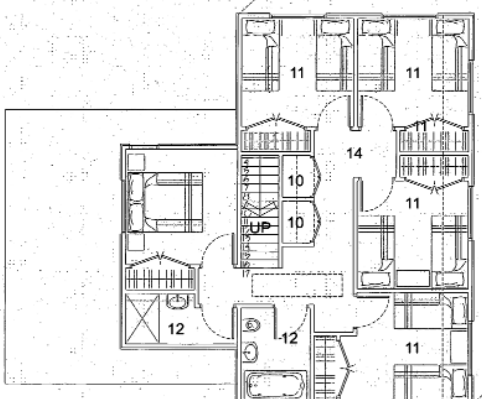
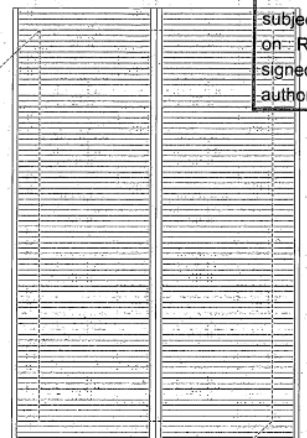
APPROVED
subject to conditions endorsed
on: RMA 20061077 | 107K
signed: [signature] date: 9/10/08
authorised officer



GROUND FLOOR PLAN

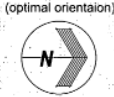


UPPER FLOOR PLAN



ROOF PLAN

(optimal orientaion)



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5A HOUSE - 5 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
H.JUN.2008
A109

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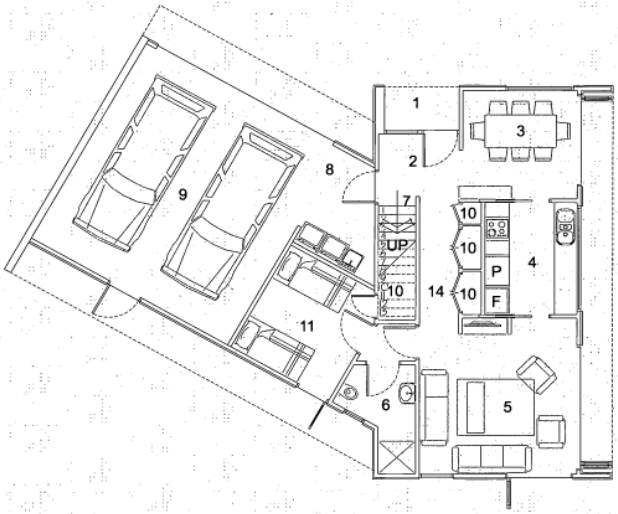
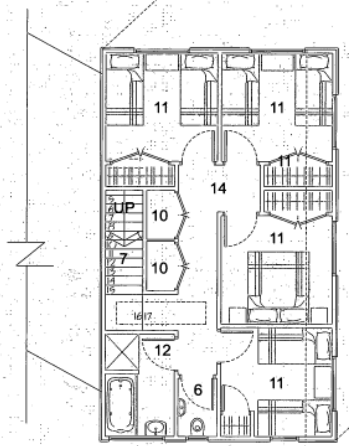
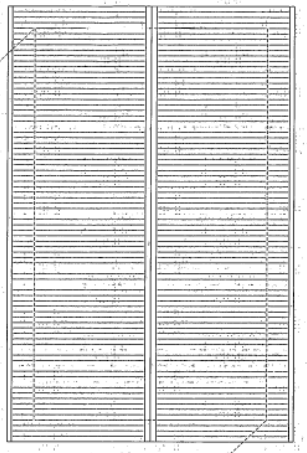


GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN

(optimal orientation)

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

APPROVED
subject to conditions endorsed
on : RMA20061077/1078
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A110

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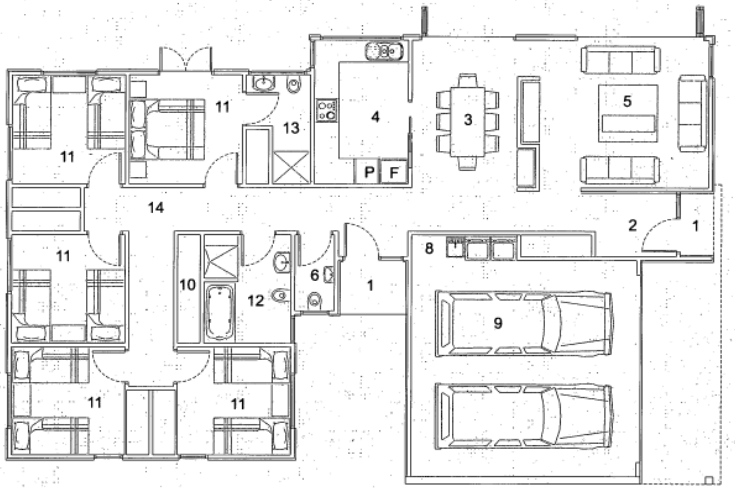
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: [signature] date: 19/10/06
authorised officer

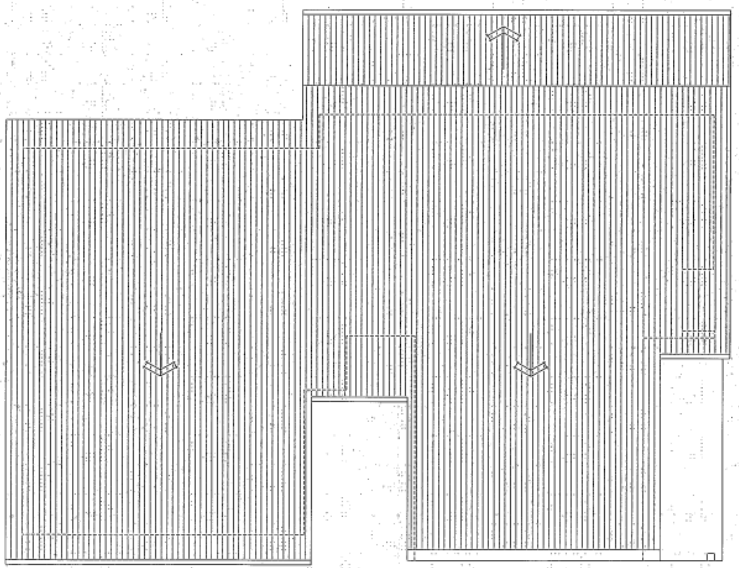
N



FLOOR PLAN

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway



ROOF PLAN

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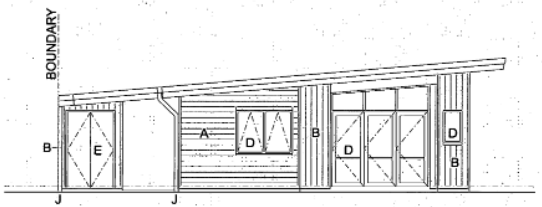
WEST COAST RD HOUSING DEVELOPMENT

TYPE 5C HOUSE - 5 BEDROOM / DOUBLE GARAGE

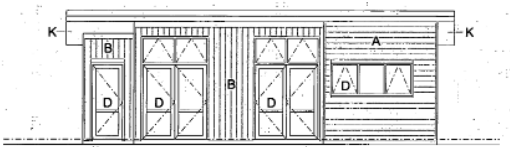
FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
11 JUN 2006
A111

6/23/2006 2:54:58 PM S:\dgn\42600's\42608 - West Coast Rd\SKETCH\SHEETs\A111_5C.dgn

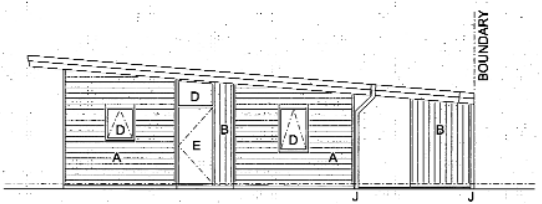
APPROVED
subject to conditions endorsed
on : RMA 20061077 / 1078
signed: [signature] date: 17/10/07
authorised officer



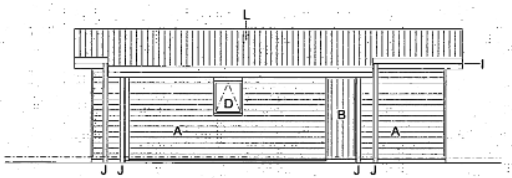
EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

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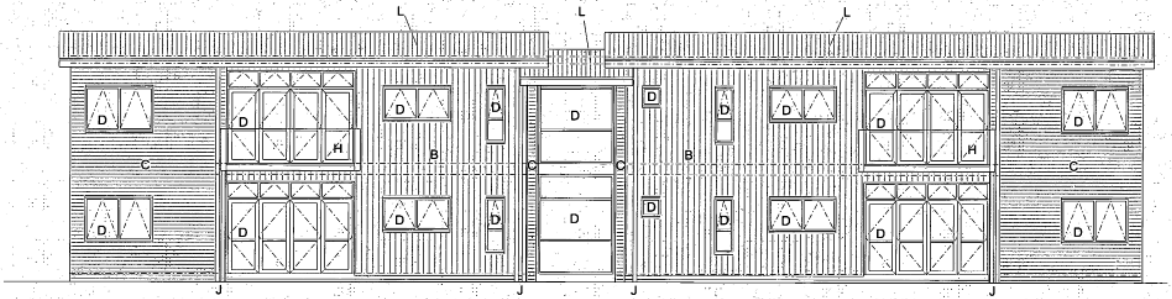
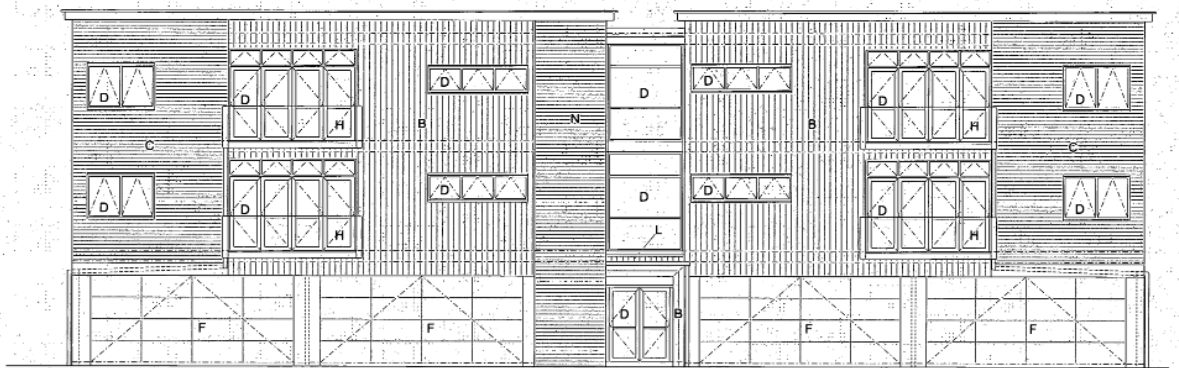
42608

WEST COAST RD HOUSING DEVELOPMENT
TYPE 1 HOUSE - 2 BEDROOM SENIOR / CARPORT

ELEVATIONS
scale @A1 1:100
scale @A3 1:200
MARK 2006
A201



WEST ELEVATION



EAST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall

APPROVED
subject to conditions endorsed
on : RMA 2006 1077 | 1078
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

ELEVATIONS
scale @A1 1:100
scale @A3 1:200
10 JUN 2006
A202-1

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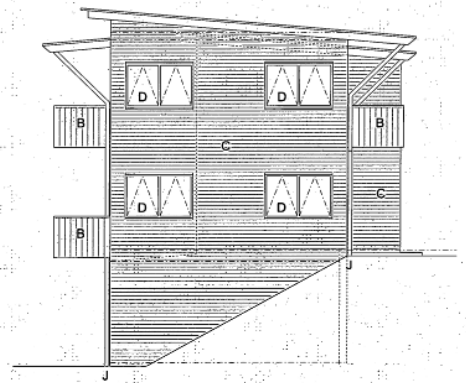
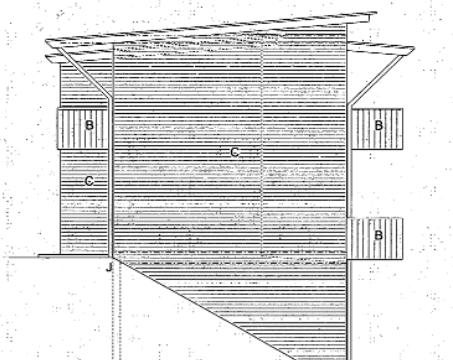


NORTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT
TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
H.JUN.2006
A202-2

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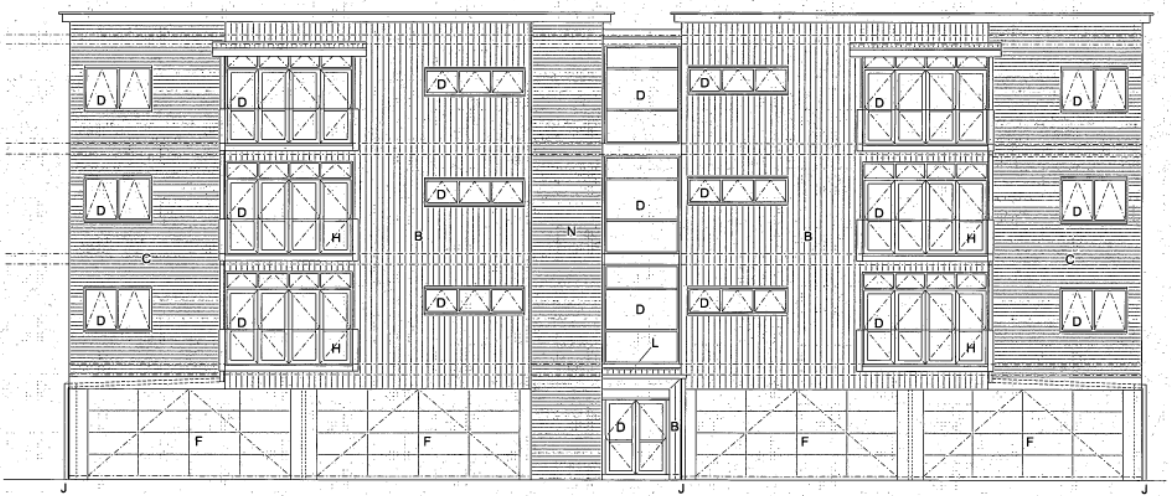

EAST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061079 | 1078
signed: _____ date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

ELEVATIONS
scale @A1 1:100
scale @A3 1:50
14 JUN 2006
A203-1

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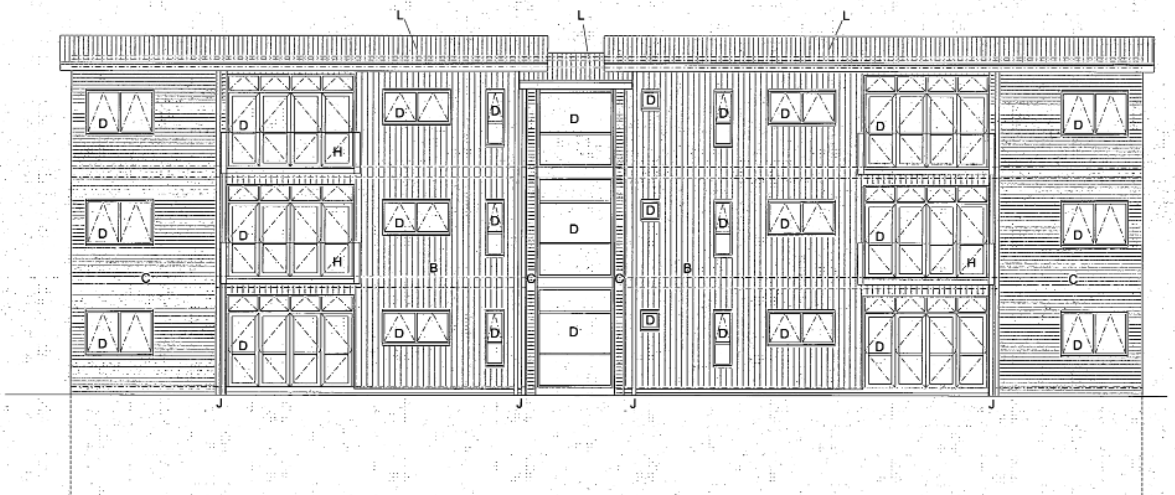

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20021077 | 10776
signed: [signature] date: 17/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A203-2

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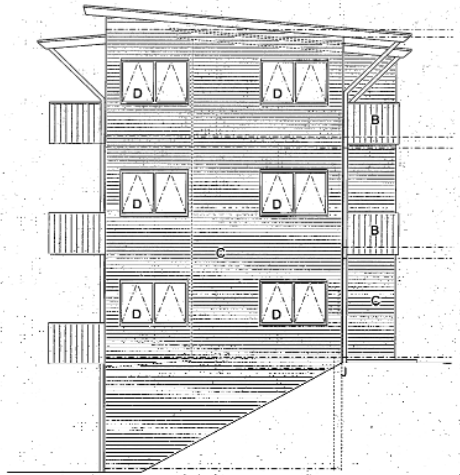
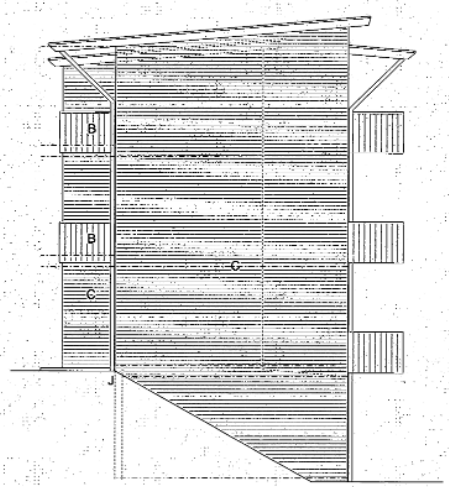


NORTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: [signature] date: 17/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A203-3

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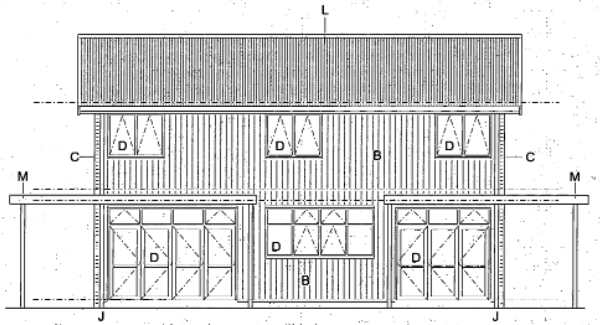
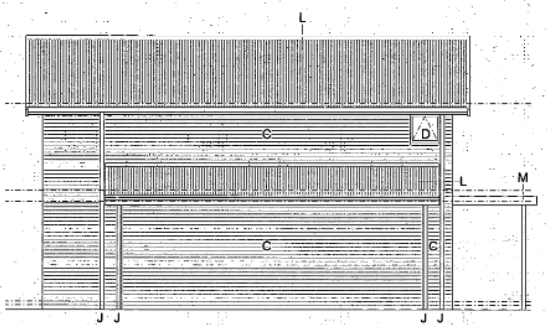
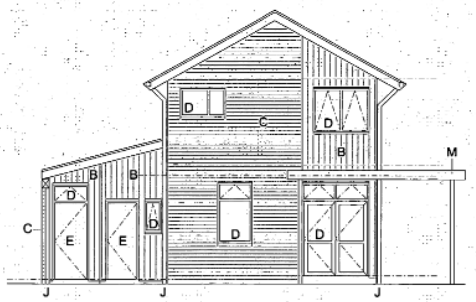


NORTH ELEVATION

WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

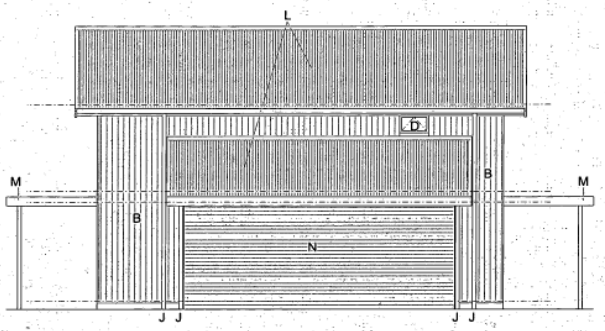
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 7/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT
TYPE 3 HOUSE - 3 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A205

6/23/2006 10:47:59 AM s:\dgn\42600\s\42608 - west coast rd\sketch\sheet\A205_3.dgn



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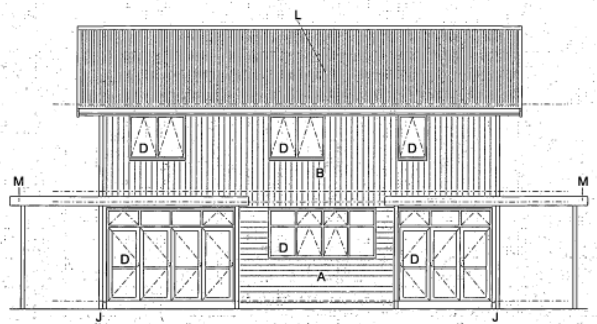

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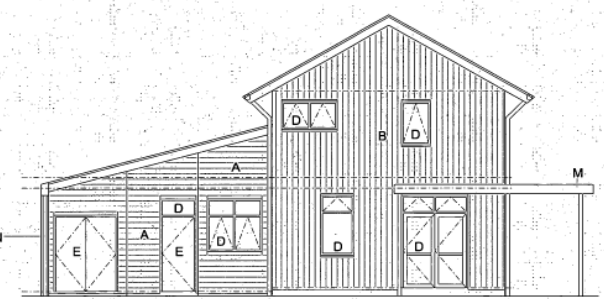

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 2006 1077 | 1077
signed: [signature] date: 9/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 4A HOUSE - 4 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A206

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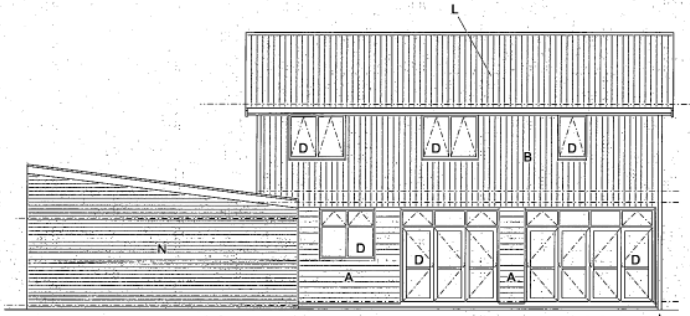

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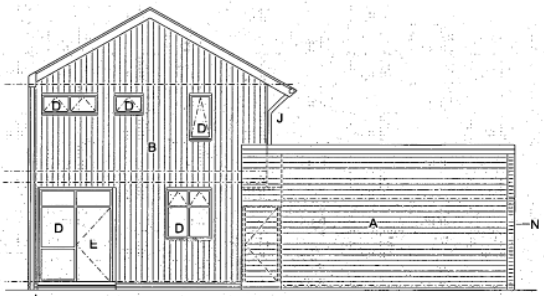

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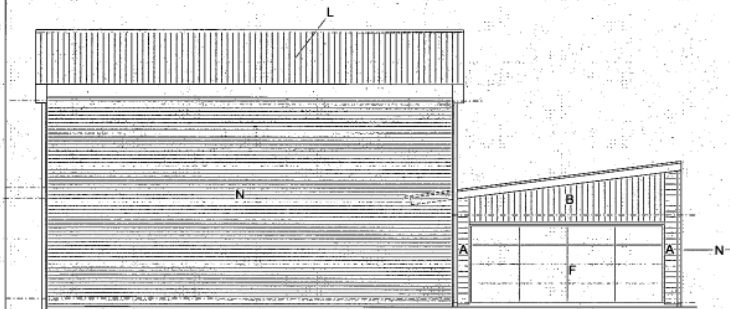


SOUTH ELEVATION

WEST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

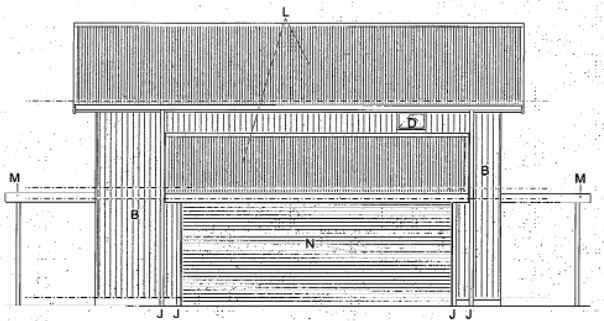
APPROVED
subject to conditions endorsed
on : RMA 20061077 / 10 7E
signed: _____ date: 9/10/08
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 4B HOUSE - 4 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A207



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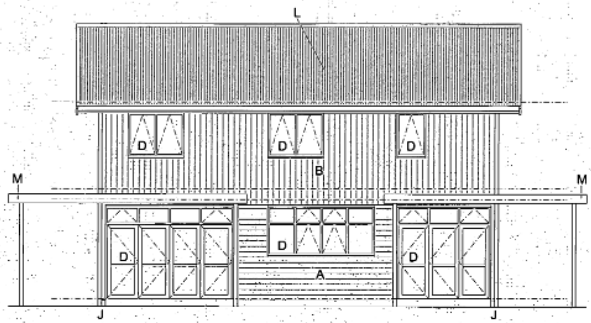
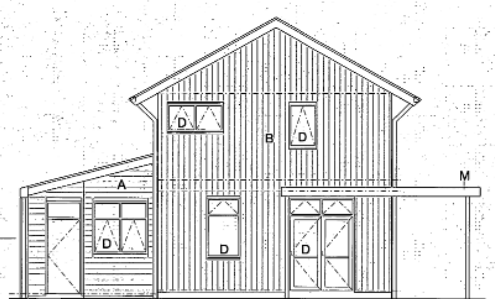


NORTH ELEVATION



ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 10.98
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 4C HOUSE - 4 BEDROOM / DOUBLE GARAGE

ELEVATIONS
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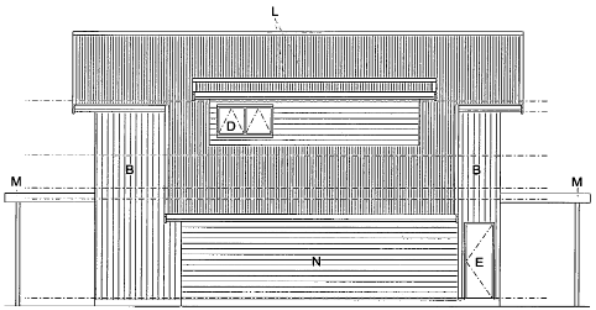
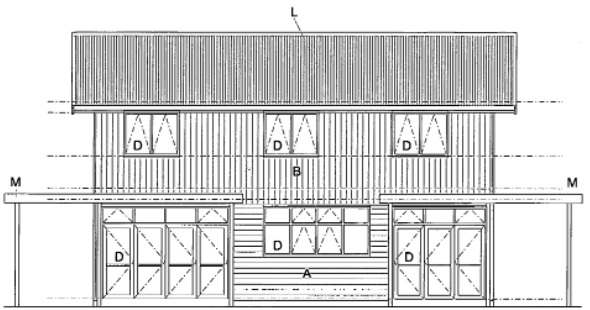
scale @A1 1:50
14 Jun 2006
A208



SOUTH ELEVATION



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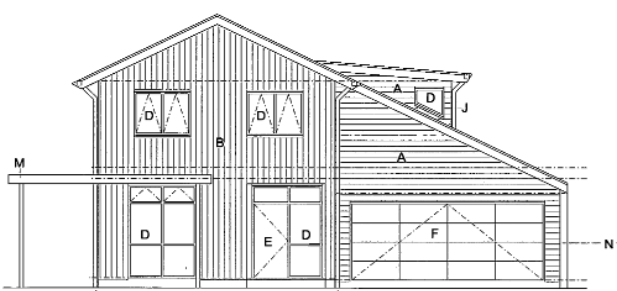
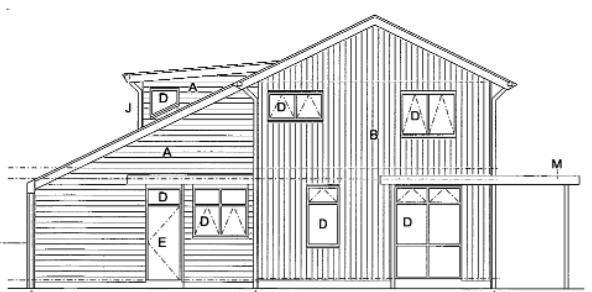


WEST ELEVATION



EAST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 / 1078
signed: [signature] date: 19/10/06
authorised officer

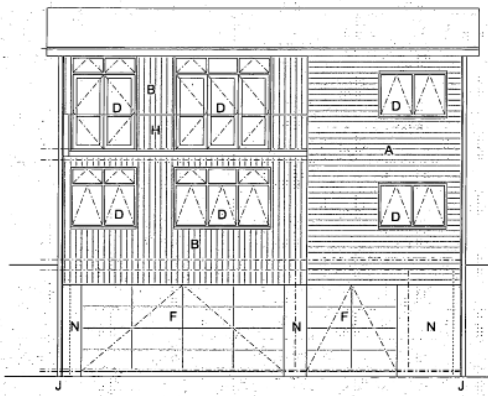
Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

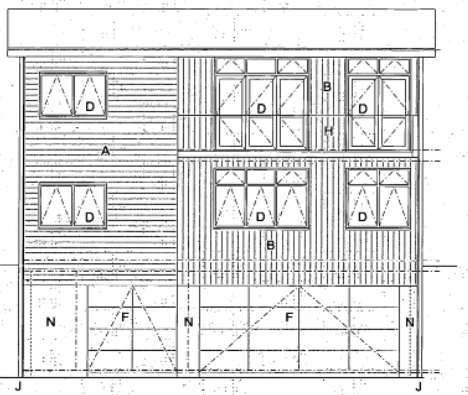
TYPE 5A HOUSE - 5 BEDROOM / DOUBLE GARAGE

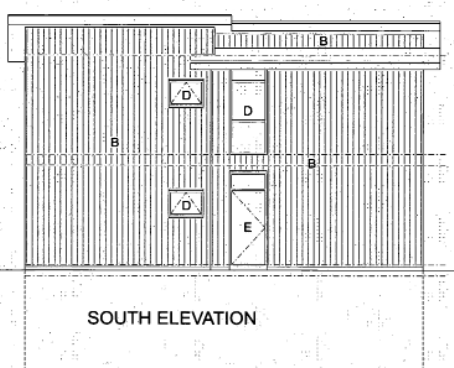
ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A209

6/23/2006 10:48:18 AM s:\dgn\42600's\42608 - west coast rd\sketch\sheet\A208_5A.dgn

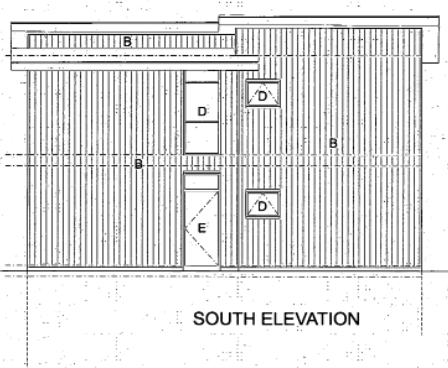


NORTH ELEVATION





SOUTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20060077 | 1075
signed: _____ date: 7/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / SEPARATE CARPORT

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A204-1

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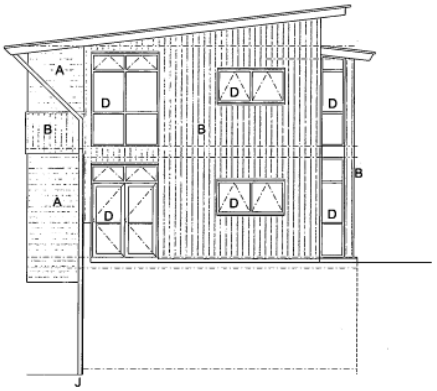
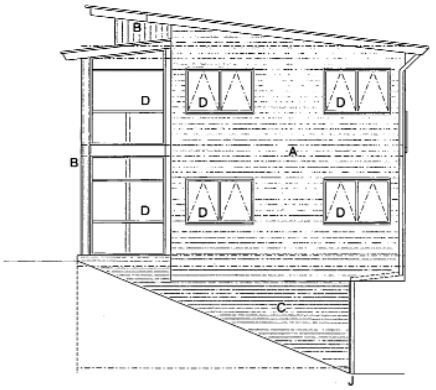


WEST ELEVATION



EAST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

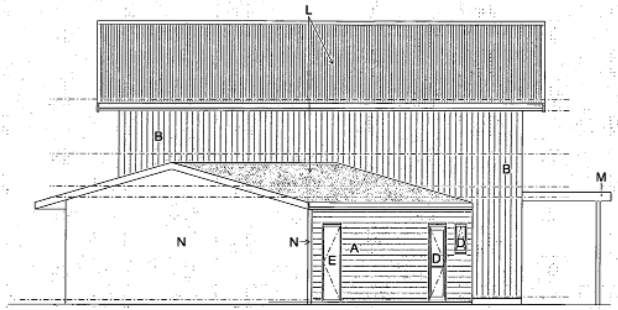
APPROVED
subject to conditions endorsed
on : RMA 20061077 [109K
signed: _____ date: 17/10/06
authorised officer

Babbage CONSULTANTS
42608

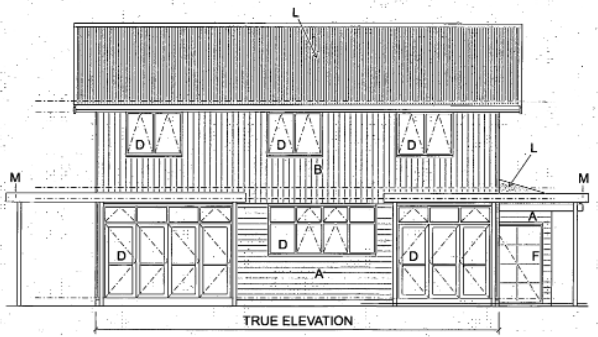
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / SEPARATE CARPORT

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A204-2



SOUTH ELEVATION



NORTH ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: _____ date: 7/10/06
authorised officer

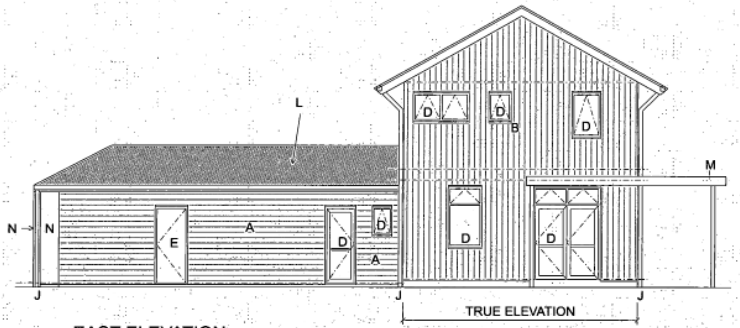
Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

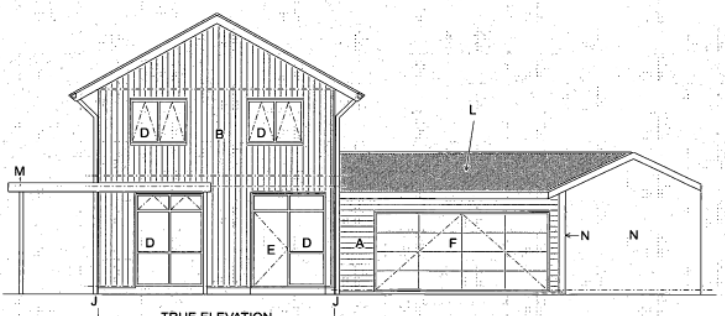
TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A210-1

6/23/2006 10:48:23 AM x:\dgn\42600's\42608 - west coast rd\sketch\sheet\A210-1_5B.dgn



EAST ELEVATION



WEST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: [signature] date: 17th Oct
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS
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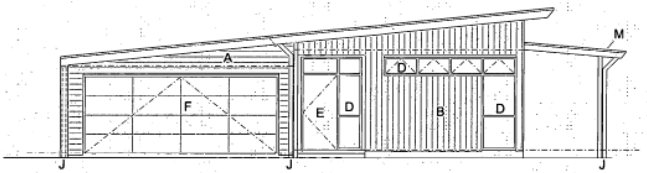
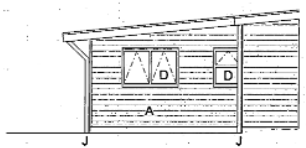
scale @A1 1:50
14 JUN 2006
A210-2

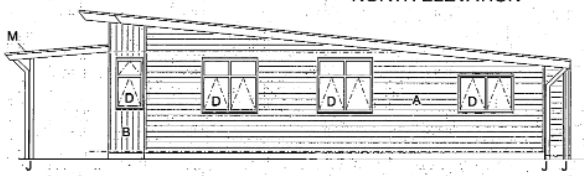
6/23/2006 10:48:26 AM s:\dgn\42600\s\42608 - west coast rd\sketch\sheet\A210-2_5B.dgn



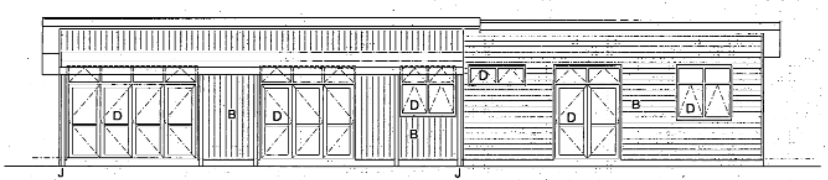
NORTH ELEVATION



NORTH ELEVATION (COURTYARD)



SOUTH ELEVATION



WEST ELEVATION

ELEVATION KEY

A	Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
B	Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
C	Architectural masonry veneer.
D	Powder coated aluminium window joinery.
E	Solid core exterior door in aluminium frame. Paint finish.
F	Timber sectional overhead garage door. Paint finish.
G	Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
H	Glazed-front balconies. Powder coated aluminium fixings.
I	Colorsteel gutter and fascia
J	UPVC down pipe. Paint finish
K	Fibre cement panel soffit. Paint finish.
L	Longrun colorsteel roof, corrugate profile
M	Optional timber pergola. Paint finish.
N	Solid masonry wall.

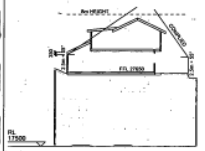
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5C HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A211-1



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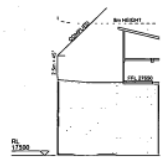

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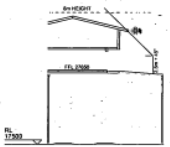

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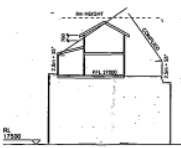
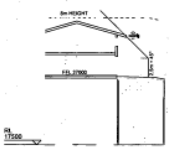


4 A304 LOT 02 - North & South 1 : 500

5 A304 LOT 02 - East 1 : 500



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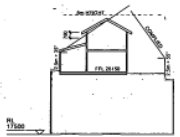
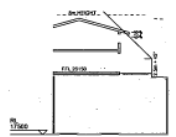


7 A304 LOT 03 - North & South 1 : 500

8 A304 LOT 03 - East 1 : 500



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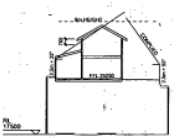

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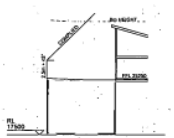

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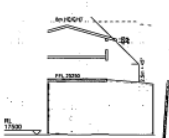
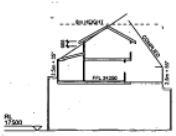


12 A304 LOT 04 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: [signature] date: 19/10/06
authorised officer



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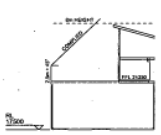

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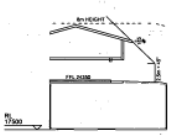

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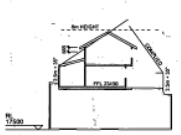

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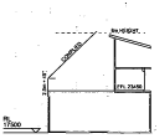

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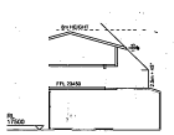

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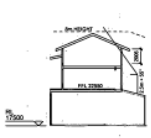

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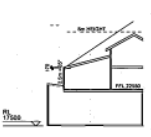

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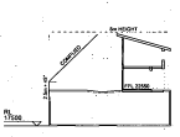

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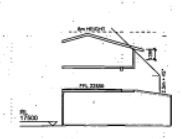


22 A304 LOT 07 - West 1 : 500

Babbage CONSULTANTS

scale @ a1 1 : 500

42608

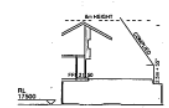
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

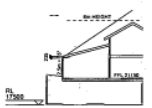
SECTIONS STAGE 1A

06/02/06

rev. A304



1 A305 LOT 08 - North 1 : 500



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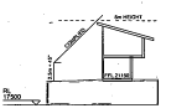

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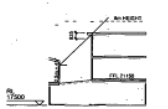

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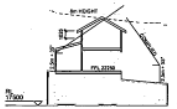

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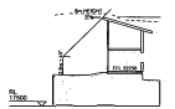
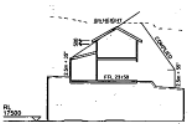


6 A305 LOT 09 - East 1 : 500

7 A305 LOT 09 - West 1 : 500



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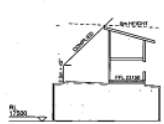
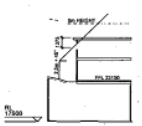
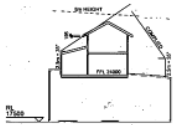


9 A305 LOT 10 - East 1 : 500



10 A305 LOT 10 - West 1 : 500



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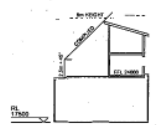
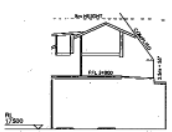


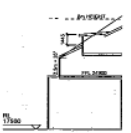
12 A305 LOT 11 - East 1 : 500

13 A305 LOT 11 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA20061077 | 1078
signed: [signature] date: 9/10/06
authorised officer



14 A305 LOT 12 - North 1 : 500



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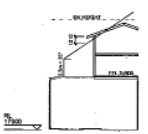
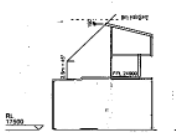
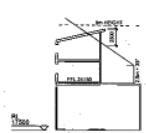


16 A305 LOT 12 - South 2 1 : 500

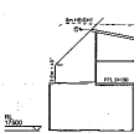


17 A305 LOT 12 - East 1 : 500

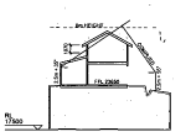
18 A305 LOT 13 - North & South 1 1 : 500



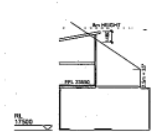
19 A305 LOT 13 - South 2 1 : 500



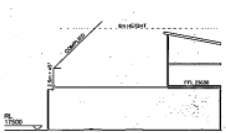
20 A305 LOT 13 - East 1 : 500



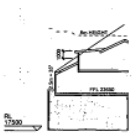
21 A305 LOT 14 - North & South 1 1 : 500



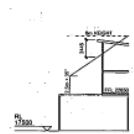
22 A305 LOT 14 - South 2 1 : 500



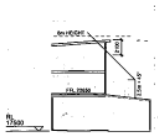
23 A305 LOT 14 - East 1 : 500



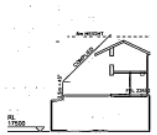
24 A305 LOT 15 - South 1 1 : 500



25 A305 LOT 15 - South 2 1 : 500



26 A305 LOT 15 - East 1 : 500



27 A305 LOT 15 - West 1 : 500

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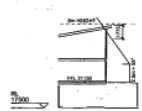
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTIONS STAGE 1B

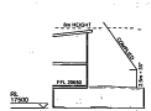
06/02/06
rev. A305



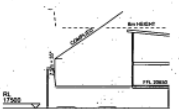
1 A306 LOT 16 - North 1 : 500

2 A306 LOT 16 - South 1 : 500

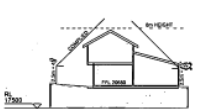
3 A306 LOT 16 - East & West 1 : 500



4 A306 LOT 17 - North 1 : 500



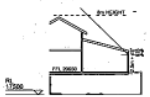
5 A306 LOT 17 - South 1 : 500



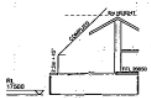
6 A306 LOT 17 - East & West 1 : 500

7 A306 LOT 18 - North 1 : 500

8 A306 LOT 18 - South 1 : 500



9 A306 LOT 18 - East 1 : 500



10 A306 LOT 18 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 17/10/06
authorised officer

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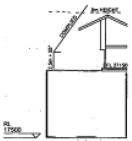
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

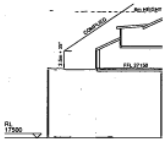
SECTIONS STAGE 1B

06/02/06
rev. A306

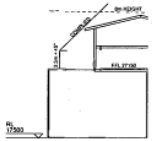
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: [signature] date: 19/10/06
authorised officer



1 A307 LOT 26 - North 1 : 500

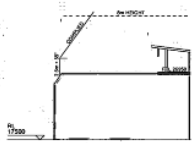


2 A307 LOT 26 - South 1 : 500

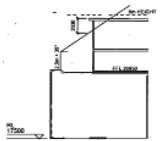


3 A307 LOT 26 - East 1 : 500

4 A307 LOT 26 - West 1 : 500



5 A307 LOT 27 - North 1 : 500



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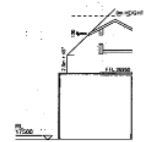
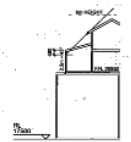
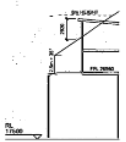


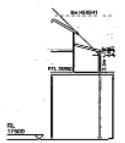
7 A307 LOT 27 - East 1 : 500



8 A307 LOT 27 - West 1 : 500



9 A307 LOT 28 - South 1 : 500



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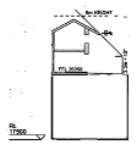

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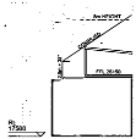
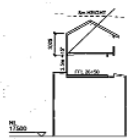
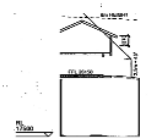


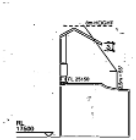
12 A307 LOT 29 - South 1 : 500



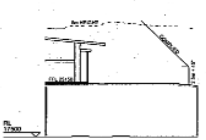
13 A307 LOT 29 - East 1 : 500



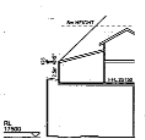
14 A307 LOT 29 - West 1 : 500



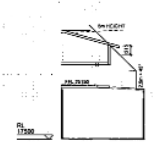
15 A307 LOT 30 - North 1 : 500



16 A307 LOT 30 - East 1 1 : 500

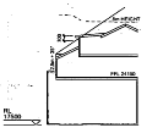


17 A307 LOT 30 - East 2 1 : 500

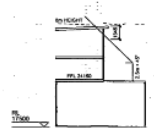


18 A307 LOT 30 - West 1 : 500

19 A307 LOT 31 - North 1 : 500



20 A307 LOT 31 - South 1 : 500



21 A307 LOT 31 - East 1 : 500

22 A307 LOT 31 - West 1 : 500

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WEST COAST ROAD HOUSING DEVELOPMENT

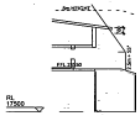
BULK & LOCATION STUDY

SECTIONS STAGE 1C

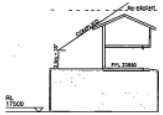
06 JUN 2006

rev. A307

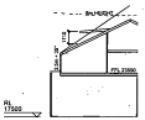
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: _____ date: 19/10/06
authorised officer



1 A308 LOT 32 - North
1 : 500

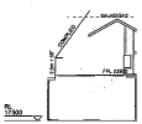


2 A308 LOT 32 - South 1
1 : 500

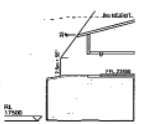


3 A308 LOT 32 - South 2
1 : 500

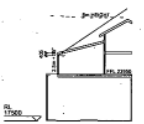
4 A308 LOT 32 - West
1 : 500



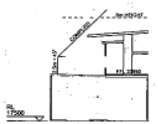
5 A308 LOT 33 - North 1
1 : 500



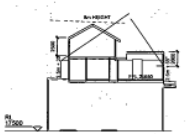
6 A308 LOT 33 - North 2
1 : 500



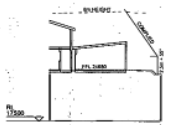
7 A308 LOT 33 - South
1 : 500



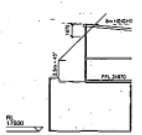
8 A308 LOT 33 - West
1 : 500



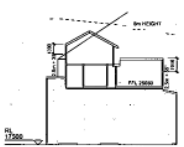
9 A308 LOT 34 - North 1 & South
1 : 500



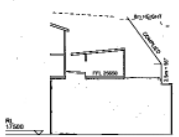
10 A308 LOT 34 - North 2
1 : 500



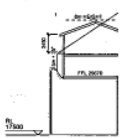
11 A308 LOT 34 - West
1 : 500



12 A308 LOT 35 - North 1 & South 1
1 : 500



13 A308 LOT 35 - North 2
1 : 500



14 A308 LOT 35 - South 2
1 : 500

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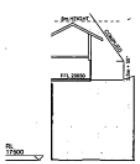
WEST COAST ROAD HOUSING DEVELOPMENT

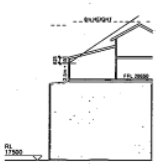
BULK & LOCATION STUDY

SECTIONS STAGE 1C

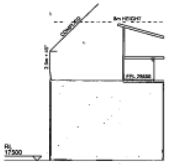
06/06/06
rev. A308



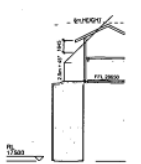
1 A309 LOT 19 - North 1 : 500



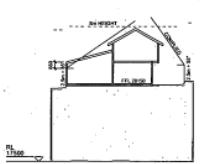
2 A309 LOT 19 - South 1 : 500



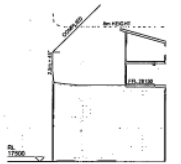
3 A309 LOT 19 - East 1 : 500



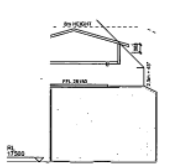
4 A309 LOT 19 -West 1 : 500



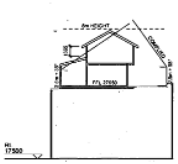
5 A309 LOT 20 - North & South 1 : 500



6 A309 LOT 20 - East 1 : 500

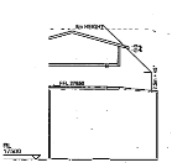


7 A309 LOT 20 - West 1 : 500

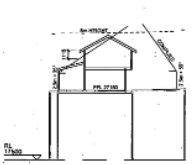


8 A309 LOT 21 - North & South 1 : 500

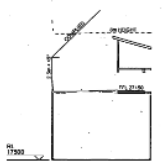
9 A309 LOT 21 - East 1 : 500



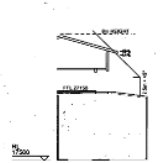
10 A309 LOT 21 - West 1 : 500



11 A309 LOT 22 - North & South 1 : 500



12 A309 LOT 22 - East 1 : 500



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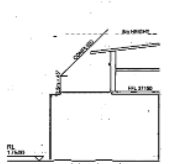
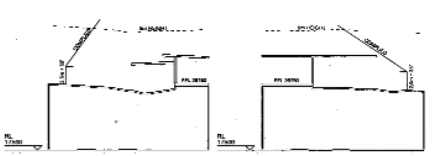
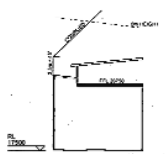


14 A309 LOT 22 - West 2 1 : 500

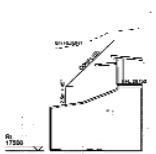


15 A309 LOT 23 - North 1 : 500

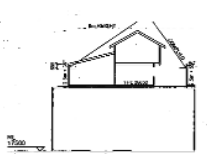
16 A309 LOT 23 - South 1 : 500



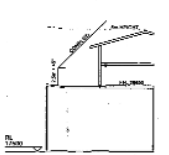
17 A309 LOT 23 - East 1 : 500



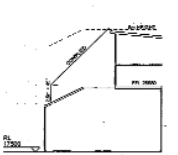
18 A309 LOT 23 - West 1 : 500



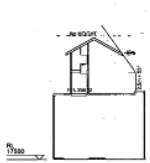
19 A309 LOT 24 - North & South 1 : 500



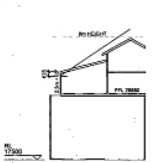
20 A309 LOT 24 - East 1 : 500



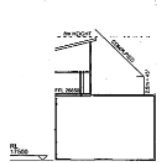
21 A309 LOT 24 - West 1 : 500



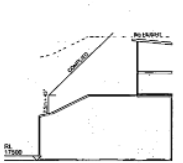
22 A309 LOT 25 - North 1 : 500



23 A309 LOT 25 - South 1 : 500



24 A309 LOT 25 - East 1 : 500



25 A309 LOT 25 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1098
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS

42608

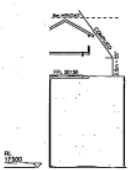
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTIONS STAGE 1D

06 JUN 2006

rev. A309



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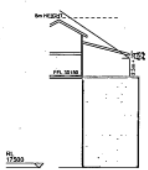
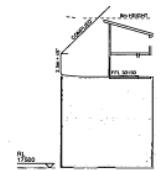
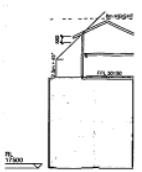


2 A310 LOT 36 - South 1 : 500



3 A310 LOT 36 - East 1 : 500



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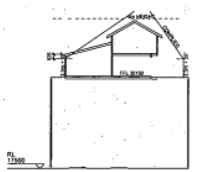
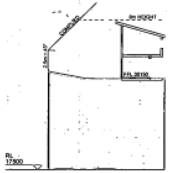


5 A310 LOT 37 - North & South 1 : 500



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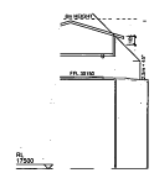
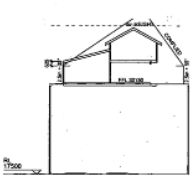
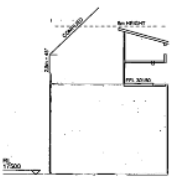


7 A310 LOT 37 - West 1 : 500



8 A310 LOT 38 - North & South 1 : 500



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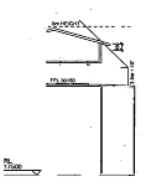

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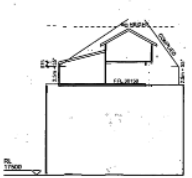

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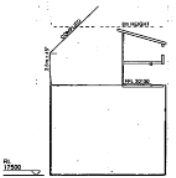

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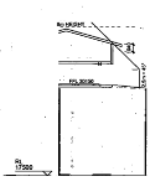
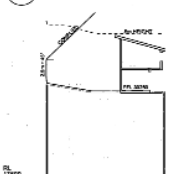


13 A310 LOT 39 - West 1 : 500

14 A310 LOT 40 - North & South 1 : 500



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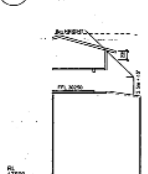
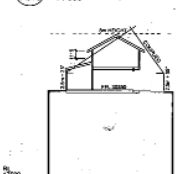
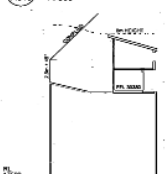


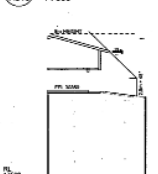
16 A310 LOT 40 - West 1 : 500



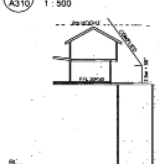
17 A310 LOT 41 - North & South 1 : 500



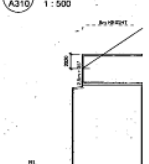
18 A310 LOT 41 - East 1 : 500



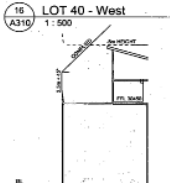
19 A310 LOT 41 - West 1 : 500



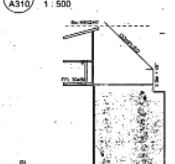
23 A310 LOT 42 - North 1 : 500



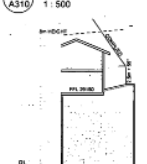
24 A310 LOT 42 - South 1 : 500



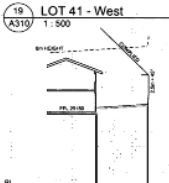
25 A310 LOT 42 - East 1 : 500



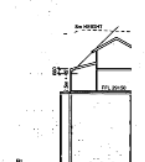
26 A310 LOT 42 - West 1 : 500



20 A310 LOT 43 - North 1 : 500



21 A310 LOT 43 - East 1 : 500



22 A310 LOT 43 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS

42608

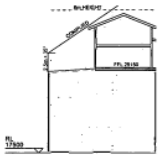
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

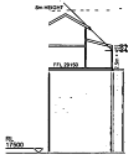
SECTIONS STAGE 2A

06 JUN 2006

rev. A310



1 A311 LOT 44 - South 1 : 500



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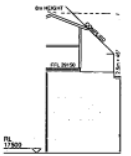
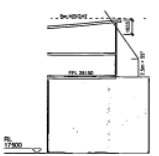
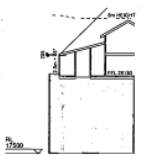


3 A311 LOT 44 - West 1 : 500

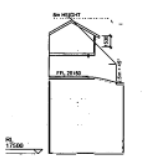


4 A311 LOT 45 - North 1 : 500

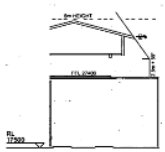
5 A311 LOT 45 - South 1 : 500



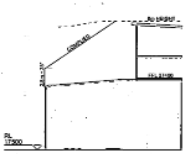
6 A311 LOT 45 - East 1 : 500



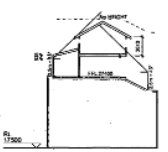
7 A311 LOT 45 - West 1 : 500



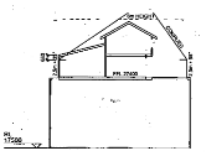
8 A311 LOT 46 - North 1 : 500



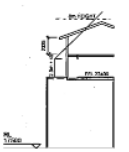
9 A311 LOT 46 - South 1 : 500



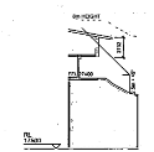
10 A311 LOT 46 - East & West 1 : 500



11 A311 LOT 47 - North & South 1 : 500

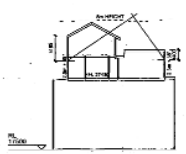


12 A311 LOT 47 - East 1 : 500

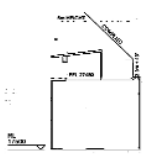


13 A311 LOT 47 - West 1 : 500

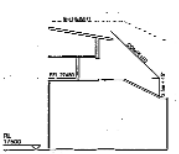
APPROVED
subject to conditions endorsed
on : RMA20061077 | 1078
signed: _____ date: 19/10/06
authorised officer



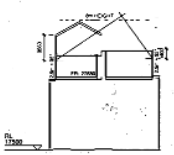
14 A311 LOT 48 - North & South 1 : 500



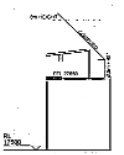
15 A311 LOT 48 - East 1 : 500



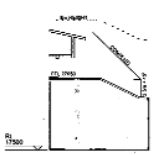
16 A311 LOT 48 - West 1 : 500



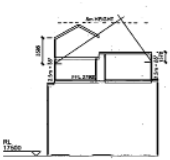
17 A311 LOT 49 - North & South 1 : 500



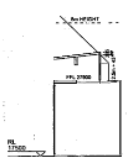
18 A311 LOT 49 - East 1 : 500



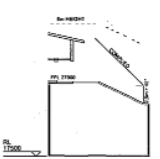
19 A311 LOT 49 - West 1 : 500



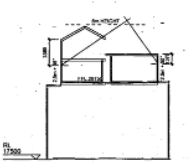
20 A311 LOT 50 - North & South 1 : 500



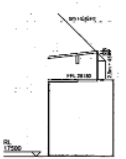
21 A311 LOT 50 - East 1 : 500



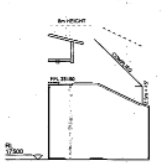
22 A311 LOT 50 - West 1 : 500



23 A311 LOT 51 - North & South 1 : 500



24 A311 LOT 51 - East 1 : 500



25 A311 LOT 51 - West 1 : 500

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42608

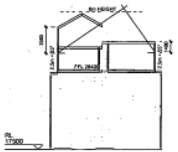
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

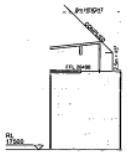
SECTIONS STAGE 2A & 2B

06/06/06

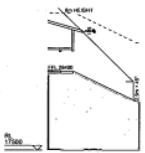
rev. A311



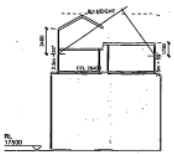
1 A312 LOT 52 - North & South 1 : 500



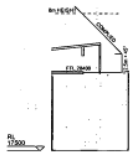
2 A312 LOT 52 - East 1 : 500



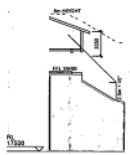
3 A312 LOT 52 - West 1 : 500



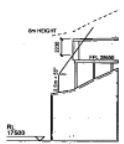
4 A312 LOT 53 - North & South 1 : 500



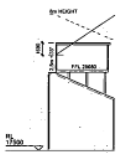
5 A312 LOT 53 - East 1 : 500



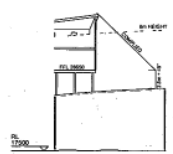
6 A312 LOT 53 - West 1 : 500



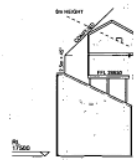
7 A312 LOT 54 - North 1 : 500



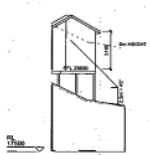
8 A312 LOT 54 - South 1 : 500



9 A312 LOT 54 - East 1 1 : 500

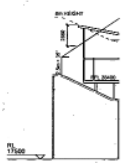


10 A312 LOT 54 - East 2 1 : 500

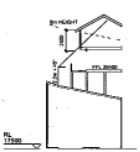


11 A312 LOT 54 - West 1 : 500

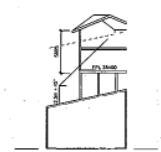
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 19/6/06
authorised officer



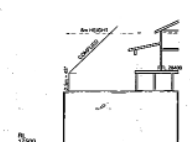
13 A312 LOT 55 - South 1 : 500



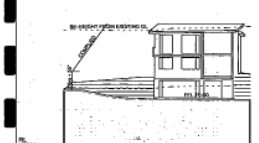
14 A312 LOT 55 - East 1 : 500



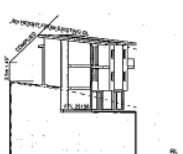
12 A312 LOT 55 - West 1 1 : 500



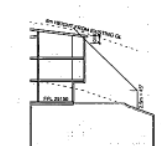
15 A312 LOT 55 - West 2 1 : 500



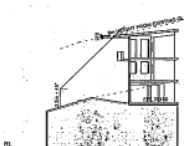
16 A312 LOT 56 - North 1 : 500



17 A312 LOT 56 - East 1 : 500



18 A312 LOT 56 - West 1 1 : 500



19 A312 LOT 56 - West 2 1 : 500

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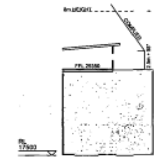
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

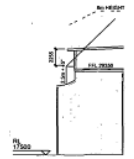
SECTIONS STAGE 2B

06/06/06

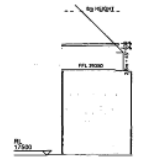
rev. A312



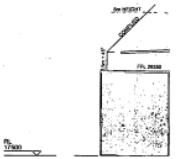
1 A313 LOT 57 - North 1 : 500



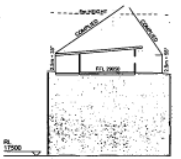
2 A313 LOT 57 - East 1 : 500



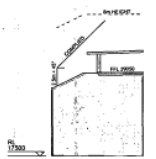
3 A313 LOT 57 - West 1 1 : 500



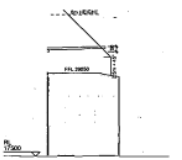
4 A313 LOT 57 - West 2 1 : 500



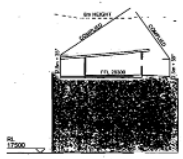
5 A313 LOT 58 - North & South 1 : 500



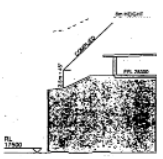
6 A313 LOT 58 - East 1 : 500



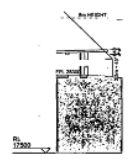
7 A313 LOT 58 - West 1 : 500



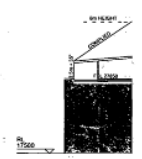
8 A313 LOT 59 - North & South 1 : 500



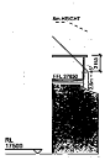
9 A313 LOT 59 - East 1 : 500



10 A313 LOT 59 - West 1 : 500



11 A313 LOT 60 - South 1 : 500



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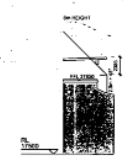
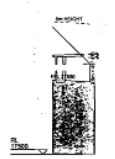
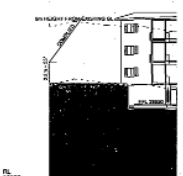


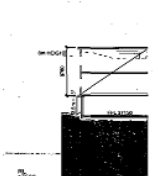
13 A313 LOT 60 - East 2 1 : 500



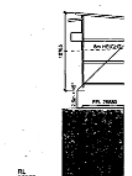
14 A313 LOT 60 - West 1 : 500



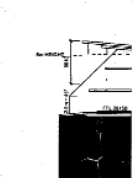
15 A313 LOT 61 - North 1 : 500



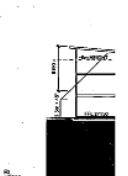
16 A313 LOT 61 - South 1 : 500



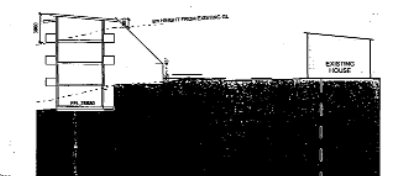
17 A313 LOT 61 - East 1 1 : 500



18 A313 LOT 61 - East 2 1 : 500

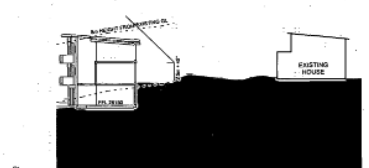


19 A313 LOT 61 - East 3 1 : 500

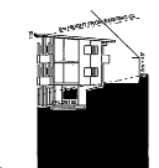


20 A313 LOT 61 - West 1 1 : 500

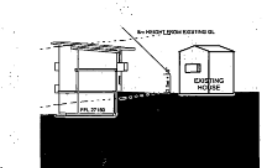
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 10 78
signed: [signature] date: 17/10/06
authorised officer



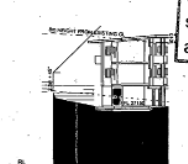
22 A313 LOT 61 - West 3 1 : 500



21 A313 LOT 61 - West 2 1 : 500



23 A313 LOT 61 - West 4 1 : 500



24 A313 LOT 61 - West 5 1 : 500

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WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTION STAGE 3

06/15/06 rev. A313

STAGE 1A

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 01	415 m²	109 m²	26.3%	209 m²	50.4%
LOT 02	380 m²	86 m²	22.6%	154 m²	40.5%
LOT 03	380 m²	86 m²	22.6%	154 m²	40.5%
LOT 04	380 m²	86 m²	30.5%	154 m²	40.5%
LOT 05	380 m²	92 m²	23.9%	164 m²	43.2%
LOT 06	380 m²	92 m²	24.2%	164 m²	43.2%
LOT 07	381 m²	109 m²	28.6%	199 m²	52.2%

STAGE 1B

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 08	403 m²	109 m²	27.0%	176 m²	43.7%
LOT 09	402 m²	86 m²	21.4%	143 m²	35.6%
LOT 10	388 m²	86 m²	22.2%	143 m²	36.9%
LOT 11	353 m²	86 m²	24.4%	143 m²	40.5%
LOT 12	374 m²	109 m²	29.1%	171 m²	45.7%
LOT 13	350 m²	86 m²	24.6%	140 m²	40.0%
LOT 14	433 m²	86 m²	19.9%	149 m²	34.4%
LOT 15	363 m²	109 m²	30.0%	176 m²	48.5%
LOT 16	395 m²	109 m²	27.6%	186 m²	47.1%
LOT 17	475 m²	109 m²	22.9%	203 m²	42.9%
LOT 18	353 m²	109 m²	30.9%	191 m²	54.1%

STAGE 1C

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 26	451 m²	109 m²	24.2%	172 m²	38.1%
LOT 27	354 m²	86 m²	24.3%	139 m²	39.3%
LOT 28	413 m²	86 m²	20.8%	139 m²	33.7%
LOT 29	412 m²	114 m²	27.7%	217 m²	52.7%
LOT 30	438 m²	109 m²	24.8%	203 m²	46.3%
LOT 31	371 m²	109 m²	29.4%	217 m²	58.5%
LOT 32	349 m²	109 m²	31.2%	193 m²	55.3%
LOT 33	383 m²	109 m²	28.5%	214 m²	55.9%
LOT 34	411 m²	114 m²	35.0%	239 m²	58.2%
LOT 35	415 m²	114 m²	27.5%	248 m²	59.0%

STAGE 1D

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 19	405 m²	109 m²	26.9%	201 m²	49.6%
LOT 20	434 m²	109 m²	25.1%	201 m²	46.3%
LOT 21	397 m²	92 m²	23.2%	165 m²	41.6%
LOT 22	405 m²	92 m²	22.7%	157 m²	38.8%
LOT 23	840 m²	191 m²	22.7%	313 m²	37.3%
LOT 24	404 m²	109 m²	27.0%	186 m²	46.0%
LOT 25	506 m²	109 m²	21.5%	209 m²	41.3%

STAGE 2A

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 36	457 m²	109 m²	23.9%	223 m²	48.8%
LOT 37	426 m²	109 m²	25.6%	205 m²	48.1%
LOT 38	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 39	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 40	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 41	370 m²	92 m²	24.9%	173 m²	46.8%
LOT 42	431 m²	126 m²	29.2%	229 m²	53.1%
LOT 43	444 m²	86 m²	19.4%	165 m²	37.2%
LOT 44	459 m²	86 m²	18.7%	165 m²	35.9%
LOT 45	370 m²	109 m²	29.5%	188 m²	50.8%
LOT 46	377 m²	92 m²	24.4%	152 m²	40.3%

APPROVED
subject to conditions endorse
on : RMA 20061077 | 1076
signed: [illegible] date: 19/
authorised officer

STAGE 2B

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 47	372 m²	109 m²	29.3%	168 m²	45.2%
LOT 48	361 m²	114 m²	31.6%	211 m²	58.4%
LOT 49	369 m²	114 m²	30.9%	199 m²	53.9%
LOT 50	363 m²	114 m²	31.4%	192 m²	52.9%
LOT 51	366 m²	114 m²	31.1%	190 m²	51.9%
LOT 52	364 m²	114 m²	31.3%	193 m²	53.0%
LOT 53	354 m²	114 m²	32.2%	199 m²	56.2%
LOT 54	469 m²	114 m²	24.3%	236 m²	50.3%
LOT 55	370 m²	92 m²	24.9%	166 m²	44.9%
LOT 56	1416 m²	177 m²	12.5%	603 m²	42.6%

STAGE 3

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 57	268 m²	81 m²	30.2%	126 m²	47.0%
LOT 58	263 m²	81 m²	30.8%	129 m²	49.0%
LOT 59	273 m²	81 m²	29.7%	131 m²	48.0%
LOT 60	318 m²	81 m²	25.5%	124 m²	39.0%
LOT 61	3743 m²	632 m²	16.9%	2474 m²	66.1%

STAGE 1A, 1B, 1C, 1D, 2A & 2B

SITE AREA	49335 m²	
SUM OFLOT AREA	23828 m²	
SUM OFBUILDING AREA	5926 m²	
SUM OF IMPERMEABLE AREA	10903 m²	
TOTAL IMPERMEABLE AREA (BUILDING COVERAGE + PAVED AREA)	20688 m²	= 41.9% OF SITE AREA

STAGE 3

SITE AREA	7870 m²	
SUM OF LOT AREA	4865 m²	
SUM OF BUILDING AREA	956 m²	
SUM OF IMPERMEABLE AREA	2984 m²	
TOTAL IMPERMEABLE AREA (BUILDING COVERAGE + PAVED AREA)	2984 m²	= 37.9% OF SITE AREA

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WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

AREA SUMMARY

30 MAY 2006

rev. A401

Waitakere City Council
Te Taiao o Waitakere

Waitakere City Council
Waitakere Central
6 Henderson Valley Road
Henderson

Private Bag 93109
Henderson
Waitakere City 0612

Telephone
09 836 8000

24Hr Call Centre
09 839 0400

Facsimile
09 836 8001

DX CX 10250 Auckland Mail Centre
Email: info@waitakere.govt.nz

Website: www.waitakere.govt.nz

30 October 2006

New Zealand Housing Foundation
C/- Matthew Paetz
Babbage Consultants
PO Box 2027
Auckland 1140

Dear Sir/Madam

Resource Consent Application Number RMA20061077
Location: 423-429 West Coast Road, & 4 Pyramid Place, Glen Eden, WAITAKERE CITY

I am pleased to advise that your Resource Consent (Planning) application has been considered and consent has been granted pursuant to sections 93, 94, 104, and 108 of the Resource Management Act 1991.

The full report considering your application and the decision which has been made is attached. The following contains the decision on your application and the conditions which must be met for your consent to be valid:

DECISION

Pursuant to Sections 104, 104B and 108 of the Resource Management Act 1991, being satisfied that no body or person is adversely affected, it is recommended that **consent be granted** to the application by New Zealand Housing Foundation to undertake a medium density residential housing development, that under the Rules of the District Plan (as more accurately defined in Sections 3 and 4 of this report) requires resource consent for;

- Earthworks
- Vegetation Alteration
- Height in relation to Boundary
- Building Height
- Medium Density Housing
- Shared driveway
- Building, earthworks & vegetation alteration on land known by Council to be subject to inundation.

At 4 Pyramid Place & 423-429 West Coast Road, Glen Eden, being Lots 2 & 3 DP 339810 for the following reasons pursuant to Section 113:

(i) It is considered that the proposal would have no more than a de minimis adverse effect on the environment as the proposed development is in keeping with the existing neighbourhood character and amenity (as described in more detail in Section 10 above). Although the proposed development exceeds the maximum height, the level of infringement is minor and due to the topography of the site and the design of the buildings, the infringement will not be clearly distinguished when viewed from neighbouring sites. The Height in Relation to boundary infringements is considered minor and is on the internal boundaries. The amount of earthworks proposed is considered to be consistent with the scale of the development and will be adequately managed through sediment and erosion control measures, in conjunction with the site Management Plan. The proposed landscape treatment will improve the overall amenity of the site.

(ii) The proposal is considered to be consistent with the relevant assessment criteria for Discretionary Activities for earthworks, vegetation clearance and medium density housing as demonstrated in Sections 5.2 and 10.2 above.

(iii) The proposal is generally consistent with the objectives and policies of the District Plan and Part II of the Resource Management Act 1991.

Conditions imposed on the consent are as follows:

General Conditions

1. The development shall proceed in accordance with the plans titled;
   - Site Plan- West Coast Road Housing Development- Bulk and Location Study, prepared by Babbage Consultants, dated 23 June 2006 (being 1 sheet).
   - Site Plan- West Coast Road Housing Development (Bulk & Location Study)- Stage 1A & 1B- Rev A002, Stage 1C & 1D- Rev A003, Stage 2A & 2B- Rev A004, Stage 3- Rev A005, all dated June 2006.
   - Floor Plans- Type 1 House- (Sheet A101), Type 2A House- 2 Bedroom Apartment (Sheets A102-1 & A102-2), Type 2B House (Sheets A103-1 & A103-2), Type 2C House (Sheets A104-1 & A104-2), Type 3 House (Sheet A105), Type 4A House (Sheet 106), Type 4B House (Sheet A107), Type 4C (Sheet A108), Type 5A House (Sheet A109), Type 5B House (Sheet A110), Type 5C House (Sheet A111).
   - Elevation Plans- Type 1 House- (Sheet A201), Type 2A House- (Sheets A202-1 & A202-2), Type 2B House (Sheets A203-1, A203-2 & A203-3), Type 2C House (Sheets A204-1 & A204-2), Type 3 House (Sheet A205), Type 4A House (Sheet 206), Type 4B House (Sheet A207), Type 4C (Sheet A208), Type 5A House (Sheet A209), Type 5B House (Sheet A210-1 & A210-2), Type 5C House (Sheet A211-1).
   - Elevation Plans showing HIRB- Sections 1A (Rev A304), Sections 1B (Rev A305 & A306), Sections 1C (Rev A307 & A308), Sections Stage 1D (Rev A309), Sections Stage 2A (Rev A 310), Sections Stage 2A & 2B (Rev A311 & Rev A 312), Section stage 3 (Rev A313)
   - Area Summary, Rev A401, being 1 Sheet, dated 30 May 2006

   Prepared by Babbage consultants dated June 2006.

   - Roading Plan for NZ Housing Foundation, Sheet 1 (C20- Rev A) & Sheet 2 (C21- Rev A).
   - Road Longitudinal Sections, sheet 1 (C22), Sheet 2 (C23), Sheet 3 (C24).
   - Road Cross Sections, Sheet 1 (C25-A), Sheet 2 (C26-A).
   - Topographical Plan, Sheet 1 (C01- Rev A), Sheet 2 (C02- Rev A).
   - Earthworks Plan, Sheet 1 (C03- Rev B), Sheet 2 (C04- Rev B).
   - Erosion and Sediment Control Plan, Sheet 1 (C05- Rev B), Sheet 2 (C06- Rev B).
   - Sediment Control Details, (C07- Rev A)
   - Drainage Plan, Sheet 1 (C10- Rev C), Sheet 2 (C11- Rev A)
   - Stage 2 Swale Layout (C15), Stage 3 Swale Layout (C16- Rev A)
   - Wetland & detention Basin 1 Layout (C17- Rev A)
   - Pond Details Plan (C18- Rev B)
   - Detention Basin 2 Layout (C19)
   - Services Plan, Sheet 1 (C35- Rev A), Sheet 2 (C36- Rev A)
   - Stormwater Catchment Plan, Sheet 1 (C45), Sheet 2 (C46)
   - Retaining Wall Plan, Sheet 1 (C50), Sheet 2 (C51).

   prepared by Babbage Consultants and dated June 2006.

   - Typical Planting Plan House Type 4A, reference LSP-07, dated 07/08/06
   - Typical Garden Layout House type 4A, reference LSP-08 dated 15/08/06
   - Landscape Master Plan and Typical Garden Layout reference LSP-01 Rev C, dated 16/06/06
   - Landscape Master Plan, reference LSP-02 Rev C, dated 16/06/06
   - Street Tree Planting Plan 1 of 2, reference LSP-05 Rev B, dated 15/08/06
   - Street tree Planting Plan 2 of 2, reference LSP-06 Rev B, dated 15/08/06

   prepared by Soul Environments

and all of the information submitted with the application (including further information), all referenced by Council as **RMA20061077** .

2. Pursuant to Section 125 of the Resource Management Act 1991, if not given effect to earlier, this consent shall lapse five (5) years after the grant date of the consent.

3. A consent compliance monitoring fee of $1, 035 has been paid to the Council. This fee is to recover the actual and reasonable costs incurred ensuring compliance with the conditions of this consent. If, on inspection all conditions have not been satisfactorily met, a reinspection shall be required at the relevant hourly rate applicable at the time the re-inspection is carried out. The resource consent holder shall be advised of any further monitoring fees if they are required.

4. All reticulated services, including power and telephone, shall be provided underground.

5. A copy of this Resource Consent and the approved Site Management Plan to which the consent relates shall be held on site at all times that the works are being carried out. All personnel working on the site shall be made aware of, and have access to this consent and accompanying documentation.

6. The carparks for the apartments on Lot 61 shall be clearly marked prior to occupation. At least one carpark shall be allocated for each unit.

Surveyors Certificates

7. A Licensed Cadastral Surveyor shall certify to Council in writing prior to work progressing beyond the pre-lining stage that the buildings are located exactly as proposed in the application and will not exceed the degree of infringement applied for in relation to the overall height and height in relation to boundary controls of the District Plan and elsewhere complies with the height in relation to boundary and overall height rules of the District Plan. No work shall proceed beyond this stage until receipt of such certification, to the satisfaction of the Manager Resource Consents.

Earthworks Conditions

8. **Before commencement of any works and until completion of exposed earth siteworks**, adequate sediment and erosion control measures shall be constructed and maintained by the consent holder. The control measures must be maintained until the site has been adequately stabilised against erosion. The construction and maintenance shall be in accordance with Appendix 3, Erosion and Sediment Control Measures Appendix to the Natural Area Rules of the Waitakere City Council District Plan (attached as appendix A to this consent).

   Please **advise Council's Environmental Monitoring Officer when the controls are in place and await the approval of the monitoring officer** before commencing work. **The applicant should book an inspection at least 48 hours prior to the required inspection.**

9. In the event of archaeological evidence being uncovered (e.g shell, middens, hängï or ovens, pit depressions, defensive ditches, artifactual material or human bones) work shall cease in the vicinity of the discovery, the area secured, and the Council (Planning Help Desk , 839 0400) contacted. Activity on the site will remain halted until the Manager Resource Consents gives approval for operation to recommence.

10. All sediment laden runoff from the site shall be treated in accordance with the approved silt and sediment control management plan attached as appendix A to this consent. These measures are to be operational before earthworks commence, and shall be maintained until the site has been secured against erosion (whether by vegetative means, paving or otherwise). The consent holder shall notify Council's Monitoring Officer when silt and sediment control measures are in place. Work shall not commence until approval has been gained in writing from the Manager Resource Consents.

11. If the bulk earthworks are not completed within the earthworks season (1 November till April 30th) then the necessary measures shall be implemented to ensure that the erosion and sediment controls are appropriate for the winter. A written report on the progress of the earthworks and the above erosion and sediment controls from the registered engineer supervising the work shall be submitted for the approval of the Manager: Resource Consents within one month of the cessation of work.

12. All areas of exposed earth shall be top-soiled and grassed or otherwise stabilised against erosion as soon as practicable and in a progressive manner as works are complete but no later than one week following the completion of works.

13. All topsoil excavated during the course of works shall be retained on site and re-spread following the completion of earthworks.

14. All earthworks, stockpiles of earth and the storage of other construction materials/ works shall be excluded from the drip-line of all vegetation to be retained on site and from the riparian margins of streams / the coast. A protective fence shall be erected around the affected area prior to the commencement of any work on the site and shall remain in place until the completion of all works on site.

15. Stockpiles of earth shall be located as far as practicable from the stream and existing residences, to the satisfaction of the Manager Resource Consents. Approval to the landfill to be used shall be obtained from the Manager, Resource Consents prior to any work commencing.

16. All excess or unsuitable excavated material shall be removed from the site before or immediately following the completion of earthworks, to an approved disposal location and disposed of to the satisfaction of the Manager Resource Consents. Written evidence demonstrating that the excavated fill has been deposited in the approved location, should be submitted to the Manager Resource Consents in the form of producer statement, certification or similar.

17. All dirt tracked onto the surrounding roads as a result of the development covered by this consent shall be cleaned by sweeping on a daily basis at the expense of the applicant. In case of repeated non-compliance with this condition, Council may engage the road cleaning contractor nominated by the applicant to carry out the road cleaning. Council's Environmental Monitoring Officer (EMO) may engage the road sweeping contractor to carry out road cleaning if it is the EMO' opinion that the dirt on roads and/or footpath is creating an adverse effect on the environment. The road cleaning contractor shall be engaged at the cost of the applicant.

18. A full copy of the Resource Consent Conditions, Approved Plans, including site management and Erosion and Sediment Control Plans shall be kept on the site at all times. All personnel working on the site shall be made aware of and have access to the contents of this consent document and the associated Site Management and Erosion and Sediment Control Plans.

19. All necessary action shall be taken to prevent a dust nuisance to neighbouring properties; including, but not limited to, the staging of areas of works, the retention of existing shelter belts and hedgerows, the installation and maintenance of wind fences and vegetated strips, watering of all haul roads and manoeuvring areas during dry periods, spraying of load dumping operations, and suspension of all operations if necessitated by the prevailing conditions to the satisfaction of the Manager Resource Consents. The site, or parts thereof as appropriate, shall be re-grassed or otherwise protected from wind erosion immediately on the completion of bulk earthworks whether or not other works are completed.

20. A stabilised entranceway to the site shall be provided prior to the commencement of works and maintained for the duration of works. Additional measures such as wheel wash facilities shall be implemented (as) if deemed necessary by Council's Environmental Monitoring Officer to prevent the deposition of earth or other debris on the surrounding street network by vehicles entering and exiting the site. Roads, footpaths, berms and kerbs including entry and exit points to the site shall be kept free from damage and clear of mud and debris at all times Any material deposited on the street shall be immediately removed by sweeping and any damage caused shall be immediately repaired at the expense of the consent holder. The consent holder shall notify Council's Monitoring Officer when entranceway controls are in place. Work shall not commence until approval has been gained in writing from the Manager Resource Consents.

21. **The development works associated with the subdivision are to be carried out in accordance with NZS 6803P:1984 "The Measurement and Assessment of Noise from construction, Maintenance and Demolition Work" with the exception of the hours of work, which are to be limited as follows:**

Monday to Friday:	**7.30 am to 7.00 pm**
Saturday	**8.00 am to 5:30 pm**
Sunday and Public Holidays:	**No work**

Vegetation Conditions

22. Landscape development on private lots including framework planting shall be in general accordance with the Landscape Master Plan and Typical Garden Layout, Drawing LSP-01 Rev C and LSP-02 Rev C, both dated 16.06.06 and in accordance with the Street Tree Planting Plan 1 of 2 Drawing LSP-05 Rev B, and Street Tree Planting Plan 2 of 2 Drawing LSP-06 Rev B both dated 15.08.06 by SOUL Environments and the 'Additional information on proposed planting' Rev C, received at Council 16 October 2006, and shall be established to the satisfaction of Council's Environmental Monitoring Officer, Resource consents.

23. On site planting for each private lot shall have the framework tree planting and fencing as per the afore-cited plans and shall have lawn areas, gardens, paving and other site features, in general accordance with the 'Typical Planting Plan House Type 4A, dated 7.08.06 and 'Typical Garden Layout House Type 4B' dated 16.08.06 plans and associated planting schedule by Soul submitted with the application, and shall be to the satisfaction of Council's Environmental Monitoring Officer, Resource Consents.

24. Grassed areas shall be manually graded to be flush with adjacent paved or retained areas and, in association with garden areas, shall be prepared prior to occupation of units and establishment of any proposed fencing. Fences and gates shall be set in place following final forming of ground levels including grassed areas. Garden areas and grassed areas shall be good quality topsoil or garden mix (50:50 topsoil and compost), weed and debris free with garden areas to 300mm minimum depth and grassed areas to 200mm minimum depth and shall be to the satisfaction of Council's Environmental Monitoring Officer Resource Consents.

25. Planting shall be set in place in the first planting season (May till 7th September) following use of each dwelling unit to the satisfaction of Council's Environmental Monitoring Officer, Resource Consents. If the development is staged then the landscape development including planting shall be staged accordingly.

26. Any tree planted within a grass area shall be within a 600mm diameter weed and debris-free garden area with a woodchip mulch to 60mm depth, and with two marker stakes 50mm x 50mm x 1.2m per tree (ties not required).

27. Lawn areas and gardens shall be watered as necessary to facilitate establishment, and with gardens kept weed free on an ongoing basis for the first two years following initial planting, to the satisfaction of the Environmental Monitoring Officer, Resource Consents. Any tree or plant that dies, is removed or otherwise fails to establish shall be replaced the following planting season and shall be maintained for a further two years to the satisfaction of the Environmental Monitoring Officer, Resource Consents.

28. All vegetation works shall be undertaken in accordance with Subdivision Conditions (PK 1) – (PK 10).

Transport Assets

29. All transport assets conditions shall be completed to the satisfaction of the Manager, Transport Assets and shall be in accordance with the conditions outlined in the subdivision consent (See the subdivision consent RMA 20061078 for exact requirements and detail).

Geotechnical Conditions

30. A geotechnical investigation shall be completed by an experienced geotechnical engineer for the detailed design of earthworks at the site. This shall include recommendations for the batter slopes and an assessment of overall stability off site slopes (supported by limit equilibrium analysis), consolidation characteristics of the soils, fill quality and compaction requirements. All the requirements for constructing and controlling engineered fill shall be detailed. The report on this work shall accompany the earthworks construction management report.

31. Groundwater drainage measures for the development shall be designed by an experienced geotechnical engineer, taking into account existing information on shallow groundwater levels, anticipated maximum winter high and summer low groundwater levels, and potential effects on adjacent developed properties or roadways.

32. Building consents shall be required for the retaining walls which shall be no higher that 2.0 metres on all boundaries.

33. Pavement designs shall be confirmed by an experienced geotechnical engineer following the completion of earthworks.

34. A producer statement must be provided on completion of earthworks together with an earthworks completion report stating what requirements if any are necessary for the individual lots.

35. Unless there is clear evidence in the earthworks completion report to be provided by an engineer that NZS 3604 requirements have been fully met, all foundations shall require specific design.

36. Foundations of all lots shall be verified by an experienced geotechnical engineer familiar with the geotechnical report and shall take into account the potential for shrink/swell behaviour.

37. Stormwater pond construction shall be supervised by an experienced engineer familiar with the geotechnical report.

38. The proposed stormwater management systems to be used during construction shall be reviewed by an experienced engineer familiar with the geotechnical report.

39. The proposed stormwater management systems to be used during construction shall be reviewed by an experienced engineer familiar with the geotechnical report.

PARKS CONDITIONS

Please contact the Parks Assets Planning Co-ordinator on 836-8000 (extension 8768) to book an inspection.

(PK 1) Carry out the removal of environmentally damaging plants from all lots including the proposed esplanade reserve, as listed in the Waitakere City Council Proposed District Plan. Submit a Weed Control Programme to the satisfaction of the Manager, Resource Consents within 2 months of the issue of this consent. This Weed Control Programme shall be implemented on the site within 6 months of the date of issue of this resource consent to the satisfaction of the Manager, Resource Consents. The programme needs to include:

a) an inventory of the weed species to be removed;
b) removal techniques to be utilised; weed disposal methods;
c) time frames for work and whether the weed removal needs to be staged (particularly relevant for sensitive areas such as coastal edges or riparian margins);
d) any re-vegetation programme required to prevent re infestation of weeds;
e) an assessment of any ecological issues around the removal of vegetation;
f) methods for addressing stability and erosion and sediment control methods.

(PK 2) Enter into a registerable fencing agreement with Council in regards to Lots 23, 24, 25, and 46 – 60 to the effect that the Council will not be liable to contribute towards the cost of creating or maintaining any dividing fence between any reserve or other land vested in or administered by the Council. Also, that any fences facing the reserve shall be of visually permeable construction such as swimming pool fencing and 1.2metres maximum height in order to ensure good surveillance of the reserve, and to reduce the likelihood of graffiti.

(PK 3) Prior to work commencing on the site, protective fencing shall be placed around the dripline of the Totara (#4), Kahikatea (#7), Cabbage (#13), Pear (#10) and groups of native revegetation (references #4 and #6) as shown on the plan titled "Housing Foundation HZ, West Coast Road Development (Part of 423-429 West Coast Road) vegetation and major features, Sheets 1 & 2", dated 12 June 2006 prepared by Willy Coenradi. The fencing shall remain in place throughout the vegetation alteration, earthworks and construction stages.

(PK 4) Monitoring of the health of the vegetation referenced in (2) above shall be undertaken prior to the commencement of, and during the vegetation alteration, earthworks and construction stages. This monitoring shall be undertaken by an appropriately qualified arborist engaged by the applicant in conjunction with a WCC arborist to provide progressive on-site assessment of the effects of the work on the health of the Riparian vegetation.

(PK 5) That a silt fence and dirty water diversion run-off bund as depicted on the Erosion and Sediment Control Plan prepared by Babbage Consultants dated 23/06/06 contained in Appendix 10 of the application shall

be implemented along the full length of the western side of the stream to the satisfaction of prior to Parks Consent Planner prior to earthworks or vegetation alteration commencing on the site.

(PK 6) Landscaping and street tree planting is to be established within the development to the satisfaction of the Parks Consent Planner. The landscaping and street tree plans prepared by SOUL Environments specifically:

- Landscape Master Plan dated 16/06/06 Revision C Reference LSP-01
- Street Tree Planting Plan, Plan 1 of 2 and 2 of 2, dated 15/08/06 Revision B
- Accompanying information titled "NZ Housing Foundation Babbage Consultants 423 -429 West Coast Road, Henderson. Additional information on proposed planting 13-October-06, Revision C".

are to be implemented in accordance with WCC parks guidelines and subject to the following:

(i) That the bollards along the road frontage of the drainage reserve at the northern end shall be implemented in accordance with the WCC Code of Practice Standard Detail 7.17 and 7.71. That a 3 metre chain entry for maintenance access to the stormwater pond and wetland area shall be located in an appropriate location to the satisfaction of the Parks Consents Planner.

(ii) Street Lighting shall be implemented in accordance with the WCC Code of Practice Section 3.3.14 and Standard Detail 7.91 attached and located so as to not conflict with street tree planting.

(iii) In accordance with Section 7.3.7.3 of the WCC Code of Practice all footpath concrete paving in the reserve shall be 1.5 metres wide and exposed aggregate.

(iv) That the plants along the footpath adjacent to the Stream shall be low level and set back a suitable distance so as to not restrict access or visibility along the pathway.

(v) That the parking areas provided on the streets adjacent to footpaths shall be curbed or wheel stops implemented to the satisfaction of the Parks Consent Planner.

(vi) All plants shall be best nursery stock, healthy vigorous and eco-sourced.

(PK 7) The street tree planting shall be implemented to the satisfaction of the Parks Consent Planner. All plantings are to be in accordance with the WCC parks guidelines, Code of Practice and the landscape specification submitted with the Landscape Plan. An option exists for the applicant to pay Council the cost of supplying, planting and staking of street trees per plan, to carry out the planting of street trees following the completion of the building works. The cost for this would be $153 plus GST per tree (the current contract price for supply, planting, and staking of a PB95 tree as at April 2003).

(PK 8) The details of the pedestrian footpath, footbridge and boardwalk shall be finalised at the Engineering Plan stage to the satisfaction of the Parks Consent Planner. Engineering plans for the footpath, footbridge and boardwalk shall be submitted within 3 months of the issue of this consent. All works shall comply with the Waitakere City Council Code of Practice for City Infrastructure and Land Development. The developer must advise the Parks Consent Planner of when work will commence and prior to any works being carried out. Engineering plan details shall be provided at Engineering Plan stages for the following:

(i) The exposed aggregate footpath alignment details shall be to a width of 1.5m and constructed in accordance with the Waitakere City Council Code of Practice for City Infrastructure and Land Development Standard Detail 7.102 for Parks Walkway Types attached.

(ii) That the footbridge shall be constructed in accordance with the Waitakere City Council Code of Practice City Infrastructure and Land Development Standard Detail 7.106 for Typical Foot Bridge attached.

(iii) The boardwalk along the stream shall be constructed in accordance with the WCC Code of Practice Standard detail 7.105 for Typical Boardwalk attached.

(PK 9) Ensure that the reserves are left in a condition suitable for maintenance and mowing in accordance with section 7.3 of the WCC Code of Practice and to the satisfaction of the Parks Asset Planner.

Ecowater Conditions

(Eco 1) All infrastructure relating to stormwater treatment and disposal, wastewater disposal, and water supply shall be designed and completed to the satisfaction of Councils Drainage Engineer. (Compliance with the Waitakere City Council Code of Practice for City Infrastructure and Land Development is deemed to be in accordance with the above condition). (See the subdivision consent RMA 20061078 for exact requirements and detail).

Advice Notes:

1. Where indicated in the conditions it is the consent holders' responsibility to inform the Environmental Monitoring Officer when inspection is required. Inspections can be requested through the Call Centre on 839 0400.

2. Prior to the commencement of works the resource consent holder shall obtain all consents, permits and authorisations for the work as may be required by the Auckland Regional Council.

3. A condition of consent relating to the payment of a maintenance bond for landscaping has not been included under this Land Use consent but will be a condition of subdivision. It is the applicant's responsibility to ensure that this condition is complied with before issue of 224c under the subdivision consent (RMA20061078).

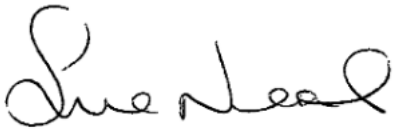
End of Conditions

Compliance with the above conditions will be monitored by Councils Environmental Monitoring Officer in accordance with section 35(d) of the Resource Management Act. This will typically include site visits to verify compliance (or non compliance) and documentation (site notes and photographs) of the activity established under the Resource Consent. Only after all conditions of the Resource Consent have been met, will Council issue a letter of compliance on request of the applicant.

Please note also that you must complete the activity that is consented to within five (5) years including compliance with the conditions of consent. If that does not happen the consent lapses and you may need to apply for an extension or a new consent. **Note: Your consent lapses on 1st November 2011.**

Please contact Felicitas Dhliwayo (extn 8352) of the Resource Consents Section if you have any general queries about the enclosed report or decision.

Yours faithfully



pp. Michael Campbell
MANAGER RESOURCE CONSENTS

Waitakere City Council
Te Taiao o Waitakere

City of Waitakere District Plan

REPORT FOR DISCRETIONARY ACTIVITY APPLICATION SECTIONS 93, 94, 94A – 94D, 104, 104A – 104D ASSESSMENT AND DETERMINATION IN ACCORDANCE WITH THE RESOURCE MANAGEMENT ACT 1991

1.0 SUMMARY OF PROPOSAL

To construct 77 residential units and subdivide into 61 lots (under RMA20061078) with net areas ranging from 263m² to 840m² requiring landuse consent for; medium density housing, shared driveway, earthworks, vegetation alteration, impermeable surfaces & building within the Riparian Margin, height, height in relation to boundary, and development on a flood sensitive site.

2.0 APPLICATION DETAILS

Planner:		Felicitas Dhliwayo
Site Address:		423-429 West Coast Road & 4 Pyramid Place, Glen Eden
Applicant:		New Zealand Housing Foundation
Date Received:		26 June 2006
Resource Consent No:		RMA20061077
Building Consent No:		Not yet lodged
Ward:		Waitakere
Legal Description:		Lot 2 DP 339810 (CT 163628) & Lot 3 DP339810 (CT 163629)
Address for Service:		Matthew Paetz Babbage Consultants P O Box 2027 Auckland
Site Area:		Lot 2- 4.9336 hectares Lot 3- 7948m²
Unit Site Area(s):		Net unit areas vary from 263m² to 840m² (see table One below).
District Plan:	Human Environment:	Living
	Natural Area(s):	General / Riparian/ Restoration
	Landscape Elements:	Riparian Margin - 7metres
	Hazards:	**Lot 3 DP 339810** Special Feature Nos: 7762 (Flooding); 11689 (drainage easement); 11690 (ROW easement); 12074 (natural flowpath); 12077(overland flowpath) **Lot 2 DP 339810** High Pressure Natural Gas Pipeline Special Feature Nos: 12071 (replanting of reserve); 12073 (natural flowpath); 12076 (overland flowpath); 12087 (flooding).
	Roading Hierarchy:	District
Further Information Required:		Tree Planting Plan, Ecowater requirements, Revised Landscaping

...	Plan & Revegetation shrubs, tree mixes.
Date Requested:	24/07/06, 03/08/06, 25/08/06 & 21/09/06
Date Received:	3/08/06, 25/08/06, 21/09/06 & 16/10/06
Any Affected Persons:	No
Approval Given:	NA

TABLE ONE- LOT SIZES

Lot No	Area m²	Lot No	Area m²	Lot No	Area m²	Lot No	Area m²
1	415*	16	395*	31	371*	46	377*
2	380*	17	475**	32	349	47	372*
3	380*	18	353*	33	383*	48	361*
4	380*	19	405*	34	411*	49	369*
5	380*	20	434*	35	415*	50	363*
6	380*	21	397*	36	446*	51	366*
7	381*	22	405*	37	426*	52	364*
8	403*	23	840**	38	439*	53	354*
9	402*	24	404*	39	439*	54	469**
10	388*	25	506**	40	439*	55	370*
11	353*	26	451**	41	370*	56	1416*
12	374*	27	354*	42	431*	57	268
13	350*	28	413*	43	444*	58	263
14	433*	29	412*	44	459**	59	273
15	363*	30	438*	45	370*	60	318
						61	3743
62 (Drainage Reserve to vest)	3005	66	1511 (Drainage reserve to vest)				
63 (Road to vest)	3302	67	7012 (Drainage reserve to vest)			70 (road to vest)	997
64 (Drainage Reserve to vest)	2556	68	1289 (Road to vest)			71 (Road to vest)	3684
65 (Drainage reserve to vest)	1956	69	3177 (Road to vest)				

** Site areas > permitted activity density of 450m²
* Site areas > limited discretionary activity density of 350m²

Locality Diagrams:

Figure 1- View of the subject site(s) as shown on Colour Orthography Map (March 2000)

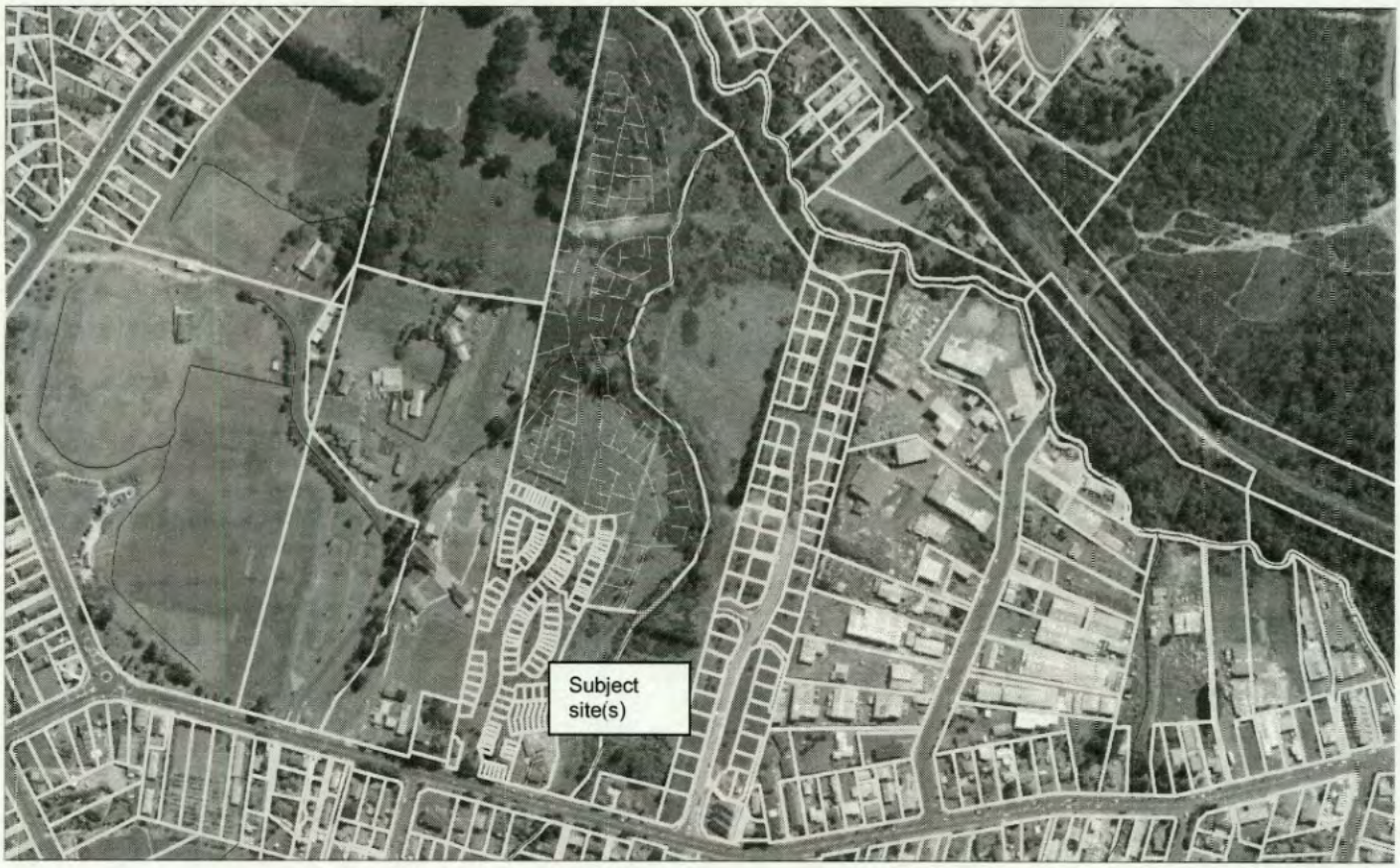


Figure 2- Location of subject site(s) as shown on Natural Environment Map.

2.1 Documents considered for this report include the application documentation and the site visit checklist completed on 10/07/2006. Specialists reports provided included;

- Landscape/Visual Assessment/ Arborist Report prepared by SOUL Environments.
- Traffic Assessment Report prepared by Traffic Design Group.
- Geotechnical Assessment Report prepared by Babbage Consultants.

2.2 BACKGROUND

The application was lodged as a combined landuse and subdivision consent (RMA20061078). Due to the complexity of the application it was considered necessary to separate the two consents to allow the applicants to start earthworks before the subdivision application is finalised. Therefore this consent only refers to the landuse aspect of the proposal.

3.0 REASON FOR APPLICATION- RELEVANT DISTRICT PLAN RULES
Extent Of Infringement And Type Of Activity Proposed

LIVING ENVIRONMENT

Rule 2.3 - Density

Discretionary activity consent is required for medium density housing or dwellings not meeting the performance standards specified in Rule 2.1 or 2.2. The proposal would result in net unit

areas ranging from 263m² to 469m² on a 4.9336 hectare and 7948m² site located outside the Glen Eden medium density housing 700m radius.

Rule 5.3 - Height in Relation to Boundary

Discretionary activity consent is required for buildings to project beyond the permitted recession planes set out in Rule 5.1. The proposed dwellings on proposed Lots 1-22 and 24-61 would project beyond the '2.5+ 45°, 2.5+35° and 2.5m+55°' recession plane along the internal boundaries by varying heights.

Rule 4.1 - Building Height

Discretionary activity consent is required for buildings to exceed the 8 metre maximum height permitted in Rule 4.1. The proposed dwellings on Lots 9, 30, 54, 55 and 61 will exceed the 8 metre maximum height by the following varying heights;

- 4 level apartment Type "2B" on Lot 61

Maximum extent of infringement = 3.960m (eastern façade)
Minimum extent of infringement = 1.095m (western façade)

- *Northern-most 3 level apartment Type "2A" on Lot 61*

Maximum extent of infringement = 115mm (eastern façade)

- *Southern-most 3 level apartment Type "2A"on Lot 61*

Maximum extent of infringement = 1.010m (eastern façade)

- *Proposed dwelling on Lot 9*

Maximum infringement = 250mm

- *Proposed dwelling on Lot 30*

Maximum infringement = 500mm

- *Proposed dwelling on Lot 54*

Maximum infringement = 2700mm

- *Proposed dwelling on Lot 55*

Maximum infringement = 3200mm

However, I note that the medium density housing criteria require that the maximum height of buildings should not exceed 11 metres.

Rule 12.3 – Carparking and Driveways

Limited Discretionary Activity for a shared driveway serving more than 10 dwellings (Living Environment Rule 12.3). The proposed right of way A will serve a total of 18 dwellings on proposed lots 57-61.

GENERAL NATURAL AREA

Rules 2.2 & 2.3 - Vegetation Alteration

Controlled Activity and Limited Discretionary consent is required for (a) the clearance of exotic and native vegetation less than 6 metres in height and/or 600mm in girth and vegetation listed within the Removable Vegetation Appendix and Environmentally Damaging Plants Appendix, to a total cleared area greater than 500m²; and (b) clearance of native and exotic vegetation higher than 6 metres and/or more than 600mm in girth. The proposed site works would require the removal of trees and exotic weed growth on the site.

Rule 3.4 - Earthworks

Discretionary Activity consent is required for earthworks not meeting the performance standards of Rule 3.1, 3.2 or 3.3 where the application is accompanied by a Management Plan. The proposal requires 40 000 cubic metres of earthworks.

RIPARIAN MARGIN NATURAL AREA

Rule 2.4 – Vegetation Alteration

Discretionary Activity consent is required for vegetation alteration/ clearance for the purpose of establishing driveways, roads or infrastructure or stream crossings associated with a Greenfields Subdivision.

Rule 3.2- Earthworks

Discretionary Activity consent is required for earthworks necessary to provide for infrastructure or stream crossings associated with a Greenfields Subdivision not otherwise meeting the performance standards of Rule 3.1. A pedestrian footbridge over the Waikumete Stream that traverses the site from north to south is required in order to provide access to the neighbouring Albionvale medium density development to the west.

Rule 4.1 – Impermeable Surfaces

Limited Discretionary Activity consent for the establishment of impermeable surfaces not exceeding 10% of the part of the site within the Riparian Margin. The 1.5 metre wide pedestrian walkway will be partially located within the Riparian Margin.

Rule 7- Buildings

Limited Discretionary Activity consent is required for the construction of the footbridge within the Riparian Margin.

CITY WIDE RULES

Rule 1.1 – Natural Hazards

Limited Discretionary Activity consent is required for buildings on land and subdivision of land known by Council to be subject to inundation. Consent is also sought for earthworks and vegetation alteration on land known to be subject to inundation.

Overall the application is considered to be a **Discretionary Activity**. The proposal complies with all other development control rules under the District Plan.

4.0 SITE AND PROPOSAL

4.1 Site Description

The subject site comprises two properties (being 423-429 West Coast Road and 4 Pyramid Place), each on separate certificates of title, with a combined site area of 5.7284 hectares. The site is described in the application as follows; "The development site is located on West Coast Road, Glen Eden, in close proximity to the intersection of that road with Woodbank Drive. The site has legal frontage to four roads – West Coast Road, Pyramid Place, Titch Place and Woodbank Drive."

The site is of an irregular shape, which is largely a result of the topographical characteristics of the locality, in particular the location and route of the watercourse (Parrs Stream) running through the site roughly in a meandering north-south direction. To the south of Pyramid Place there is a row of mature pine trees running from east to west.

In the southern portions of the site the land is gently sloping downwards from east to west, towards the stream channel and associated riparian margins, before sloping upwards from the stream channel to the western site boundary. The land to the north of Pyramid Place on the site becomes steeper as part of the site drops quite steeply into a gully towards the stream. The west side of the site is moderately steep.

The larger area at the north end of the site is relatively flat with a gentle slope down to the stream. The site is presently covered in overgrown grass, weeds, gorse and trees. There is a mixture of native and exotic trees, predominantly located around the edge of the stream and at the northern boundary.

The area has a new subdivision on its western boundary which has the roading network laid and the construction of some houses has commenced. A more mature subdivision borders the site on the eastern side. There are no structures currently on the site.

The neighbourhood character is varied containing a mix of land use activities within 400 metres of the site, including developed and undeveloped residential land, open space developed for active and passive recreation, undeveloped open space, Marae, school, dairy and fruit and vegetable shops.

The surrounding neighbourhood contains a mix of housing styles, including medium density terraced housing, free-standing town houses on sites generally ranging between 350m² and 450m² (i.e. Woodbank Drive development), and conventional house and garden development where the site areas are in excess of 600m² (i.e. West Coast Road)".

Figure 3- View of subject site looking North from West Coast Road.

Figure 4- Looking west from Pyramid Place- Note the existing neighbouring Albionvale development.

4.2 Proposal

The proposal is for a 3-stage medium density residential housing development that would involve the construction of 77 new units, and subdivision into 61 freehold lots (under RMA20061078) in conjunction with roads and drainage reserves to vest in Waitakere City Council. The proposal involves the construction of 14 apartment units on proposed Lot 61, 4 apartment units on proposed Lot 56 which will be unit titled, with the rest of the dwellings being on free hold titles.

The 3-staged development will be carried out as follows:

Stage 1

Lots 1-35, Drainage reserves to vest (Lots 65-67) and Roads to vest (Lots 68-71).

Stage 2

Lots 36-56, Road to vest (Lot 63), Drainage reserve to vest (Lot 64).

Stage 3

Lots 57-61, Drainage reserve to vest (Lot 62)

The proposed apartments on proposed Lot 61 and the dwellings on proposed Lots 9, 30, 54 and 55 will infringe the 8 metre maximum height requirement by varying heights. The proposed apartments and dwellings will also infringe the height in relation to boundary requirements along the internal boundaries. The material of the proposed houses will be mainly concrete slab foundations (where grade permits), timber weatherboard, masonry cladding, powder coated aluminium windows, and colorsteel roofs. Timber pole retaining walls are proposed on the property boundaries. The retaining walls will be generally positioned between individual residential lots or on the existing property boundary to create the necessary building platforms. Approximately 0.5 metre high key stone variety retaining walls are also proposed between the properties and the road frontage.

2(j) The extent to which vegetation alteration can be offset by restoration or enhancement around and within the area subject to the application.
2(k)The extent to which vegetation alteration adversely affects the significance, natural character or landscape value of any natural features.

Riparian Margin

2(a) The extent to which vegetation alteration adversely affects the overall resilience, biodiversityand integrity of the Green Network and, where possible, utilises areas of the site not within the Riparian Margins Natural area.
2(b) The extent to which vegetation alteration reduces the extent, range and linkages between vegetation, fauna habitat and natural features.
2(c) The extent to which vegetation alteration adversely affects the mauri (life-force) of native vegetation.
2(d) The extent to which clearance adversely affects the water quality of taiapure or mahinga mātaitai.
2(e) The extent to which vegetation alteration adversely affects the historical, cultural or spiritual significance of any site or waahi tapu of significance to iwi.
2(f) The extent to which vegetation alteration adversely affects the significance of or landscape or natural character or heritage value of any cultural features.
2(g) The extent to which trees which are notable examples of their species are retained.
2(h) The extent to which vegetation alteration creates edge effects from wind or light on remaining native vegetation.
2(i) The extent to which vegetation alteration adversely affects heritage or amenity values.
2(j) The extent to which vegetation alteration can be offset by restoration or enhancement around and within the area subject to the application.
2(k) The extent to which vegetation alteration creates, contributes to, or exacerbates stability problems.
2(l) The extent to which existing cleared areas area utilised for proposed development.
2(m) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and/or through payment or provision of a financial contribution.
2(n) The extent to which the proposed vegetation alteration is necessary:

- *to accommodate development otherwise permitted by the Plan.*
- *To ensure the safety or integrity of existing development on the site.*
- *For pruning to provide light.*
- *For vegetation alteration (other than clearance) for cultural purposes in accordance with established protocols.*
- *For pruning to preserve public views.*

2(o) The extent to which vegetation alteration adversely affects the natural, cultural and amenity values of surface water in rivers and lakes.
2(p) The extent to which vegetation alteration affects or may affect the water quality and acquatic ecosystem health of any part of the waterway, adjacent to, upstream of or downstream of, the vegetation alteration
2(q) The extent to which any vegetation alteration associated with a subdivision can be avoided by carrying out works on parts of the site which are not in a green network Natural Area.
2(r) The extent to which vegetation alteration associated with a subdivision is necessary to construct a stream crossing.
2(s) The extent to which vegetation alteration associated with a subdivision is minimised.

It is noted that loss of vegetation would result in short term changes to neighbourhood character but would be offset by the proposed restoration planting of the reserves and landscape treatment throughout the residential development. Compliance with the proposed conditions of consent and implementation of the re-vegetation and street planting plans would ensure that the amenity of the currently weed infested and degraded site will be enhanced. The view of the site from the adjoining roads and the residential neighbourhood would also be enhanced. Although the development would result in a change from the present pastoral 'feel' of the site, residential transformation of the site has been anticipated by the District Plan zoning and this would be achieved in this proposal with no overall adverse effects on visual amenity, streetscape, neighbourhood character, sense of place or on- and between- site amenity.

The application has been reviewed by Council's Consultant Parks Planner, Ms Jodie Mitchell, who comments that, "In the medium to long term, the removal of weeds will improve the biodiversity of the Green Network. Over time water quality will be enhanced providing a more hospitable environment for in-stream native wildlife and the facilitation of an ecological corridor within the Riparian Margin will improve the integrity of the Green Network". Particularly, it is noted that the proposed vegetation clearance in the Riparian Margin is not to provide for building platforms but a public walkway adjacent to Parrs stream and clearance of weed species and planting of vegetation incompatible with the development and proposed

enhancement of the Riparian area. In addition, no retaining walls are proposed within the Riparian Margin as battering is proposed instead. It is also noted that the introduction of native seedlings, saplings and specimens through re-vegetation will enhance the natural ecosystem of the reserve and surrounding area. Council's Landscape Architect, Mr Gordon Griffin has also reviewed the proposed landscaping and is also satisfied that the proposed planting on individual sites will be sustainable and will enhance the amenity of the individual sites and the surrounding area. Therefore, the removal of vegetation as proposed would therefore result in no more than minor adverse effects in the long term.

10.4 EARTHWORKS

3(a)The extent to which the scale of earthworks is consistent with the scale of development being undertaken.
3(b)The extent to which earthworks adversely affect the potential for restoration or enhancement around the area of earthworks.
3(c)The extent to which earthworks reduce the amount, range and linkages between representative vegetation, fauna habitat and natural features.
3(d)The extent to which earthworks adversely affect the significance or landscape value or natural character of natural landscape elements or other natural features.
3(h)The extent to which earthworks adversely affect the visual amenity of the site or adjoining sites.
3(i) The extent to which cut and fill activities involving earthworks are confined to the site rather than being transported off the site.
3(j)The extent to which earthworks may harm the health and safety of residents.
3(k)The extent to which heavy vehicle traffic generated to the site by earthworks activities creates:
physical damage to a road
a situation hazardous or unsafe to road users.
3(l)The extent to which earthworks are necessary to accommodate development otherwise permitted by the Plan.
3(m)The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through the provision of works and services on or off the site and/or through payment or provision of a financial contribution.
3(n) The extent to which a driveway requiring earthworks is designed to minimise earthworks, particularly by limiting the distance of the driveway on the site.
3(o)The extent to which earthworks are avoided.
3(p)The extent to which unavoidable earthworks are minimised.
3(q)The extent to which the duration of earthworks is minimised.

The proposal is for 40 000 cubic metres of earthworks to be carried out in three stages. The earthworks are required to provide building platforms and to raise parts of the site to ensure that all construction will be above the 100 year flood level of the adjacent stream. It is noted that there will be minor earthworks within the Riparian Margin but the natural contour of the slope will not be altered. There would be no more than minor adverse effects in relation to water quality or quantity as a result of the proposed earthworks activity on the site as it would be located within a modified urban area and stream protection would be an essential requirement of any consent, if granted. Silt and erosion control measures would be required to be installed to ensure that there would be no off-site effects from silt-laden runoff during the construction period.

The site is known to be affected by flooding hazards and is already modified. The geotechnical report provided by the applicant was reviewed by Council's consultant geotechnical engineer who noted some shallow instability along the stream banks. Conditions of consent have been recommended to address any instability issues.

As noted above, bulk site works would be required to prepare the building platforms and for the formation of roads, driveways and parking areas. These works are considered to be appropriate for the scale of the development. Conditions of consent would be recommended to ensure any adverse effects are no more than minor and contained within the site. Such conditions would include silt and erosion controls, cleaning up and/or repairing damage to roadways and footpaths, transport of excess spoil to an approved disposal site and re-use of topsoil on the site. Medium to long term effects resulting from this re-contouring of the site would be off set and enhanced by the proposed restoration planting of the riparian margins and the landscape treatment proposed through out the site. Relatively high perimeter retaining walls will be required particularly along the eastern boundary, but they will have a maximum height of no more than 2 metres. Therefore over time the present unkempt and degraded appearance of the site will evolve into a pleasant urban landscape of gardens and trees and views at varying elevations overlooking the reserves to the north and west.

10.5 IMPERMEABLE SURFACES & RIPARIAN MARGINS

4(a)The extent to which impermeable surfaces degrade or lead to the degradation of existing water quality in the adjoining stream, river, lake, wetland, harbour or sea.
4(b)The extent to which impermeable surfaces adversely affect the overall resilience, biodiversity and integrity of the Green Network.
4(c) The extent to which impermeable surfaces adversely affect potential for restoration or enhancement around and within the area subject to the application, and adjoining sites.
4(d) The extent to which impermeable surfaces reduce the extent, range and linkages between vegetation, fauna habitat and natural features.
4(e) The extent to which impermeable surfaces adversely affect the significance and the landscape value of natural features.
4(f) The extent to which impermeable surfaces contribute to the creation, or exacerbate stormwater flooding problems on-site or in any other part of the stream catchment, with particular regard to impacts in known flood-prone areas and any impacts on an existing stormwater system.
4(g) The extent to which runoff from impermeable surfaces adversely affects the quality of receiving natural water, including the life-supporting quality of natural water.
4(h) The extent to which impermeable surfaces destroy or harm surrounding native vegetation.
4(i) The extent to which impermeable surfaces result in adverse effects on the mauri (life force) of water.

4(j) The extent to which impermeable surfaces result in adverse effects arising from soil loss from the site.
4(k) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through the provision of works and services on or off the site and/or through payment or provision of a financial contribution.
4(l) The extent to which proposed impermeable surfaces are necessary to accommodate development otherwise permitted by the Plan.
4(m) The extent to which impermeable surfaces adversely affect the natural, cultural and maneity values of surface water in rivers and lakes.
4(n) The extent to which the impermeable surfaces affects or may affect the water quality and aquatic ecosystem health of any part of the waterway, adjacent to, upstream of or downstream of, the impermeable surfaces.

It has been previously noted that the performance standard for impermeable surfaces for reticulated sites in the General Natural Area allows up to 60% net site area and this can be increased to 65% of net area for Medium Density Housing. All proposed sites comply with the 60% maximum impermeable surfaces. Given that a reasonable area of the site will be drainage reserves, it is considered that total impermeable surfaces including roads and ROW would not be greater than 60%. The development is therefore unlikely to generate adverse effects from increased impermeable surfaces as restoration planting, landscape treatment and stormwater detention and treatment would mitigate discharge effects and enhance water quality and quantity entering the waterways, would improve ecological linkages and add positively to the mauri of the riparian environment. Financial contributions have been required to further offset future costs of maintenance and mitigation of subsequent impacts.

The proposed walkway within the Riparian Margin will result in impermeable surfaces not exceeding 10% of that part of the site within the Riparian Margin. It is noted that the proposed walkway will be 1.5 metres in width, will be of concrete or asphalt and will not be within the Riparian Margin for the entire length. Therefore, it is considered that the impermeable surface meets the assessment criteria as it does not result in inappropriate or excessive modification to the edges of a stream or a Riparian Margin. As noted earlier, minor earthworks are proposed within the Riparian Margin and erosion and sediment control measures as proposed by the applicant will ensure that any adverse effects on the stream will be no more than minor. The proposed tree planting within the reserves will ensure that the proposed impermeable surfaces within the Riparian Margin will not result in adverse effects on the stream. Therefore the impact on the riparian margins would be no more than minor with restoration treatment enhancing the riparian ecosystem post-development.

10.6 BUILDINGS WITHIN THE RIPARIAN MARGIN

7(a) The extent to which the building will adversely affect the overall resilience, biodiversity and integrity of the Green network.

7(b) The extent to which the building will reduce the extent, range and linkages between vegetation, fauna habita, and natural features.

7(c) The extent to which the building will adversely affect the mauri (lifeforce) of native vegetation.

7(d) The extent to which the building will adversely affects the water quality of taiapure or mahinga mätaitai.

7(e) The extent to which the building will adversely affect the historical, cultural or spiritual significance of any site or waahi tapu of significance to iwi.

7(f) The extent to which the building will adversely affect the significance or landscape value or natural character of any natural features.

7(g) The extent to which the building will adversely affect amenity.

7(h) The extent to which the building can be offset by restoration or enhancement around and within the area subject to the proposed development.

7(i) The extent to which the building creates, contributes to, or exacerbates flooding, erosion stability problems or the potential for flooding, erosion or stability problems.

7(j) The extent to which the building will exacerbate or contribute to degradation of natural watercourses in a way that destroys or reduces their ability to support instream vegetation and fauna; their ability to be used as a healthy food source; their clarity; water quality and flow and their sustainability for swimmers.

7(k) The extent to which the building is necessary to provide access to a site that will avoid the need to pipe or culvert a stream or natural watercourse or water body.

7(l) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and/or through payment or provision of a financial contribution.

7(m) The extent to which the building affects or may affect the water quality and aquatic ecosystem health of any part of the waterway, adjacent to, upstream of or downstream of, the bulding.

The proposed footbridge will be constructed within the Riparian Margin to link the subject site with the existing Albionvale development to the west. The footbridge will be constructed in accordance with the WCC Code of Practice Standard Detail for footbridges or a suitable design agreed by the Parks Consent Planner. Council's Consultant Parks Planner, Ms Jodie Mitchell has reviewed the application and is satisfied that the above assessment criteria can be met due to the following reasons;

1. The Green Network will not be adversely affected as the footbridge will not interrupt the flow of the watercourse, or result in discharge.
2. The footbridge is not of a physical size so as to reduce the extent, range or linkages between vegetation, fauna habitat, or natural features.
3. Amenity will not be affected by the footbridge, it will be constructed in accordance with design principles adopted by WCC through the Code of Practice.
4. Given the minor nature of the building work, it will not exacerbate flooding, erosion or stability problems.
5. The footbridge provides a valuable pedestrian link from the subdivision on the western side of Parrs Stream to the walkway along the eastern side of the Stream and also the proposed housing development.

I concur with Ms Mitchell's assessment and consider that the adverse effects of the bridge on the Riparian Margin will be no more than minor.

10.7 BUILDING HEIGHT

4(a) The extent to which the height of buildings will create adverse effects on neighbourhood character.
4(b) The extent to which the height of buildings will intrude into the privacy of adjoining sites.
4(c) The extent to which the height of buildings will intrude into the privacy of adjoining sites.

4(d) The extent to which the height of buildings will interupt views from the sites vicinity.

The proposed dwellings being building types '2B' and 2'A' on proposed Lot 61 will exceed the 8 metre maximum height by the following varying heights;

- *4 level apartment Type "2B"*
  Maximum extent of infringement = 3.960m (eastern façade)
  Minimum extent of infringement = 1.095m (western façade)

- *Northern-most 3 level apartment Type "2A"*
  Maximum extent of infringement = 115mm (eastern façade)

- *Southern-most 3 level apartment Type "2A"*
  Maximum extent of infringement = 1.010m (eastern façade)

As discussed before, the height infringement noticeable from the adjoining Albionvale property will be a maximum 1.095 metre height infringement. The subject site slopes down from the western boundary and the apartment buildings are sited on the steeper gradients, where they are set into the hillside with car parking underneath and usable outdoor living space on the upper ground level. As the ground level parking in these buildings is cut into the slope, these buildings will present as 2 and 3 storied structures to the neighbouring properties to the west. In addition, the proposed apartments are strategically located next to the existing apartments on the adjoining property and there is a separation distance of approximately 10 metres between the existing and the proposed development. Therefore the infringing buildings will not physically dominate adjoining sites as they adjoin buildings of a similar height.

The proposed dwellings on Lots 9, 30, 54 and 55 will also have the following maximum height infringements respectively; 250mm, 500mm, 2700mm and 3200mm. As discussed in Section 5.2.9 of this report, the proposed dwellings on Lots 54 and 55 will be setback approximately 45-50m from the nearest external boundary of the neighbouring Albionvale development to the west and approximately 40 metres from the nearest external boundary of the neighbouring Woodbank development to the east. The proposed houses will also be lower than the existing houses on the neighbouring properties and hence any adverse effects will be minimal. Given the setback of these buildings from adjoining property boundaries and the proposed landscaping, it is considered that the privacy of adjoining properties will not be adversely affected. I however note that the Medium Density Housing Criteria allow a maximum height of 11 metres, therefore the infringing portion of the development fits well with these criteria.

10.8 HEIGHT IN RELATION TO BOUNDARY

5(a) The extent to which the height, location and design of buildings will allow for reasonable sunlight and daylight access to adjoining sites.
5(b) The extent to which the height, location and design of buildings will allow for reasonable sunlight and daylight access to the proposed building.
5(c)The extent to which each habitable room in a building is located to allow for reasonable daylight access.
5(d)The extent to which privacy is safeguarded by the provision of planting or screening

The proposed dwellings on proposed Lots 1-22 and 24-61 would project beyond the '2.5+ 45°, 2.5+35° and 2.5m+55°' recession plane along the internal boundaries by varying heights. In the majority of the cases, the infringements are limited to the one corner of the building or roof ridgeline such that there would be no significant loss of daylight or sunlight to habitable rooms or to the sites in general. The development has been designed in such a way that buildings and outdoor areas receive maximum amounts of daylight. Given that the infringements are along internal boundaries and the intensity of the development, it is considered that any dominance or privacy effects will be minimal as they are expected in this type of development. In addition, the proposal complies with height in relation to boundary requirements on the external boundaries and given the setback of the proposed houses from the existing houses on adjoining properties, any adverse privacy and dominance effects on adjoining properties will be negligible. Proposed planting and screening along the property boundaries will also ensure that the privacy of adjoining properties is not adversely affected.

10.9 CARPARKING & DRIVEWAYS

12(a) the extent to which driveways provide safe, maintenance-free, adequately drained, efficient, effective and visually attractive vehicular access from the road to buildings.
12(b) The extent to which car parking accommodates expected peak demand of an activity, having regard to the position of the site in relation to public transport routes and the parking capacity of adjacent roads, and the road's function in the Roading Hierarchy.
12(c) The extent to which driveways and carparking create adverse visual or aural effects on adjoining sites.
12(d) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and /or through payment or provision of a financial contribution.

As noted in Section 5.2.9 above, the proposal is for a shared driveway to serve 18 units on lots 57-61. Council's Transport Assets Engineer, Mr John Carroll has reviewed the application and has recommended conditions of consent to ensure that the driveway is constructed in accordance with Council's standards. It is considered that the proposed driveway will be located and designed to ensure that it provides for safe and efficient vehicular traffic. In addition, the proposed driveway will be screened from view of adjoining properties by an existing fence and proposed planting.

10.10 CITY WIDE RULES- NATURAL HAZARDS

1(a) The extent to which subdivisions are designed to avoid natural hazards or at least provide for reasonable development, on areas of the proposed site not subject to natural hazards.
1(b) The extent to which buildings can be located on areas of site not subject to natural hazards.
1(c) The extent to which any subdivision or building:

- *Will or may result in damage to property or harm to people.*
- *Will or may result in more than minor adverse effects on existing landforms or coastlines.*
- *Will or may result in more than minor adverse effects on water quality.*

1(d) The extent to which in relation to areas subject to inundation, any subdivision or building:

- *Will or may result in damage to property or harm to people.*
- *Will or may result in more than minor adverse effects on existing landforms*
- *Will have more than minor adverse effects on the natural qualities of the water system.*
- *Will have more than minor adverse effects on the ability of the catchement to dispose of water in an efficient manner.*
- *Will result in the floor level of any habitable building being less than 0.5 metres above the 1 in 100 (1% AEP) flood level*

1(e) The extent to which the proposal has given regard to any comprehensive catchment stormwater discharge consent issued by the Auckland Regional Council.
1(f) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and/or through payment or provision of a financial contribution.
1(g) The extent to which, in relation to areas subject to the potential for damage by wildfire, provision is made for appropriate disposal of dead vegetative material.

The application notes that limited earthworks within the 100 year flood plain are required for the construction of the wetland stormwater treatment facilities to the northern portion of the site. A comprehensive sediment and erosion control plan will be implemented and will be monitored by both the Waitakere City Council and Auckland Regional Council. Although most of the vegetation will be removed, a comprehensive landscaping plan is proposed on the entire site and particularly along the riparian margins. The application has been reviewed by Council's Subdivision Engineer, Ms Lucy Lunevich who has recommended the inclusion of conditions of consent to ensure that habitable buildings within the flood plain have floor levels above the flood level. It is considered that the proposal will have no more than minor adverse effects on water quality and on the safety of people and property.

10.11 Other Matters (Section 104(1)(c))

(a) The proposal also requires the following resource consent from the Auckland Regional Council:
- Land Use Consent: Sediment Control for land disturbing activities over more than 1.0 hectare of land;
- Land Use Consent : Section 13 (RMA) for works within a watercourse for the construction of a road crossing and culvert.

(b) A high pressure gas pipeline cuts across the proposed drainage reserve to the northern end of the subject site. The Scheme Plan shows an existing easement through the site to accommodate this. The proposed road and residential lots will be outside of this easement.

(c) Potential contamination: The site is large and has had a pastoral use in the past. It has **not** been identified on the Auckland Regional Council contamination maps and there is no indication of any contamination sources. Soil testing has therefore not been required.

10.12 Long Term Council Community Plan

It is noted that the creation of a 59 new additional Lots and 77 new residential units including medium density development attracts a development contribution in accordance with the Waitakere City Council LTCCP.

A Development Contribution of $613, 657.09 (incl. GST) was estimated at lodgement for this application. This development contribution has already been paid.

10.13 Auckland Regional Policy Statement

The proposal fits with the ARPS of intensifying housing opportunities close to transport hubs and commercial facilities.

11.0 POLICIES AND OBJECTIVES

It is considered that the proposed development would be consistent with the objectives and policies of the District Plan. The District Plan is "effects-based" in its approach to natural and physical resources and it has been demonstrated in the previous environmental assessment of effects that subject to conditions any adverse effects arising from the proposal would be no more than minor.

The District Plan Assessment Criteria, developed to address the issues covered in the objectives and policies, have already been discussed in section 10.2.

The proposed development is considered to be consistent with these assessment criteria. For this reason the proposed development is also considered to be consistent with the relevant Objectives and Policies.

The relevant objectives and policies in relation to this proposal are:

1.1 - Settlement should be of a type and density that avoids, remedies or mitigates adverse impacts on water quality. Consolidation of population within the urban area should be within the capacity of stormwater and waste management infrastructure.

1.2 - Centralisation of activities to support passenger transport, reduce vehicle numbers and therefore reduce contamination of stormwater from motor vehicles. Particular regard should be had for the location of medium density housing within and adjacent to central locations.

1.5 - Activities should be managed to avoid further clearance and damage to native vegetation within the margins of the rivers. Need to have a programme to restore native vegetation to the riparian margins.

1.7 - Activities should be managed in a way that encourages absorption of rainfall and surface water runoff on-site.

1.8 - Carry out activities in such a way so as to avoid, remedy or mitigate, so minimising the movement of soils and sediment and other contaminants into receiving waters.

1.15 - Where possible, minimise demand for water and energy.

3.1 - Medium Density Housing should be encouraged around main town centres, railway stations and major roads to help provide for the efficient use of land within the urban area.

3.2 - Earthworks should be carried out in a way that avoids, or where unavoidable, remedies or mitigates any adverse effects on the surrounding topsoil and soil structure.

10.4 - Buildings should be located on residential sites in a way that provides for sufficient and usable outdoor space for recreation and leisure.

10.5 - structures should be placed to ensure that adequate levels of daylight reach any habitable rooms on-site and adjoining properties throughout the year.

10.6 - Buildings, storage and parking areas to be designed and placed on-site or screened to maintain privacy and on site amenity of adjacent residential properties.

10.17 - Settlement in all parts of the city should be at a density that is within the capacity of water supply, stormwater, wastewater and solid waste infrastructure to safely absorb the effects of that settlement, and to provide for the health of all residents, visitors and workers.

11.1 - Settlement should be of a type and a density that protects amenity values, including neighbourhood character by providing for more intensive settlement in other parts of the Living environment in a way that protects the wellbeing of residents and enhances the amenity of these areas.

11.3 - Buildings and structures should be located so that they maintain the neighbourhood character, visual amenity of the surrounding area and the characteristic streetscape of the area.

The subject site is located outside but in close proximity to the Medium Density Housing Radius located around the Glen Eden town centre to the east and the Sunnyvale railway station to the north as identified within the District plan maps. The proposed freehold development comprises sites varying from 350m² to 840m² while the more intensive development proposed to adjoin the completed Albionvale subdivision provides densities between 267m² to 318m². The lower density development will be located adjacent to the existing lower density development along Woodbank Drive to the east.

Each proposed residential unit will have a minimum of 25m² outdoor space per bedroom with all of the units having private garden areas. Some of the 3 and 4 bedroom units have outdoor spaces of more than 150m² in area. The apartments on Lot 61 will have deck/patio areas adjacent to the houses. Furthermore, the outdoor space has been established on site to also provide gardens and recreational areas. This would add to onsite amenity and would generally improve the existing neighbourhood amenity.
The proposal is for the removal of all existing trees with the exception of some native trees and shrubs in the reserve area. The weed infested areas will also be cleared. Trees to be retained include the mature totara and the mature kahikatea, both close to the stream, as well as groups of kanuka with their mainly native under storey. Planting is proposed along the stream, the reserves, road reserve and on individual lots which will greatly improve the present degraded site.

Infrastructure has been assessed by Council's EcoWater subdivision engineer and suitable conditions have been recommended to ensure proper servicing of the units. The units will be connected to reticulated services. In addition, a contribution to the upgrade of stormwater reticulation will be required through a condition of consent. Development contributions have been paid to offset the cost of upgrading or renewing infrastructure

Conditions of consent will ensure that sediment control measures will be installed to Council's satisfaction prior to the commencement of earthworks. Landscape treatment will ensure that the short term adverse effects from site works (including earthworks and vegetation removal) are mitigated.

Overall the proposal is consistent with the type of development anticipated by the District Plan, is compatible with Council's strategic objectives for Medium Density Housing and would be sympathetic to existing and proposed development within the wider locality associated with this rapidly growing residential area.

12.0 PART II OF THE ACT- PURPOSE AND PRINCIPLES

Section 5 in Part II of the Act identifies the purpose of the Act as being the sustainable management of natural and physical resources. This means managing the use of natural and physical resources in a way that enables people and communities to provide for their social, cultural and economic well-being while sustaining those resources for future generations, protecting the life supporting capacity of ecosystems, and avoiding, remedying or mitigating adverse effects on the environment.

It is considered that the proposal is consistent with sustainable resource management. In particular this proposal is concerned with the sustainable management of the Living Environment, General Natural area and Riparian Margins in such a way that the communities' social and cultural well being are enhanced through maintaining the existing neighbourhood character and amenity. The proposal would allow for the establishment of Medium Density Housing with unit areas ranging from 263m² - 840m² that would be appropriate within the environment and would be able to establish and operate in such a way that the amenities of the neighbourhood would not be adversely affected.

The proposal is not considered to adversely affect any matters of national importance nor affect Council's obligations under the Treaty of Waitangi. It is considered that the adverse effects arising from the proposal and the proposed mitigation are limited in significance to the surrounding urban neighbourhood.

Council's iwi partners, Ngati Whatua and Te Kawerau a Maki have been given the opportunity to discuss this proposal and no issues have arisen in regard to the Treaty of Waitangi.

Section 7 identifies a number of "other matters" to be given particular regard by Council in the consideration of any assessment for resource consent, and includes the efficient use of natural and physical resources, and the maintenance and enhancement of amenity values.

The potential effects of the proposal on the amenity and character of the area have been discussed in detail in the effects assessment contained in Section 8 of this report. Subject to conditions such as

compliance with sediment and erosion control measures, implementation of the restoration planting plan and landscape treatment, and compliance with Council's Code of Practice for infrastructure (drainage and roading), it is concluded that the proposed development would be compatible with the surrounding built and natural environment and the existing amenity of the area would not be reduced.

13.0 TIME PERIOD IN WHICH TO IMPLEMENT THE CONSENT

Under section 125 of the Resource Management Act 1991, a consent lapses either on the date that is specified in the consent or if no date is specified, 5 years after the date of commencement of the consent. This Landuse consent has been given a 5 year lapse date.

14.0 MONITORING

The proposal will need to be monitored in accordance with the conditions specified in this report, and the requirements contained in the District Plan.

15.0 RECOMMENDED DECISION

Pursuant to Sections 104, 104B and 108 of the Resource Management Act 1991, being satisfied that no body or person is adversely affected, it is recommended that **consent be granted** to the application by New Zealand Housing Foundation to undertake a medium density residential housing development, that under the Rules of the District Plan (as more accurately defined in Sections 3 and 4 of this report) requires resource consent for;

- Earthworks
- Vegetation Alteration
- Height in relation to Boundary
- Building Height
- Medium Density Housing
- Shared driveway
- Building, earthworks & vegetation alteration on land known by Council to be subject to inundation.

At 4 Pyramid Place & 423-429 West Coast Road, Glen Eden, being Lots 2 & 3 DP 339810 for the following reasons pursuant to Section 113:

(i) It is considered that the proposal would have no more than a de minimis adverse effect on the environment as the proposed development is in keeping with the existing neighbourhood character and amenity (as described in more detail in Section 10 above). Although the proposed development exceeds the maximum height, the level of infringement is minor and due to the topography of the site and the design of the buildings, the infringement will not be clearly distinguished when viewed from neighbouring sites. The Height in Relation to boundary infringements is considered minor and is on the internal boundaries. The amount of earthworks proposed is considered to be consistent with the scale of the development and will be adequately managed through sediment and erosion control measures, in conjunction with the site Management Plan. The proposed landscape treatment will improve the overall amenity of the site.

(ii) The proposal is considered to be consistent with the relevant assessment criteria for Discretionary Activities for earthworks, vegetation clearance and medium density housing as demonstrated in Sections 5.2 and 10.2 above.

(iii) The proposal is generally consistent with the objectives and policies of the District Plan and Part II of the Resource Management Act 1991.

Conditions imposed on the consent are as follows:

General Conditions

1. The development shall proceed in accordance with the plans titled;
   - Site Plan- West Coast Road Housing Development- Bulk and Location Study, prepared by Babbage Consultants, dated 23 June 2006 (being 1 sheet).
   - Site Plan- West Coast Road Housing Development (Bulk & Location Study)- Stage 1A & 1B- Rev A002, Stage 1C & 1D- Rev A003, Stage 2A & 2B- Rev A004, Stage 3- Rev A005, all dated June 2006.
   - Floor Plans- Type 1 House- (Sheet A101), Type 2A House- 2 Bedroom Apartment (Sheets A102-1 & A102-2), Type 2B House (Sheets A103-1 & A103-2), Type 2C House (Sheets A104-1 & A104-2), Type 3 House (Sheet A105), Type 4A House (Sheet 106), Type 4B House (Sheet A107), Type 4C (Sheet A108), Type 5A House (Sheet A109), Type 5B House (Sheet A110), Type 5C House (Sheet A111).
   - Elevation Plans- Type 1 House- (Sheet A201), Type 2A House- (Sheets A202-1 & A202-2), Type 2B House (Sheets A203-1, A203-2 & A203-3), Type 2C House (Sheets A204-1 & A204-2), Type 3 House (Sheet A205), Type 4A House (Sheet 206), Type 4B House (Sheet A207), Type 4C (Sheet A208), Type 5A House (Sheet A209), Type 5B House (Sheet A210-1 & A210-2), Type 5C House (Sheet A211-1).
   - Elevation Plans showing HIRB- Sections 1A (Rev A304), Sections 1B (Rev A305 & A306), Sections 1C (Rev A307 & A308), Sections Stage 1D (Rev A309), Sections Stage 2A (Rev A 310), Sections Stage 2A & 2B (Rev A311 & Rev A 312), Section stage 3 (Rev A313)
   - Area Summary, Rev A401, being 1 Sheet, dated 30 May 2006

   Prepared by Babbage consultants dated June 2006.

   - Roading Plan for NZ Housing Foundation, Sheet 1 (C20- Rev A) & Sheet 2 (C21- Rev A).
   - Road Longitudinal Sections, sheet 1 (C22), Sheet 2 (C23), Sheet 3 (C24).
   - Road Cross Sections, Sheet 1 (C25-A), Sheet 2 (C26-A).
   - Topographical Plan, Sheet 1 (C01- Rev A), Sheet 2 (C02- Rev A).
   - Earthworks Plan, Sheet 1 (C03- Rev B), Sheet 2 (C04- Rev B).
   - Erosion and Sediment Control Plan, Sheet 1 (C05- Rev B), Sheet 2 (C06- Rev B).
   - Sediment Control Details, (C07- Rev A)
   - Drainage Plan, Sheet 1 (C10- Rev C), Sheet 2 (C11- Rev A)
   - Stage 2 Swale Layout (C15), Stage 3 Swale Layout (C16- Rev A)
   - Wetland & detention Basin 1 Layout (C17- Rev A)
   - Pond Details Plan (C18- Rev B)
   - Detention Basin 2 Layout (C19)
   - Services Plan, Sheet 1 (C35- Rev A), Sheet 2 (C36- Rev A)
   - Stormwater Catchment Plan, Sheet 1 (C45), Sheet 2 (C46)
   - Retaining Wall Plan, Sheet 1 (C50), Sheet 2 (C51).

   prepared by Babbage Consultants and dated June 2006.

   - Typical Planting Plan House Type 4A, reference LSP-07, dated 07/08/06
   - Typical Garden Layout House type 4A, reference LSP-08 dated 15/08/06
   - Landscape Master Plan and Typical Garden Layout reference LSP-01 Rev C, dated 16/06/06
   - Landscape Master Plan, reference LSP-02 Rev C, dated 16/06/06
   - Street Tree Planting Plan 1 of 2, reference LSP-05 Rev B, dated 15/08/06
   - Street tree Planting Plan 2 of 2, reference LSP-06 Rev B, dated 15/08/06

   prepared by Soul Environments

and all of the information submitted with the application (including further information), all referenced by Council as **RMA20061077** .

2. Pursuant to Section 125 of the Resource Management Act 1991, if not given effect to earlier, this consent shall lapse five (5) years after the grant date of the consent.

3. A consent compliance monitoring fee of $1, 035 has been paid to the Council. This fee is to recover the actual and reasonable costs incurred ensuring compliance with the conditions of this consent. If, on inspection all conditions have not been satisfactorily met, a reinspection shall be required at the relevant hourly rate applicable at the time the re-inspection is carried out. The resource consent holder shall be advised of any further monitoring fees if they are required.

4. All reticulated services, including power and telephone, shall be provided underground.

5. A copy of this Resource Consent and the approved Site Management Plan to which the consent relates shall be held on site at all times that the works are being carried out. All personnel working on the site shall be made aware of, and have access to this consent and accompanying documentation.

6. The carparks for the apartments on Lot 61 shall be clearly marked prior to occupation. At least one carpark shall be allocated for each unit.

Surveyors Certificates

7. A Licensed Cadastral Surveyor shall certify to Council in writing prior to work progressing beyond the pre-lining stage that the buildings are located exactly as proposed in the application and will not exceed the degree of infringement applied for in relation to the overall height and height in relation to boundary controls of the District Plan and elsewhere complies with the height in relation to boundary and overall height rules of the District Plan. No work shall proceed beyond this stage until receipt of such certification, to the satisfaction of the Manager Resource Consents.

Earthworks Conditions

8. **Before commencement of any works and until completion of exposed earth siteworks**, adequate sediment and erosion control measures shall be constructed and maintained by the consent holder. The control measures must be maintained until the site has been adequately stabilised against erosion. The construction and maintenance shall be in accordance with Appendix 3, Erosion and Sediment Control Measures Appendix to the Natural Area Rules of the Waitakere City Council District Plan (attached as appendix A to this consent). **NO WORK MAY COMMENCE UNTIL APPROVAL HAS BEEN OBTAINED FROM WATERCARE (due to presence of Watercare Infrastructures)**

   Please **advise Council's Environmental Monitoring Officer when the controls are in place and await the approval of the monitoring officer** before commencing work. **The applicant should book an inspection at least 48 hours prior to the required inspection.**

9. In the event of archaeological evidence being uncovered (e.g shell, middens, hängï or ovens, pit depressions, defensive ditches, artifactual material or human bones) work shall cease in the vicinity of the discovery, the area secured, and the Council (Planning Help Desk , 839 0400) contacted. Activity on the site will remain halted until the Manager Resource Consents gives approval for operation to recommence.

10. All sediment laden runoff from the site shall be treated in accordance with the approved silt and sediment control management plan attached as appendix A to this consent. These measures are to be operational before earthworks commence, and shall be maintained until the site has been secured against erosion (whether by vegetative means, paving or otherwise). The consent holder shall notify Council's Monitoring Officer when silt and sediment control measures are in place. Work shall not commence until approval has been gained in writing from the Manager Resource Consents.

11. If the bulk earthworks are not completed within the earthworks season (1 November till April 30th) then the necessary measures shall be implemented to ensure that the erosion and sediment controls are appropriate for the winter. A written report on the progress of the earthworks and the above erosion and sediment controls from the registered engineer supervising the work shall be submitted for the approval of the Manager: Resource Consents within one month of the cessation of work.

12. All areas of exposed earth shall be top-soiled and grassed or otherwise stabilised against erosion as soon as practicable and in a progressive manner as works are complete but no later than one week following the completion of works.

13. Where practicable all topsoil excavated during the course of works shall be retained on site and re-spread following the completion of earthworks.

14. All earthworks, stockpiles of earth and the storage of other construction materials/ works shall be excluded from the drip-line of all vegetation to be retained on site and from the riparian margins of streams / the coast. A protective fence shall be erected around the protected area prior to the commencement of any work on the site and shall remain in place until the completion of all works on site.

15. Stockpiles of earth shall be located as far as practicable from the stream and existing residences, to the satisfaction of the Manager Resource Consents. Approval to the landfill to be used shall be obtained from the Manager, Resource Consents prior to any work commencing.

16. All excess or unsuitable excavated material shall be removed from the site before or immediately following the completion of earthworks, to an approved disposal location and disposed of to the satisfaction of the Manager Resource Consents. Written evidence demonstrating that the excavated fill has been deposited in the approved location, should be submitted to the Manager Resource Consents in the form of producer statement, certification or similar.

17. All dirt tracked onto the surrounding roads as a result of the development covered by this consent shall be cleaned by sweeping on a daily basis at the expense of the applicant. In case of repeated non-compliance with this condition, Council may engage the road cleaning contractor nominated by the applicant to carry out the road cleaning. Council's Environmental Monitoring Officer (EMO) may engage the road sweeping contractor to carry out road cleaning if it is the EMO' opinion that the dirt on roads and/or footpath is creating an adverse effect on the environment. The road cleaning contractor shall be engaged at the cost of the applicant.

18. A full copy of the Resource Consent Conditions, Approved Plans, including site management and Erosion and Sediment Control Plans shall be kept on the site at all times. All personnel working on the site shall be made aware of and have access to the contents of this consent document and the associated Site Management and Erosion and Sediment Control Plans.

19. All necessary action shall be taken to prevent a dust nuisance to neighbouring properties; including, but not limited to, the staging of areas of works, the retention of existing shelter belts and hedgerows, the installation and maintenance of wind fences and vegetated strips, watering of all haul roads and manoeuvring areas during dry periods, spraying of load dumping operations, and suspension of all operations if necessitated by the prevailing conditions to the satisfaction of the Manager Resource Consents. The site, or parts thereof as appropriate, shall be re-grassed or otherwise protected from wind erosion immediately on the completion of bulk earthworks whether or not other works are completed.

20. A stabilised entranceway to the site shall be provided prior to the commencement of works and maintained for the duration of works. Additional measures such as wheel wash facilities shall be implemented (as) if deemed necessary by Council's Environmental Monitoring Officer to prevent the deposition of earth or other debris on the surrounding street network by vehicles entering and exiting the site. Roads, footpaths, berms and kerbs including entry and exit points to the site shall be kept free from damage and clear of mud and debris at all times Any material deposited on the street shall be immediately removed by sweeping and any damage caused shall be immediately repaired at the expense of the consent holder. The consent holder shall notify Council's Monitoring Officer when entranceway controls are in place. Work shall not commence until approval has been gained in writing from the Manager Resource Consents.

21. The development works associated with the subdivision are to be carried out in accordance with NZS 6803P:1984 "The Measurement and Assessment of Noise from construction, Maintenance and Demolition Work" with the exception of the hours of work, which are to be limited as follows:

Monday to Friday:	7.30 am to 7.00 pm
Saturday	8.00 am to 5:30 pm
Sunday and Public Holidays:	No work

Vegetation Conditions

22. Landscape development on private lots including framework planting shall be in general accordance with the Landscape Master Plan and Typical Garden Layout, Drawing LSP-01 Rev C and LSP-02 Rev C, both dated 16.06.06 and in accordance with the Street Tree Planting Plan 1 of 2 Drawing LSP-05 Rev B, and Street Tree Planting Plan 2 of 2 Drawing LSP-06 Rev B both dated 15.08.06 by SOUL Environments and the 'Additional information on proposed planting' Rev C, received at Council 16 October 2006, and shall be established to the satisfaction of Council's Environmental Monitoring Officer, Resource consents.

23. On site planting for each private lot shall have the framework tree planting and fencing as per the afore-cited plans and shall have lawn areas, gardens, paving and other site features, in general accordance with the 'Typical Planting Plan House Type 4A, dated 7.08.06 and 'Typical Garden Layout House Type 4B' dated 16.08.06 plans and associated planting schedule by Soul submitted with the application, and shall be to the satisfaction of Council's Environmental Monitoring Officer, Resource Consents.

24. Grassed areas shall be manually graded to be flush with adjacent paved or retained areas and, in association with garden areas, shall be prepared prior to occupation of units and establishment of any proposed fencing. Fences and gates shall be set in place following final forming of ground levels including grassed areas. Garden areas and grassed areas shall be good quality topsoil or garden mix (50:50 topsoil and compost), weed and debris free with garden areas to 300mm minimum depth and grassed areas to 200mm minimum depth and shall be to the satisfaction of Council's Environmental Monitoring Officer Resource Consents.

25. Planting shall be set in place in the first planting season (May till 7th September) following use of each dwelling unit to the satisfaction of Council's Environmental Monitoring Officer, Resource Consents. If the development is staged then the landscape development including planting shall be staged accordingly.

26. Any tree planted within a grass area shall be within a 600mm diameter weed and debris-free garden area with a woodchip mulch to 60mm depth, and with two marker stakes 50mm x 50mm x 1.2m per tree (ties not required).

27. Lawn areas and gardens shall be watered as necessary to facilitate establishment, and with gardens kept weed free on an ongoing basis for the first two years following initial planting, to the satisfaction of the Environmental Monitoring Officer, Resource Consents. Any tree or plant that dies, is removed or otherwise fails to establish shall be replaced the following planting season and shall be maintained for a further two years to the satisfaction of the Environmental Monitoring Officer, Resource Consents.

28. All vegetation works shall be undertaken in accordance with Subdivision Conditions (PK 1) – (PK 10).

Transport Assets

29. All transport assets conditions shall be completed to the satisfaction of the Manager, Transport Assets and shall be in accordance with the conditions outlined in the subdivision consent (See the subdivision consent RMA 20061078 for exact requirements and detail).

Geotechnical Conditions

30. A geotechnical investigation shall be completed by an experienced geotechnical engineer for the detailed design of earthworks at the site. This shall include recommendations for the batter slopes and an assessment of overall stability off site slopes (supported by limit equilibrium analysis), consolidation characteristics of the soils, fill quality and compaction requirements. All the requirements for constructing and controlling engineered fill shall be detailed. The report on this work shall accompany the earthworks construction management report.

31. Groundwater drainage measures for the development shall be designed by an experienced geotechnical engineer, taking into account existing information on shallow groundwater levels,

anticipated maximum winter high and summer low groundwater levels, and potential effects on adjacent developed properties or roadways.

32. Building consents shall be required for the retaining walls which shall be no higher that 2.0 metres on all boundaries.

33. Pavement designs shall be confirmed by an experienced geotechnical engineer following the completion of earthworks.

34. A producer statement must be provided on completion of earthworks together with an earthworks completion report stating what requirements if any are necessary for the individual lots.

35. Unless there is clear evidence in the earthworks completion report to be provided by an engineer that NZS 3604 requirements have been fully met, all foundations shall require specific design.

36. Foundations of all lots shall be verified by an experienced geotechnical engineer familiar with the geotechnical report and shall take into account the potential for shrink/swell behaviour.

37. Stormwater pond construction shall be supervised by an experienced engineer familiar with the geotechnical report.

38. The proposed stormwater management systems to be used during construction shall be reviewed by an experienced engineer familiar with the geotechnical report.

39. The proposed stormwater management systems to be used during construction shall be reviewed by an experienced engineer familiar with the geotechnical report.

PARKS CONDITIONS

Please contact the Parks Assets Planning Co-ordinator on 836-8000 (extension 8768) to book an inspection.

(PK 1) Carry out the removal of environmentally damaging plants from all lots including the proposed esplanade reserve, as listed in the Waitakere City Council Proposed District Plan. Submit a Weed Control Programme to the satisfaction of the Manager, Resource Consents within 2 months of the issue of this consent. This Weed Control Programme shall be implemented on the site within 6 months of the date of issue of this resource consent to the satisfaction of the Manager, Resource Consents. The programme needs to include:

a) an inventory of the weed species to be removed;
b) removal techniques to be utilised; weed disposal methods;
c) time frames for work and whether the weed removal needs to be staged (particularly relevant for sensitive areas such as coastal edges or riparian margins);
d) any re-vegetation programme required to prevent re infestation of weeds;
e) an assessment of any ecological issues around the removal of vegetation;
f) methods for addressing stability and erosion and sediment control methods.

(PK 2) Enter into a registerable fencing agreement with Council in regards to Lots 23, 24, 25, and 46 – 60 to the effect that the Council will not be liable to contribute towards the cost of creating or maintaining any dividing fence between any reserve or other land vested in or administered by the Council. Also, that any fences facing the reserve shall be of visually permeable construction such as swimming pool fencing and 1.2metres maximum height in order to ensure good surveillance of the reserve, and to reduce the likelihood of graffiti.

(PK 3) Prior to work commencing on the site, protective fencing shall be placed around the dripline of the Totara (#4), Kahikatea (#7), Cabbage (#13), Pear (#10) and groups of native revegetation (references #4 and #6) as shown on the plan titled "Housing Foundation HZ, West Coast Road Development (Part of 423-429 West Coast Road) vegetation and major features, Sheets 1 & 2", dated 12 June 2006 prepared by Willy Coenradi. The fencing shall remain in place throughout the vegetation alteration, earthworks and construction stages.

(PK 4) Monitoring of the health of the vegetation referenced in (2) above shall be undertaken prior to the commencement of, and during the vegetation alteration, earthworks and construction stages. This monitoring shall be undertaken by an appropriately qualified arborist engaged by the applicant in

conjunction with a WCC arborist to provide progressive on-site assessment of the effects of the work on the health of the Riparian vegetation.

(PK 5) That a silt fence and dirty water diversion run-off bund as depicted on the Erosion and Sediment Control Plan prepared by Babbage Consultants dated 23/06/06 contained in Appendix 10 of the application shall be implemented along the full length of the western side of the stream to the satisfaction of prior to Parks Consent Planner prior to earthworks or vegetation alteration commencing on the site.

(PK 6) Landscaping and street tree planting is to be established within the development to the satisfaction of the Parks Consent Planner. The landscaping and street tree plans prepared by SOUL Environments specifically:

- Landscape Master Plan dated 16/06/06 Revision C Reference LSP-01
- Street Tree Planting Plan, Plan 1 of 2 and 2 of 2, dated 15/08/06 Revision B
- Accompanying information titled "NZ Housing Foundation Babbage Consultants 423 -429 West Coast Road, Henderson. Additional information on proposed planting 13-October-06, Revision C".

are to be implemented in accordance with WCC parks guidelines and subject to the following:

(i) That the bollards along the road frontage of the drainage reserve at the northern end shall be implemented in accordance with the WCC Code of Practice Standard Detail 7.17 and 7.71. That a 3 metre chain entry for maintenance access to the stormwater pond and wetland area shall be located in an appropriate location to the satisfaction of the Parks Consents Planner.

(ii) Street Lighting shall be implemented in accordance with the WCC Code of Practice Section 3.3.14 and Standard Detail 7.91 attached and located so as to not conflict with street tree planting.

(iii) In accordance with Section 7.3.7.3 of the WCC Code of Practice all footpath concrete paving in the reserve shall be 1.5 metres wide and exposed aggregate.

(iv) That the plants along the footpath adjacent to the Stream shall be low level and set back a suitable distance so as to not restrict access or visibility along the pathway.

(v) That the parking areas provided on the streets adjacent to footpaths shall be curbed or wheel stops implemented to the satisfaction of the Parks Consent Planner.

(vi) All plants shall be best nursery stock, healthy vigorous and eco-sourced.

(PK 7) The street tree planting shall be implemented to the satisfaction of the Parks Consent Planner. All plantings are to be in accordance with the WCC parks guidelines, Code of Practice and the landscape specification submitted with the Landscape Plan. An option exists for the applicant to pay Council the cost of supplying, planting and staking of street trees per plan, to carry out the planting of street trees following the completion of the building works. The cost for this would be $153 plus GST per tree (the current contract price for supply, planting, and staking of a PB95 tree as at April 2003).

(PK 8) The details of the pedestrian footpath, footbridge and boardwalk shall be finalised at the Engineering Plan stage to the satisfaction of the Parks Consent Planner. Engineering plans for the footpath, footbridge and boardwalk shall be submitted within 3 months of the issue of this consent. All works shall comply with the Waitakere City Council Code of Practice for City Infrastructure and Land Development. The developer must advise the Parks Consent Planner of when work will commence and prior to any works being carried out. Engineering plan details shall be provided at Engineering Plan stages for the following:

(i) The exposed aggregate footpath alignment details shall be to a width of 1.5m except where otherwise shown on approved drawings (Titch & Pyramid Place) and constructed in accordance with the Waitakere City Council Code of Practice for City Infrastructure and Land Development Standard Detail 7.102 for Parks Walkway Types attached.

(ii) That the footbridge shall be constructed in accordance with the Waitakere City Council Code of Practice City Infrastructure and Land Development Standard Detail 7.106 for Typical Foot Bridge attached.

(iii) The boardwalk along the stream shall be constructed in accordance with the WCC Code of Practice Standard detail 7.105 for Typical Boardwalk attached.

(PK 9) Ensure that the reserves are left in a condition suitable for maintenance and mowing in accordance with section 7.3 of the WCC Code of Practice and to the satisfaction of the Parks Asset Planner.

Ecowater Conditions

(Eco 1) All infrastructure relating to stormwater treatment and disposal, wastewater disposal, and water supply shall be designed and completed to the satisfaction of Councils Drainage Engineer. (Compliance with the Waitakere City Council Code of Practice for City Infrastructure and Land Development is deemed to be in accordance with the above condition). (See the subdivision consent RMA 20061078 for exact requirements and detail).

Advice Notes:

1. Where indicated in the conditions it is the consent holders' responsibility to inform the Environmental Monitoring Officer when inspection is required. Inspections can be requested through the Call Centre on 839 0400.

2. Prior to the commencement of works the resource consent holder shall obtain all consents, permits and authorisations for the work as may be required by the Auckland Regional Council.

3. A condition of consent relating to the payment of a maintenance bond for landscaping has not been included under this landuse consent but will be a condition of subdivision. It is the applicant's responsibility to ensure that this condition is complied with before issue of 224c under the subdivision consent (RMA20061078).

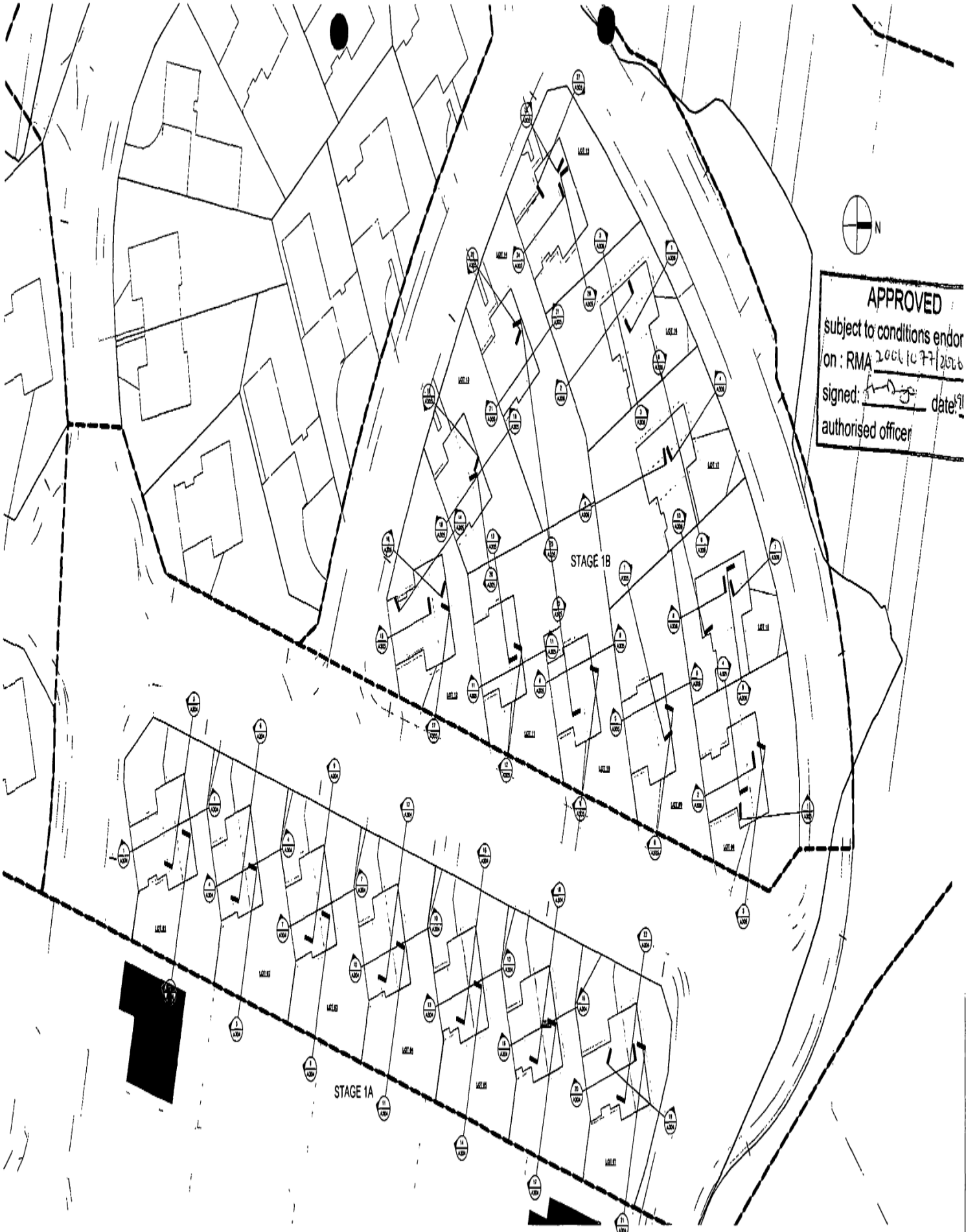
Reporting Planner:..... **Date**: 30/10/2006
Felicitas Dhliwayo

16.0 CONSENT GRANTED AS RECOMMENDED

Acting under delegated authority and for the reasons set out in the above recommendation this application **RMA20061077** shall be granted subject to the conditions set out in Section 14.0 above.

..... **Date**: 30 Oct 2006
Jeannette Ibrahim
Team Leader Consents

Please contact Felicitas Dhliwayo (Ph 836 8000 ext. 8352) if you have any queries about this resource consent and associated report.



APPROVED
subject to conditions endor
on : RMA 20061077 | 2006
signed: _____ date: 9
authorised officer

1 A002 Site 1A
1 : 500

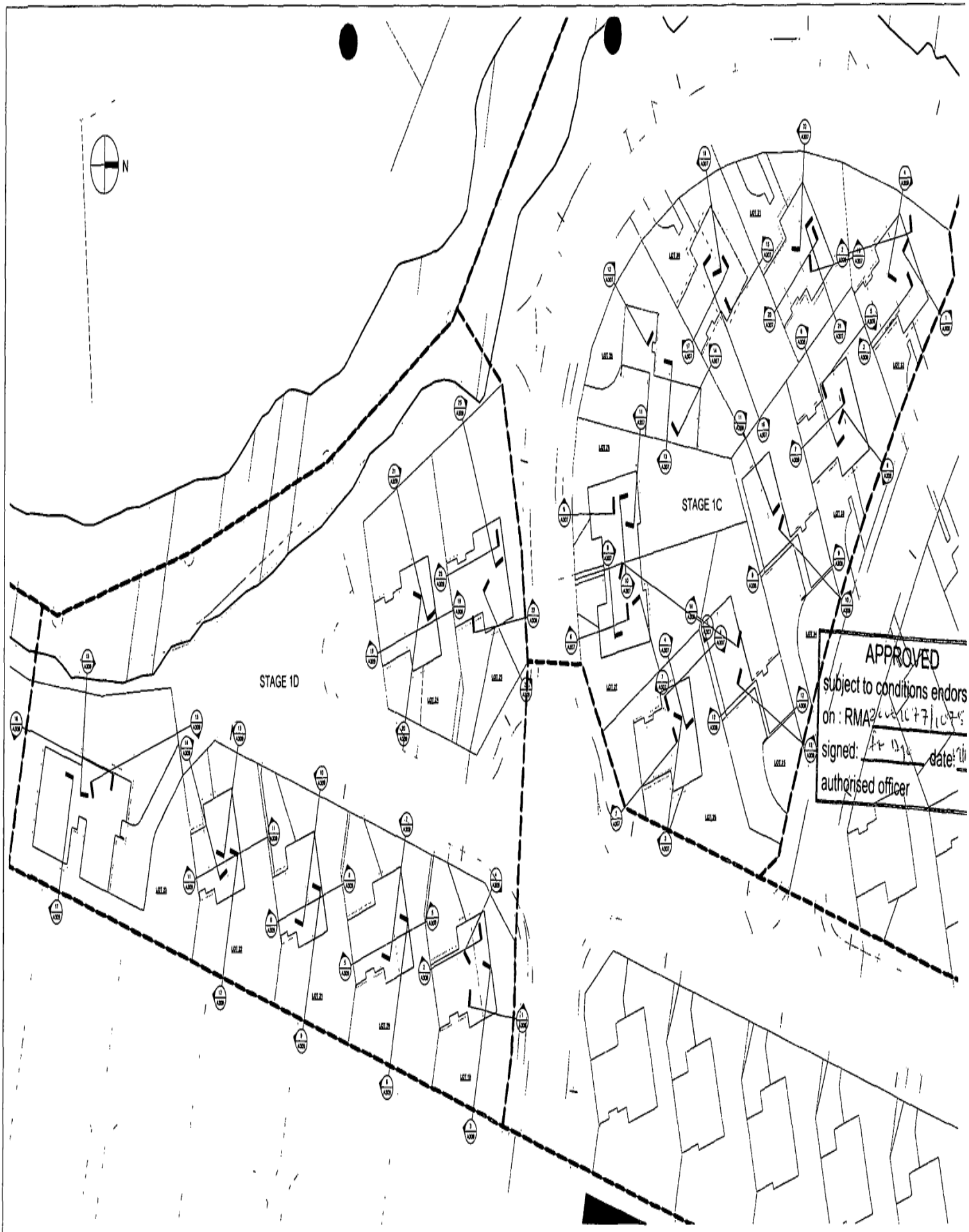
Babbage
1 : 500 @ A3
42608

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 1A & 1B

08/02/06
rev. A002



1 / A003 Site 1B
1 : 500

Babbage

42608

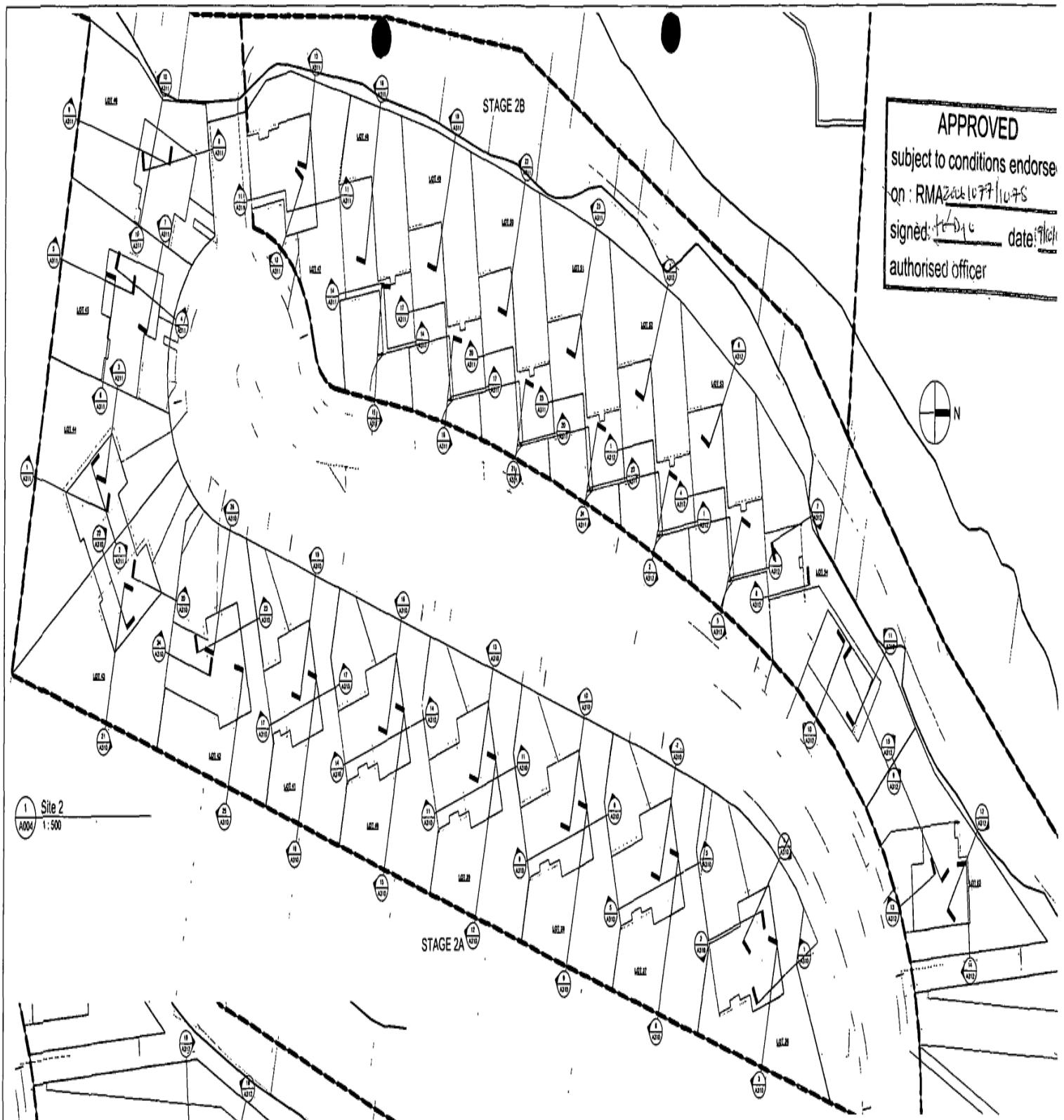
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 1C & 1D

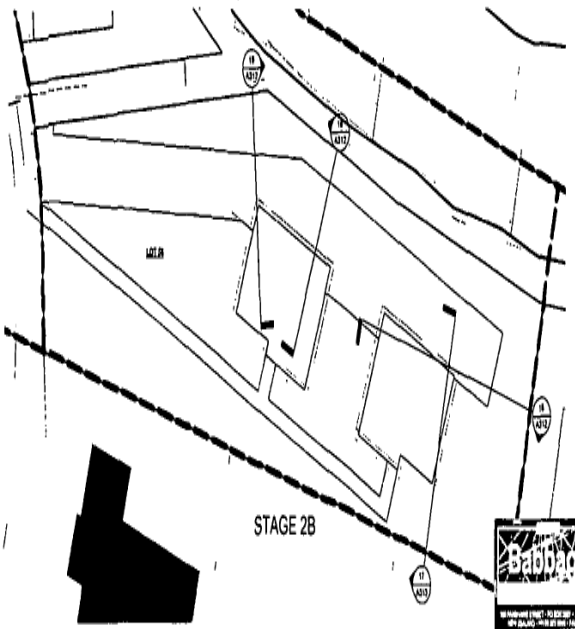
06 JUN 2008

rev. A003



APPROVED
subject to conditions endorse
on : RMA
signed: date:
authorised officer

1 A004 Site 2
1 : 500



2 A004 Site 2 - Lot 56
1 : 500

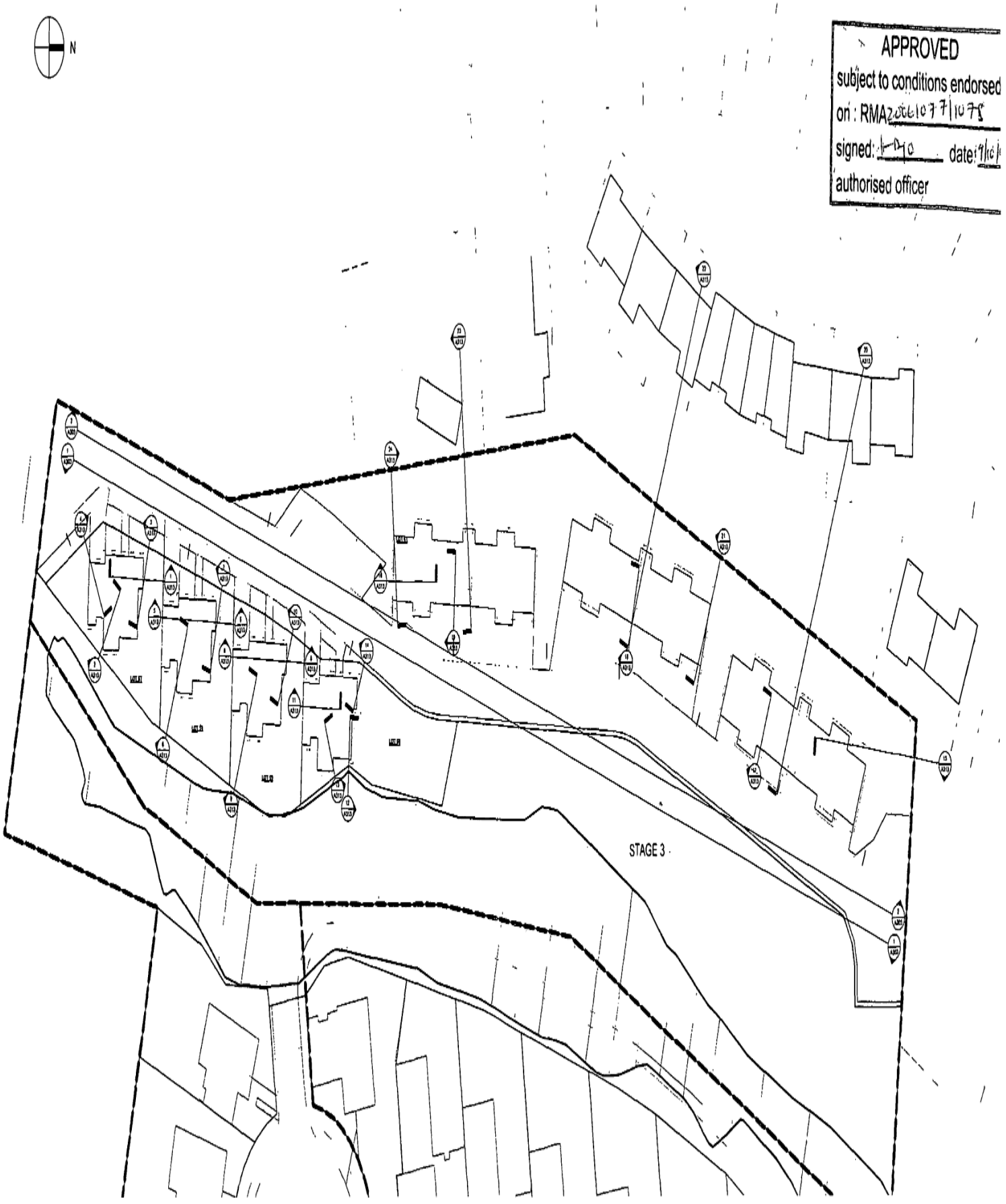
Babbage
1 : 500
42608

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 2A & 2B

06/08/08
rev. A004



APPROVED
subject to conditions endorsed
on : RMA20061077/1075
signed: [illegible] date: 9/10/
authorised officer

1 / A005 Site 3
1 : 500

Babbage

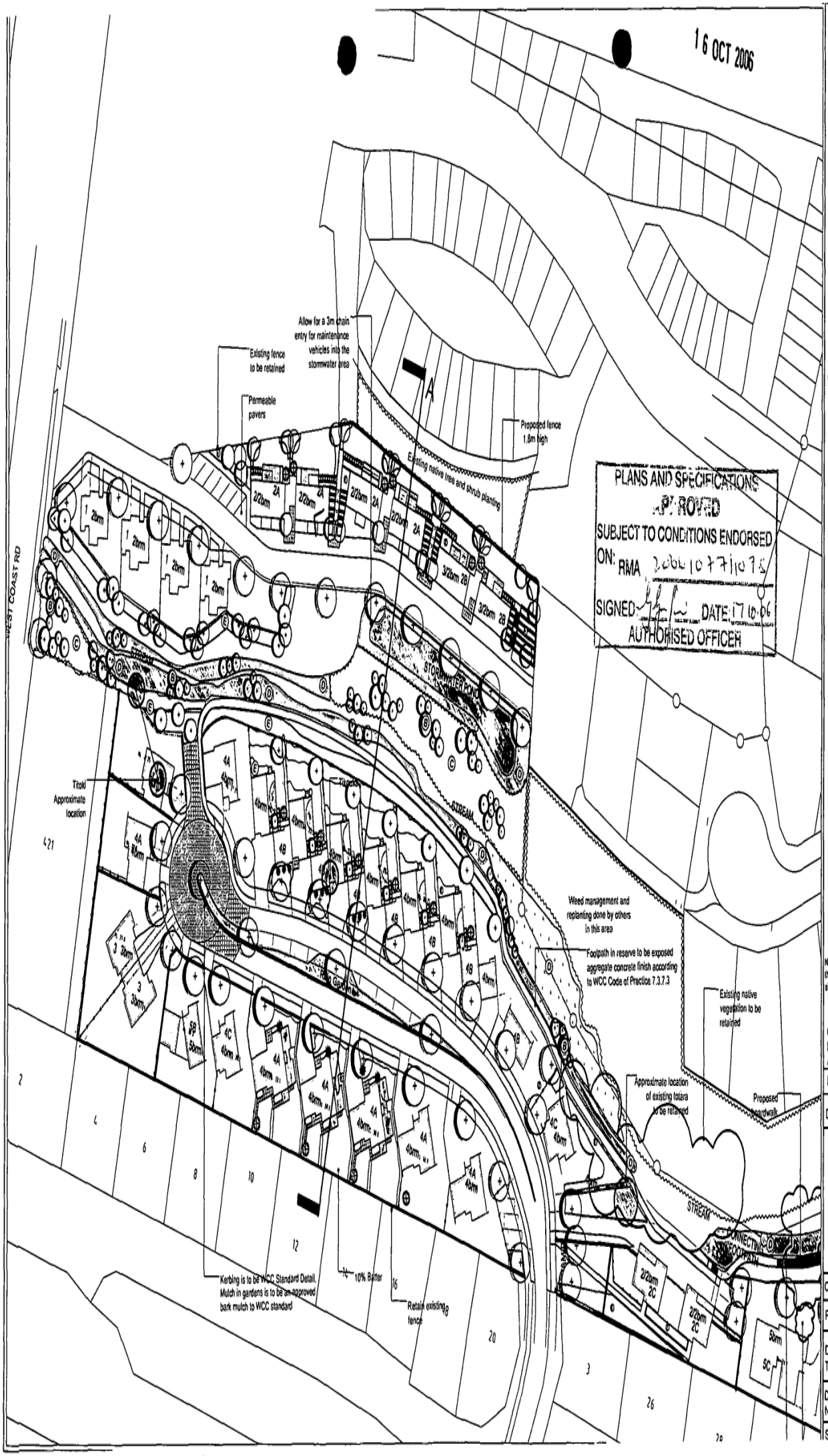
42608

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 3

rev. 06/14/08 A005



Key

N

Soft Landscape Elements
For planting mixes refer to accompanying report

- A - Proposed Ornamental Specimen Trees-mostly deciduous for streets, front yards & rear property boundaries
- B - Proposed native, medium to large trees for stream edge and other re-vegetation areas
- C - Proposed re-vegetation of native shrubs and small tree pioneer mix
- D - Proposed grass like, flax and herbaceous plants for wetland re-vegetation: for emergents, marginals and stream banks, wet ground.
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- E - Proposed low to medium height shrub planting for reserve and garden areas including ground covers.
- F - Proposed sedges for ground cover in attenuation ponds
- Boundary of existing vegetation (refer to arborist report)

Hard Landscape Elements

- Proposed fence 0.8m high for front of properties
- Proposed fence 1.35m high for between properties
- Proposed fence 1.8m high for rear of properties
- Proposed pool type fence 1.2m high between properties and stream reserve and around storm water ponds
- Proposed retaining wall (variable heights)
- Proposed concrete footpath
- Proposed deck/patio adjacent to houses
- Proposed stepping stones
- Proposed paving at entrance to houses
- Proposed clothesline/outdoor utilities area
- Proposed concrete driveway and paths
- Proposed paving for traffic calming areas and round abouts

Kerbing: All kerbing shall be in accordance with WCC standard detailing to the satisfaction of the parks consents planner.

NOTE: This landscape master plan is indicative only in relation to the layout of the typical house garden designs. Please refer to sheets LPS-03 and LPS-04 for typical house landscape designs.

Revision	Description	Date	Drawn	Chk
C	Minor changes	13/10/06	AH	CH
B	Retaining walls	31/8/06	AH	NR
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

SOUL environments
PO Box 62211 Titirangi | Auckland, New Zealand
phone 64 9 817 2788 | fax 64 9 817 3289
email consult@landscapearchitecture.co.nz
www.landscapearchitecture.co.nz

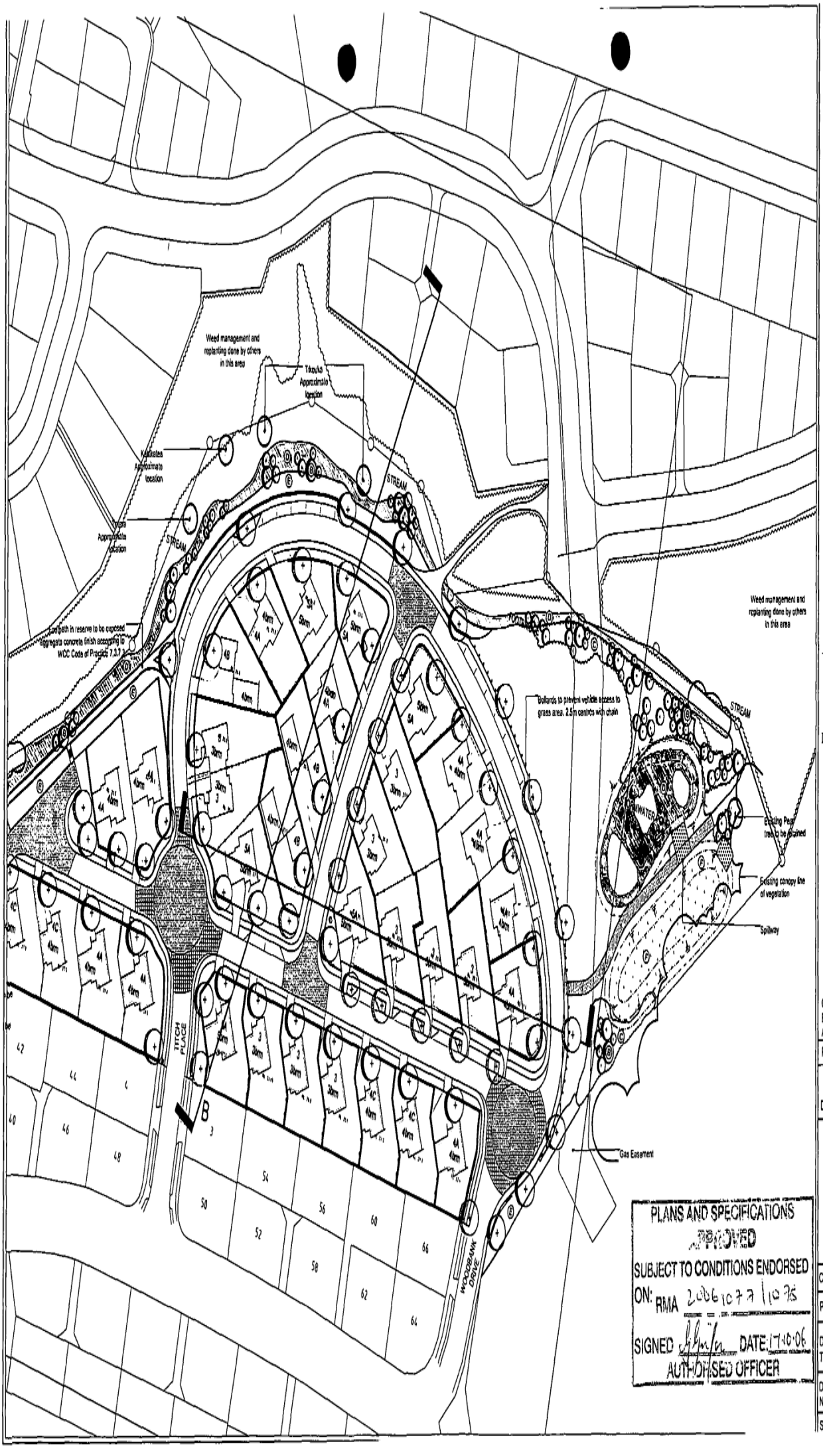
Client: NZ Housing Foundation & Babbage

Project: West Coast Road Housing Development

Drawing Title: Landscape Master Plan and Typical Garden Layout

Drawing Number:	Job Number:
LSP-01 Rev C	SOUL-05/06-161

Scale: 1:500@A1 | Date: 16/06/06 | Drawn: AH



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C	Minor changes	13/10/06	AH	CH
B	Retaining walls	31/08/06	AH	NR
A	Trees and bollards	30/08/06	AH	NR

Drawing Status:

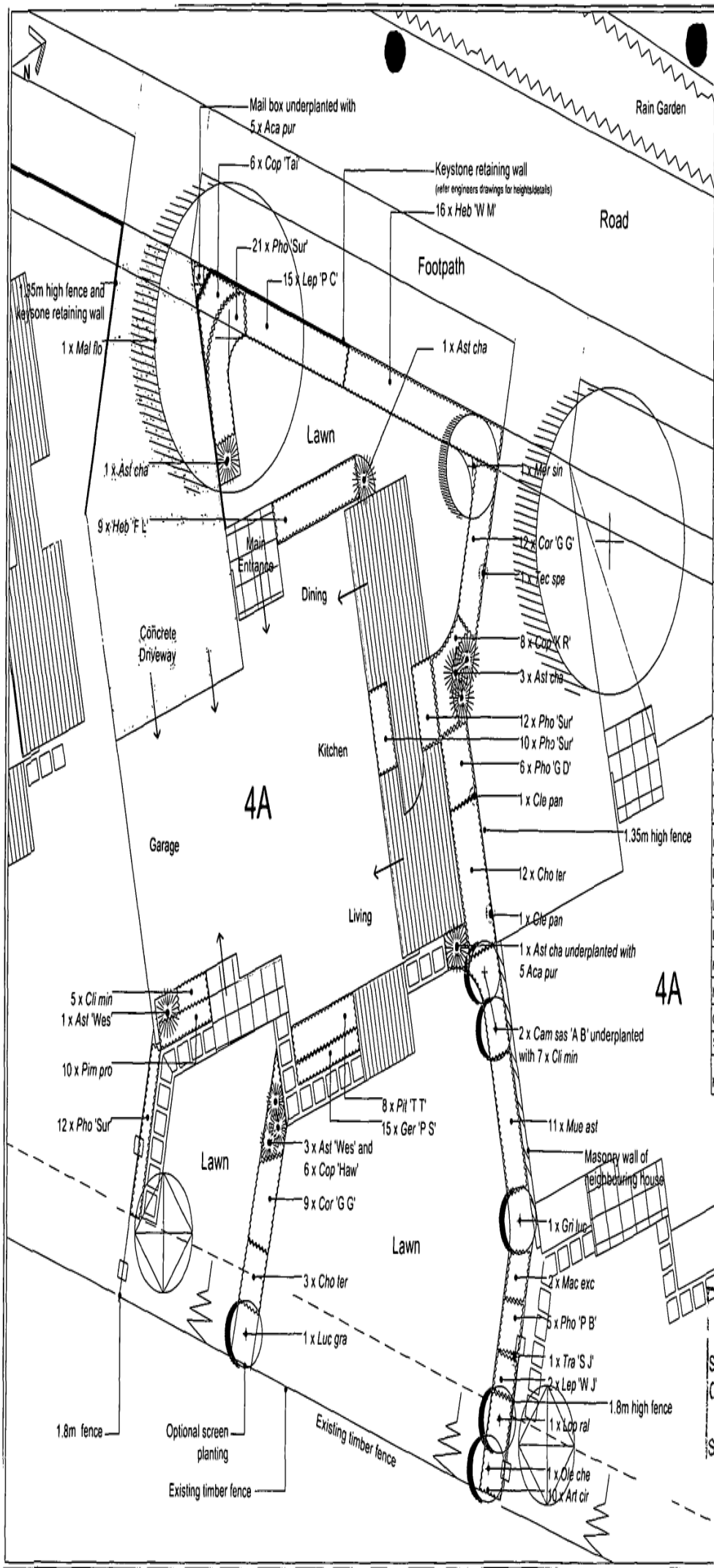
SOUL environments
PO Box 47211 Ponsonby | Auckland, New Zealand
phone 64 9 817 3788 | fax 64 9 817 3789
email consult@soularchitecture.co.nz
www.landscapearchitecture.co.nz

Client: NZ Housing Foundation & Babbage

Project: West Coast Road Housing Development

Drawing Title: Landscape Master Plan

Drawing Number:	LSP-02 Rev C	Job Number:	SOUL-05/06-161
Scale:	1:500@A1	Date:	16/06/06 Drawn: AH



Planting Schedule House Type 4A

CODE	BOTANICAL NAME	COMMON NAME	SIZE	STOCK HEIGHT (min)	SPACING	QUANTITY
Climbers						
Cle pan	*Clematis paniculata*	Clematis	PB5	0.3m	As Shown	2
Tec spe	*Tecomanthe speciosa*	Tecomanthe	PB5	0.3m	As Shown	1
Tra 'S J'	*Trachelospermum 'Star Jasmine'*	Star Jasmine	PB5	0.3m	As Shown	1
Ground covers and low growing plants up to 0.5m						
Aca pur	*Acaena purpurea*	Piri piri	PB3	0.1m	0.3m	10
Art cir	*Arthropodium cirratum*	Renga Renga Lily	PB3	0.2m	0.4m	10
Cli min	*Clivia miniata*	Kaffir Lily	PB3	0.2m	0.4m	12
Cop 'Haw'	*Coprosma 'Kawera'*	Sand Coprosma	PB3	0.2m	0.6m	6
Cop 'Tai'	*Coprosma "Taiko'*	Sand Coprosma	PB3	0.2m	0.6m	6
Ger 'P S'	*Geranium 'Pink Spice'*	Geranium 'Pink Spice'	PB3	0.1m	0.3m	15
Pho 'Sur'	*Phormium 'Surfer'*	Flax	PB3	0.2m	0.4m	55
Pim pro	*Pimelea prostrata*	Pinatoro	PB3	0.1m	0.6m	10
Plants 0.5-1m for mixed garden beds or hedging						
Ast 'Wes'	*Astelia 'Westland'*	Westland Red	PB8	0.3m	As Shown	4
Cor 'G G'	*Corokia 'Geentys Green'*	Korokio	PB5	0.4m	0.7m	21
Cop 'K R'	*Coprosma 'Karo Red'*	Coprosma 'Karo Red'	PB5	0.3m	0.5m	8
Heb 'F L'	*Hebe 'First Light'*	Hebe	PB3	0.3m	0.5m	9
Heb 'W M'	*Hebe 'Wiri Mist'*	Hebe	PB3	0.3m	0.5m	16
Lep 'P C'	*Leptospermum 'Pink Cascade'*	Manuka	PB3	0.3m	0.5m	15
Mue ast	*Muehlenbeckia astonii*	Shrubby Tororaro	PB5	0.4m	0.8m	11
Pho 'G D'	*Phormium cookianum 'Green Dwarf'*	Mountain Flax	PB5	0.4m	0.8m	6
Pho 'P B'	*Phormium 'Platts Black'*	Flax cultivar	PB8	0.5m	0.6m	5
Pit 'T T'	*Pittosporum 'Tom Thumb'*	Kohuhu cultivar	PB5	0.4m	0.7m	8
Specimen plants 1-2m for garden beds						
Ast cha	*Astelia chathamica*	Silver Spear	PB8	0.5m	As Shown	6
Cam sas 'A B'	*Camellia sasanqua 'Apple Blossom'*	Camellia	PB12	0.6m	As Shown	2
Cho ter	*Choisya ternata 'Aztec Pearl'*	Mexican Orange	PB8	0.5m	0.8m	15
Gri luc	*Grisellinia lucida*	Puka	PB8	0.7m	1m	1
Lep 'W J'	*Leptospermum 'Wiri Joan'*	Manuka	PB12	0.8m	0.8m	2
Lop ral	*Lophomyrtus x ralphii 'Kathryn'*	Ramarama	PB12	0.8m	As Shown	1
Luc gra	*Luculia grandifolia*	Luculia	PB12	0.8m	As Shown	1
Mac exc	*Macropiper excelsum*	Kawakawa	PB12	0.7m	1m	2
Mer sin	*Meryta sinclarii*	Puka	PB12	0.8m	As Shown	1
Ole che	*Olearia cheesemanii*	Tree Daisy	PB12	0.8m	As Shown	1
Specimen Trees						
Mal flo	*Malus floribunde*	Japanese Flowering Crabtree	PB95	2m	As Shown	1

PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RUA 2006/077 | 1075
SIGNED DATE 7.10.06
AUTHORISED OFFICER

Revision	Description	Drawn	Checked

Drawing Statust: DRAFT

SOUL environments
landscape architecture
environmental planning
PO Box 62011 Titirangi Auckland, New Zealand
phone 64 9 817 3783 | fax 64 9 817 3789
email consult@landscapearchitecture.co.nz
www.landscapearchitecture.co.nz

Client: NZ Housing Foundation & Babbage Consultants Ltd

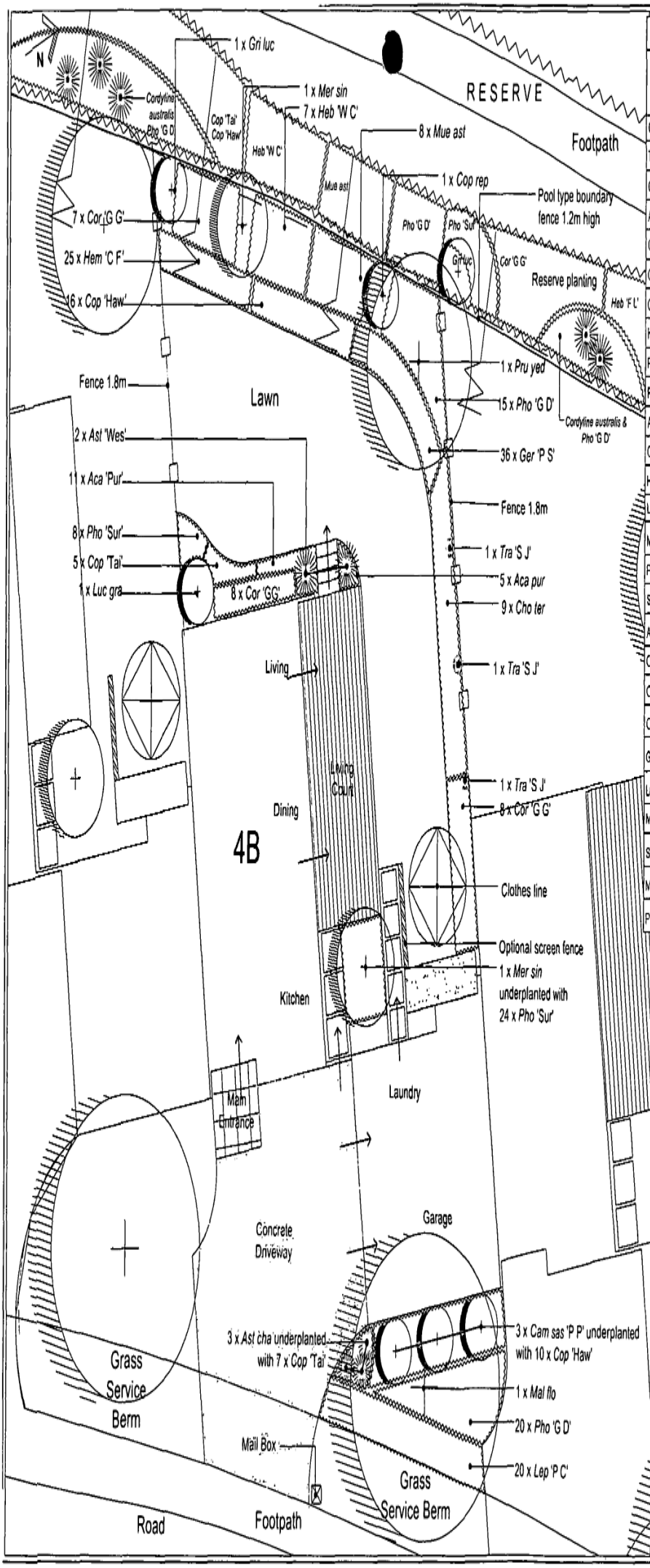
Project: West Coast Road Housing Development

Drawing Title: Typical Planting Plan
House Type 4A

Drawing Number: LSP-07

Job Number: SOUL-05/06-161

Scale: 1:125@A3 | Date: 07/08/06 | Drawn: AH



Planting Schedule House Type 4B

CODE	BOTANICAL NAME	COMMON NAME	SIZE	STOCK HEIGHT (min)	SPACING	QUANTITY
Climbers						
Tra 'S J'	*Trachelospermum 'Star Jasmine'*	Star Jasmine	PB5	0.3	As Shown	3
Ground covers and low growing plants up to 0.5m						
Ace pur	*Acaena purpurea*	Piri piri	PB3	0.1	0.3m	16
Cop 'Haw'	*Coprosma 'Hawera'*	Sand Coprosma	PB3	0.2	0.6m	26
Cop 'Tai'	*Coprosma "Taiko'*	Sand Coprosma	PB3	0.2	0.6m	12
Ger 'P S'	*Geranium 'Pink Spice'*	Geranium	PB3	0.2	0.3m	36
Hem 'C F'	*Hemerocallis 'Cabbage Flower'*	Day Lily	PB3	0.2	0.4m	25
Pho 'Sur'	*Phormium 'Surfer'*	Flax	PB3	0.2	0.4m	32
Plants 0.5-1m for mixed garden beds or hedging						
Ast 'Wes'	*Astelia 'Westland'*	Westland Red	PB8	0.4	As Shown	2
Cor 'G G'	*Corokia 'Geentys Green'*	Korokio	PB5	0.4	0.7m	23
Heb 'W C'	*Hebe 'Wiri Charm'*	Hebe cultivar	PB5	0.4	0.6m	7
Lep 'P C'	*Leptospermum 'Pink Cascade'*	Manuka	PB5	0.4	0.5m	20
Mue ast	*Muehlenbeckia astonii*	Shrubby Tororaro	PB5	0.5	0.8m	8
Pho 'G D'	*Phormium cookianum 'Dwarf Green'*	Mountain Flax	PB5	0.5	0.8m	35
Specimen plants 1-2m for garden beds						
Ast cha	*Astelia chathamica*	Silver Spear	PB8	0.5	As Shown	3
Cam sas 'P P'	*Camellia sasanqua 'Paradise Petite'*	Camelia	PB12	0.6	As Shown	3
Cho ter	*Choisya ternata 'Aztec Pearl'*	Mexican Orange Blossom	PB8	0.5	0.8m	9
Cop rep	*Coprosma repens*	Taupata	PB8	0.6	As Shown	1
Gri luc	*Griselinia lucida*	Puka	PB8	0.7	As Shown	1
Luc gra	*Luculia grandifolia*	Luculia	PB12	0.8	As Shown	1
Mer sin	*Meryta sinclairii*	Puka	PB12	0.8	As Shown	2
Specimen Trees						
Mal flo	*Malus floribunda*	Japanese Flowering Crabtree	PB95	2m	As Shown	1
Pru yed	*Prunus yedoensis*	Flowering Cherry	PB40	0.5m	As Shown	1

NOTE: Reserve planting is not reflected in this Schedule

PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20060177 1678
SIGNED: DATE: 17.10.06
AUTHORISED OFFICER

Revision	Description	Drawn	Checked

Drawing Status: DRAFT

SOUL
environments
landscape architecture
environmental planning
PO Box 68211 Titirangi Auckland, New Zealand
phone 64 9 817 3783 | fax 64 9 817 3789
email consult@thesoulpractice.co.nz
www.thesoulpractice.co.nz

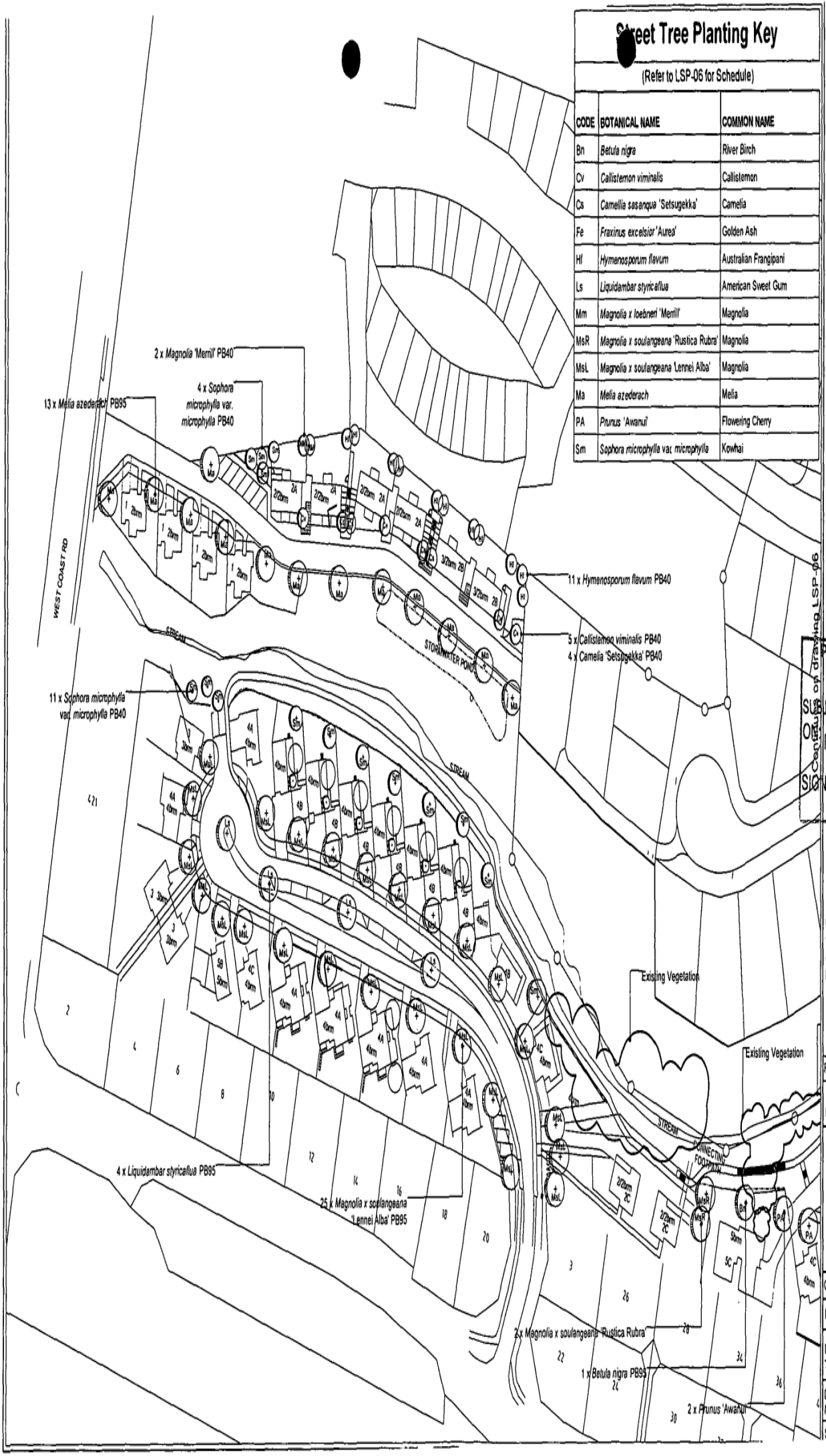
Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Typical Garden Layout
House Type 4B

Drawing Number: LSP-08 | Job Number: SOUL-05/06-161

Scale: 1:125@A3 | Date: 15/08/06 | Drawn: AH



Street Tree Planting Key

(Refer to LSP-06 for Schedule)

CODE	BOTANICAL NAME	COMMON NAME
Bn	*Betula nigra*	River Birch
Cv	*Callistemon viminalis*	Callistemon
Cs	*Camellia sasanqua* 'Setsugekka'	Camelia
Fe	*Fraxinus excelsior* 'Aurea'	Golden Ash
Hl	*Hymenosporum flavum*	Australian Frangipani
Ls	*Liquidambar styriciflua*	American Sweet Gum
Mm	*Magnolia x loebneri* 'Merrill'	Magnolia
MsR	*Magnolia x soulangeana* 'Rustica Rubra'	Magnolia
MsL	*Magnolia x soulangeana* 'Lennei Alba'	Magnolia
Ma	*Melia azederach*	Melia
PA	*Prunus* 'Awanui'	Flowering Cherry
Sm	*Sophora microphylla* var. *microphylla*	Kowhai

Key

Soft Landscape Elements

(6m) A - Proposed Ornamental Specimen Trees. Refer to schedule for sizes and quantities on LSP-06.

Configuration of drawing LSP-06

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO CONDITIONS OF RMA 20060107211075 SIGNED DATE 17.10.06 AUTHORISED OFFICER

NOTE:
Read this drawing in conjunction with LSP-06

All trees shall be planted in a minimum 600mm diameter weed free circle with 75mm woodchip mulch and shall be planted in a pit of 600x600x500 deep of good quality friable loamy topsoil or Living Earth Garden Mix.

Rev	Description	Date	Drawn	Chk
B	Minor changes	13/10/06	AH	CH
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

SOUL environments
PO Box 82011 Titirangi | Auckland, New Zealand
phone 64 9 817 3783 | fax 64 9 817 3789
email soul@clear.net.nz
www.landscapearchitecture.co.nz

Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Street Tree Planting Plan 1 of 2

Drawing Number: LSP-05 Rev B

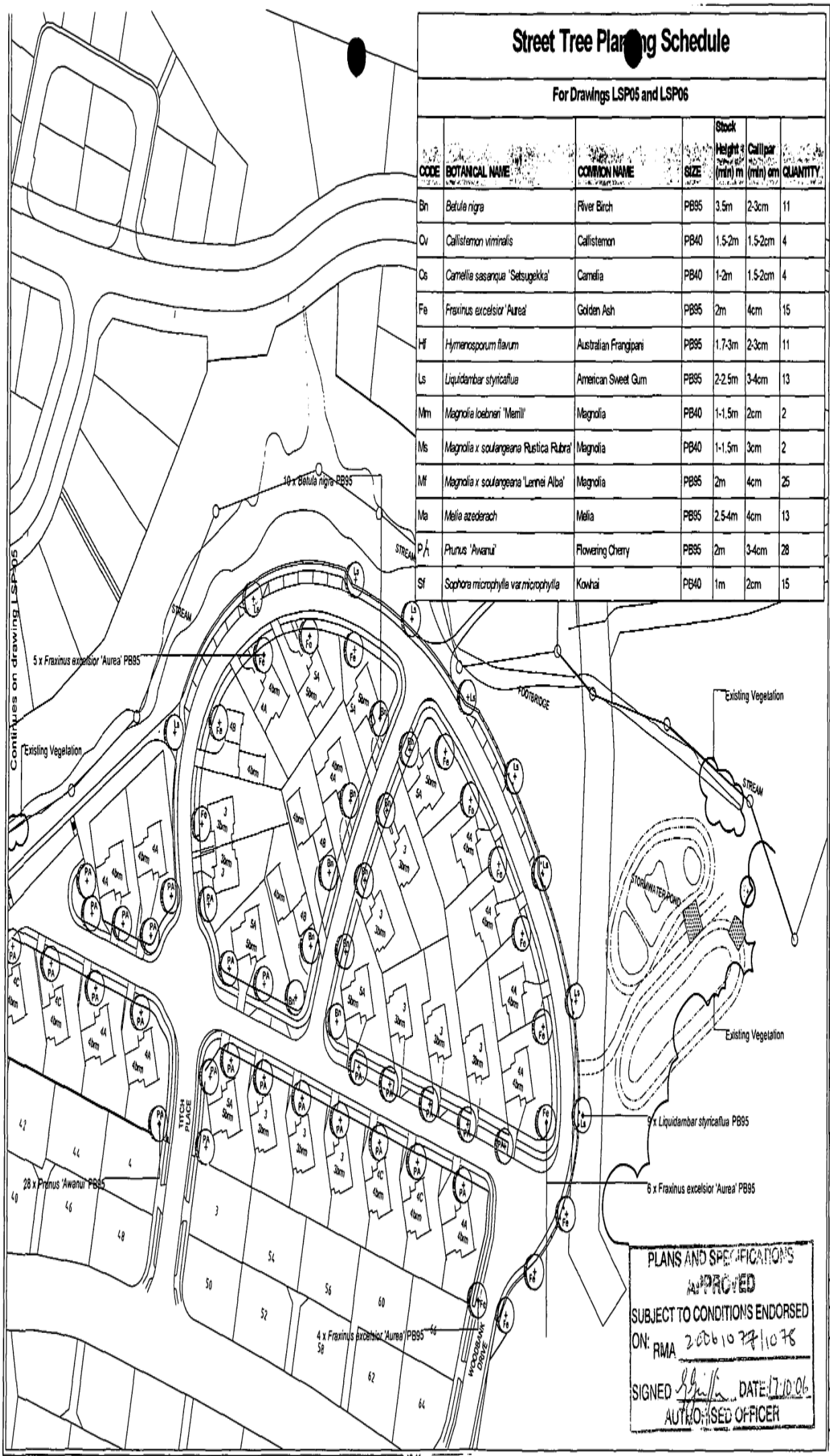
Job Number: SOUL-05/06-161

Scale: 1:500@A1 Date: 15/08/06 Drawn: AH

Street Tree Planting Schedule

For Drawings LSP05 and LSP06

CODE	BOTANICAL NAME	COMMON NAME	SIZE	Stock Height (min) m	Caliper (min) cm	QUANTITY
Bn	*Betula nigra*	River Birch	PB95	3.5m	2-3cm	11
Cv	*Callistemon viminalis*	Callistemon	PB40	1.5-2m	1.5-2cm	4
Cs	*Camellia sasanqua* 'Setsugekka'	Camelia	PB40	1-2m	1.5-2cm	4
Fe	*Fraxinus excelsior* 'Aurea'	Golden Ash	PB95	2m	4cm	15
Hf	*Hymenosporum flavum*	Australian Frangipani	PB95	1.7-3m	2-3cm	11
Ls	*Liquidambar styriciflua*	American Sweet Gum	PB95	2-2.5m	3-4cm	13
Mm	*Magnolia loebneri* 'Merrill'	Magnolia	PB40	1-1.5m	2cm	2
Ms	*Magnolia x soulangeana* Rustica Rubra'	Magnolia	PB40	1-1.5m	3cm	2
Mf	*Magnolia x soulangeana* 'Lennei Alba'	Magnolia	PB95	2m	4cm	25
Ma	*Melia azederach*	Melia	PB95	2.5-4m	4cm	13
Pa	*Prunus* 'Awanui'	Flowering Cherry	PB95	2m	3-4cm	28
Sf	*Sophora microphylla var microphylla*	Kowhai	PB40	1m	2cm	15



PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077/1078
SIGNED [signature] DATE: 17.10.06
AUTHORISED OFFICER

Key

N

Soft Landscape Elements

(A) A - Proposed Ornamental Specimen Trees. Refer to schedule for sizes and quantities

NOTE:
Read this drawing in conjunction with LSP-05

All trees shall be planted in a minimum 600mm diameter weed free circle with 75mm woodchip mulch and shall be planted in a pit of 600x600x500 deep of good quality friable loamy topsoil or Living Earth Garden Mix.

Rev	Description	Date	Drawn	Chk
B	Minor changes	13/10/06	AH	CH
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

SOUL environments
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL PLANNING
PO Box 68211 Titirangi | Auckland, New Zealand
phone 64 9 817 3768 | fax 64 9 817 3769
email: contact@landscapearchitecture.co.nz
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Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Street Tree Planting Plan 2 of 2

Drawing Number: LSP-06 Rev B

Job Number: SOUL-05/06-161

Scale: 1:500@A1 1:1000@A3

Date: 15/08/06

Drawn: AH

STAGE 1A

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 01	415 m²	109 m²	26.3%	209 m²	50.4%
LOT 02	380 m²	86 m²	22.6%	154 m²	40.5%
LOT 03	380 m²	86 m²	22.6%	154 m²	40.5%
LOT 04	380 m²	86 m²	30.5%	154 m²	40.5%
LOT 05	380 m²	92 m²	23.9%	164 m²	43.2%
LOT 06	380 m²	92 m²	24.2%	164 m²	43.2%
LOT 07	381 m²	109 m²	28.6%	199 m²	52.2%

STAGE 1B

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 08	403 m²	109 m²	27.0%	176 m²	43.7%
LOT 09	402 m²	86 m²	21.4%	143 m²	35.6%
LOT 10	388 m²	86 m²	22.2%	143 m²	36.9%
LOT 11	353 m²	86 m²	24.4%	143 m²	40.5%
LOT 12	374 m²	109 m²	29.1%	171 m²	45.7%
LOT 13	350 m²	86 m²	24.6%	140 m²	40.0%
LOT 14	433 m²	86 m²	19.9%	149 m²	34.4%
LOT 15	363 m²	109 m²	30.0%	176 m²	48.5%
LOT 16	395 m²	109 m²	27.6%	186 m²	47.1%
LOT 17	475 m²	109 m²	22.9%	203 m²	42.9%
LOT 18	353 m²	109 m²	30.9%	191 m²	54.1%

STAGE 1C

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 26	451 m²	109 m²	24.2%	172 m²	38.1%
LOT 27	354 m²	86 m²	24.3%	139 m²	39.3%
LOT 28	413 m²	86 m²	20.8%	139 m²	33.7%
LOT 29	412 m²	114 m²	27.7%	217 m²	52.7%
LOT 30	438 m²	109 m²	24.8%	203 m²	46.3%
LOT 31	371 m²	109 m²	29.4%	217 m²	58.5%
LOT 32	349 m²	109 m²	31.2%	193 m²	55.3%
LOT 33	383 m²	109 m²	28.5%	214 m²	55.9%
LOT 34	411 m²	114 m²	35.0%	239 m²	58.2%
LOT 35	415 m²	114 m²	27.5%	248 m²	59.0%

STAGE 1D

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 19	405 m²	109 m²	26.9%	201 m²	49.6%
LOT 20	434 m²	109 m²	25.1%	201 m²	46.3%
LOT 21	397 m²	92 m²	23.2%	165 m²	41.6%
LOT 22	405 m²	92 m²	22.7%	157 m²	38.8%
LOT 23	840 m²	191 m²	22.7%	313 m²	37.3%
LOT 24	404 m²	109 m²	27.0%	186 m²	46.0%
LOT 25	506 m²	109 m²	21.5%	209 m²	41.3%

STAGE 2A

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 36	457 m²	109 m²	23.9%	223 m²	48.8%
LOT 37	426 m²	109 m²	25.6%	205 m²	48.1%
LOT 38	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 39	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 40	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 41	370 m²	92 m²	24.9%	173 m²	46.8%
LOT 42	431 m²	126 m²	29.2%	229 m²	53.1%
LOT 43	444 m²	86 m²	19.4%	165 m²	37.2%
LOT 44	459 m²	86 m²	18.7%	165 m²	35.9%
LOT 45	370 m²	109 m²	29.5%	188 m²	50.8%
LOT 46	377 m²	92 m²	24.4%	152 m²	40.3%

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STAGE 2B

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 47	372 m²	109 m²	29.3%	168 m²	45.2%
LOT 48	361 m²	114 m²	31.6%	211 m²	58.4%
LOT 49	369 m²	114 m²	30.9%	199 m²	53.9%
LOT 50	363 m²	114 m²	31.4%	192 m²	52.9%
LOT 51	366 m²	114 m²	31.1%	190 m²	51.9%
LOT 52	364 m²	114 m²	31.3%	193 m²	53.0%
LOT 53	354 m²	114 m²	32.2%	199 m²	56.2%
LOT 54	469 m²	114 m²	24.3%	236 m²	50.3%
LOT 55	370 m²	92 m²	24.9%	166 m²	44.9%
LOT 56	1416 m²	177 m²	12.5%	603 m²	42.6%

STAGE 3

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 57	268 m²	81 m²	30.2%	126 m²	47.0%
LOT 58	263 m²	81 m²	30.8%	129 m²	49.0%
LOT 59	273 m²	81 m²	29.7%	131 m²	48.0%
LOT 60	318 m²	81 m²	25.5%	124 m²	39.0%
LOT 61	3743 m²	632 m²	16.9%	2474 m²	66.1%

STAGE 1A, 1B, 1C, 1D, 2A & 2B

SITE AREA	49335 m²	
SUM OFLOT AREA	23828 m²	
SUM OFBUILDING AREA	5926 m²	
SUM OF IMPERMEABLE AREA	10903 m²	
TOTAL IMPERMEABLE AREA (BUILDING COVERAGE + PAVED AREA)	20688 m²	= 41.9% OF SITE AREA

STAGE 3

SITE AREA	7870 m²	
SUM OF LOT AREA	4865 m²	
SUM OF BUILDING AREA	956 m²	
SUM OF IMPERMEABLE AREA	2984 m²	
TOTAL IMPERMEABLE AREA (BUILDING COVERAGE + PAVED AREA)	2984 m²	= 37.9% OF SITE AREA

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

AREA SUMMARY

30 MAY 2006

rev. A401

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on : RMA 20061077/1075
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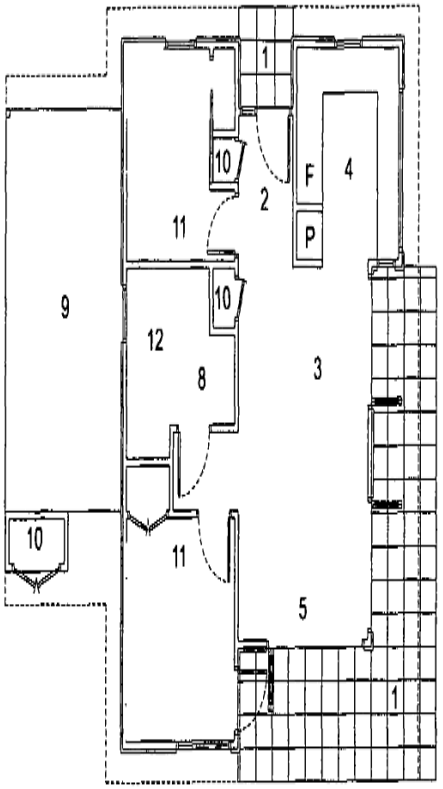
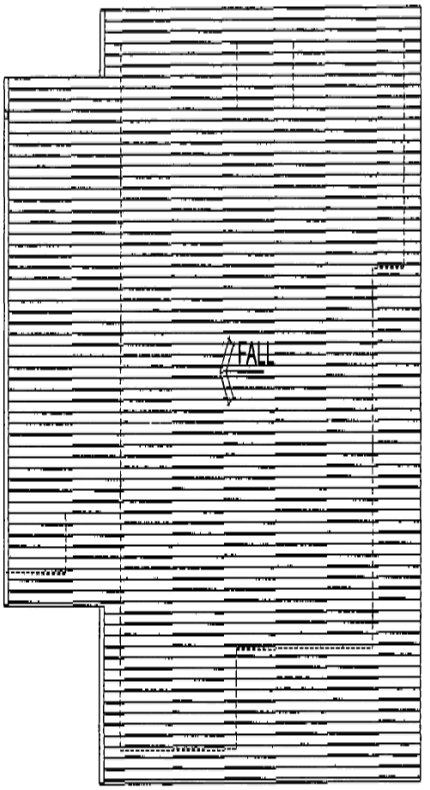


GROUND FLOOR PLAN



ROOF PLAN

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

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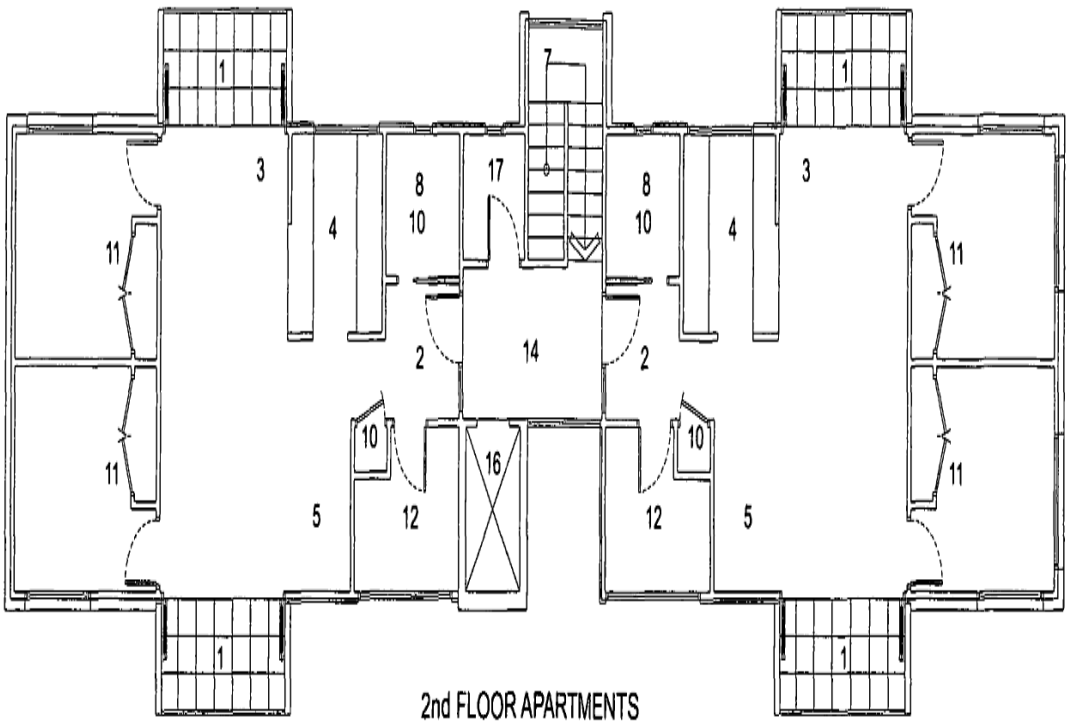
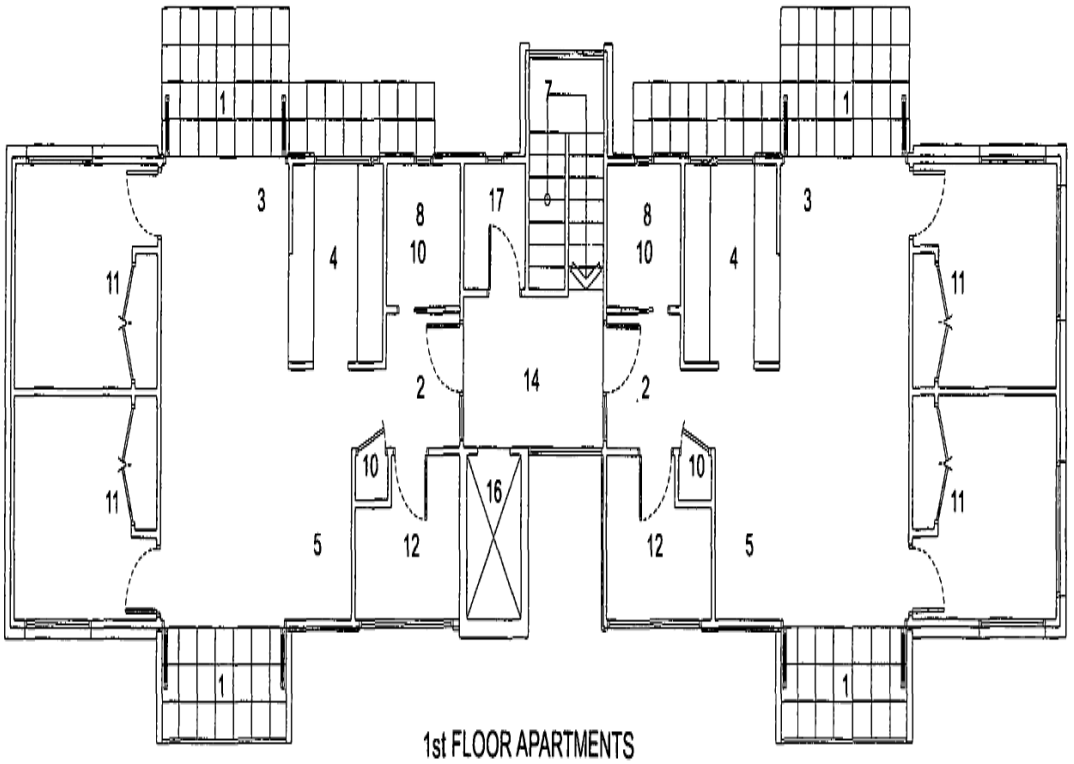
WEST COAST RD HOUSING DEVELOPMENT

TYPE 1 HOUSE - 2 BEDROOM SENIOR / CARPORT

FLOOR PLAN
A101



2nd FLOOR APARTMENTS



1st FLOOR APARTMENTS

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

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authorised officer

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

FLOOR PLAN

A102-1

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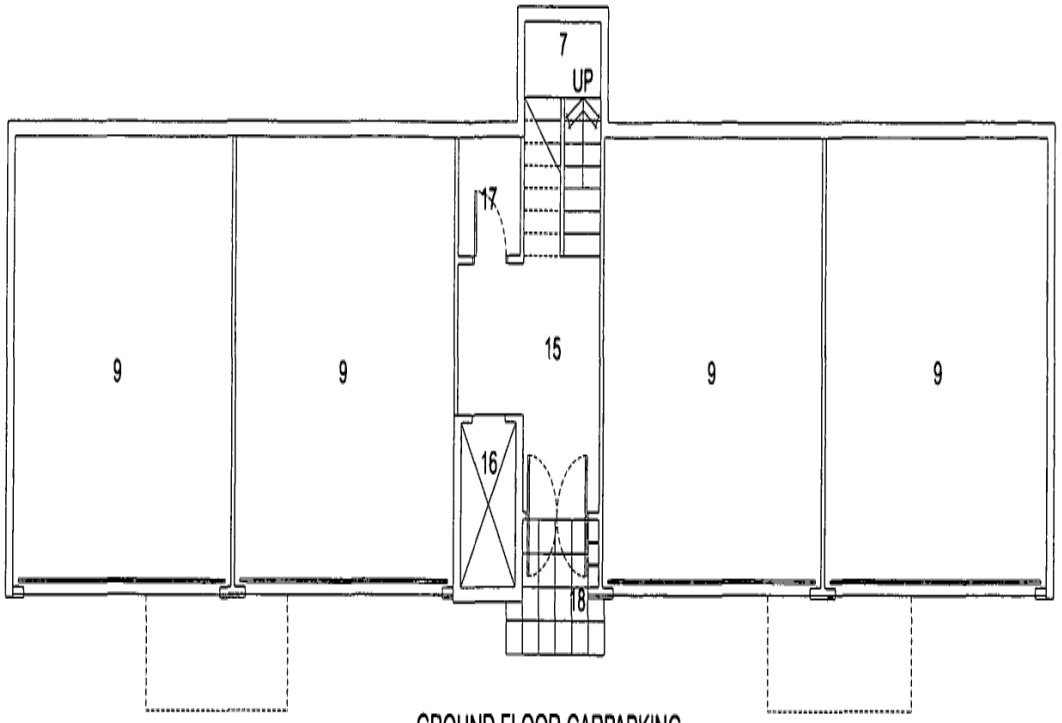
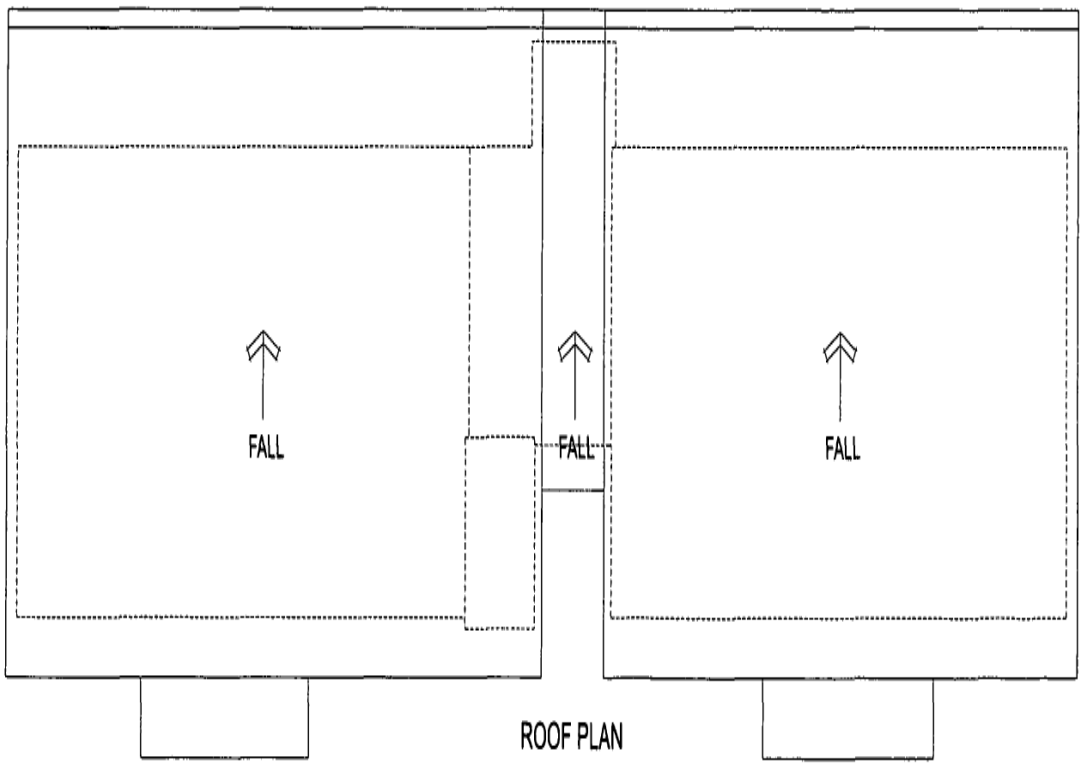
signed: [signature] date: 9/10/07
authorised officer



GROUND FLOOR CARPARKING



ROOF PLAN

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

FLOOR PLAN

A102-2

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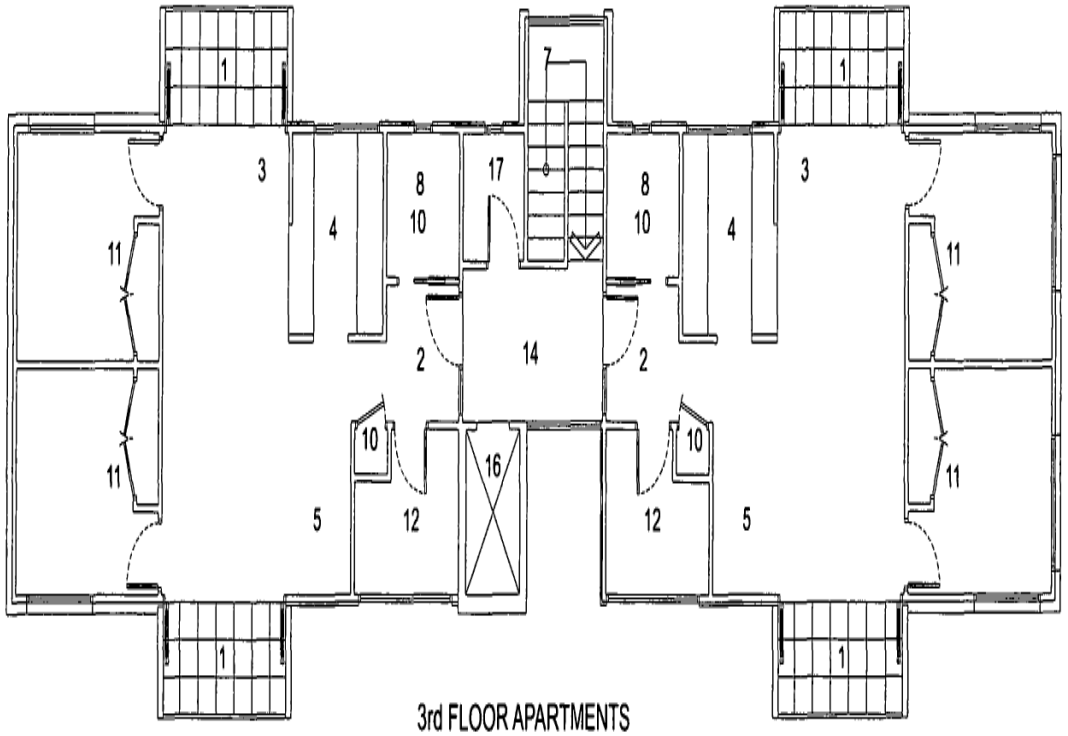
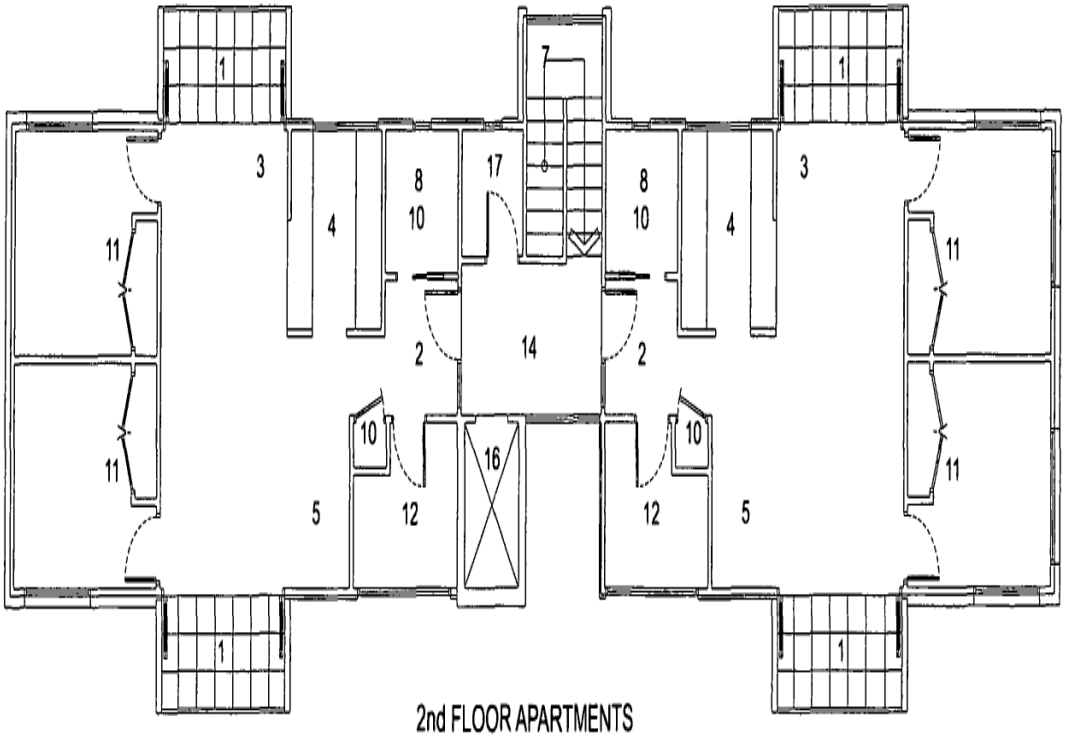


3rd FLOOR APARTMENTS



2nd FLOOR APARTMENTS

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A10341

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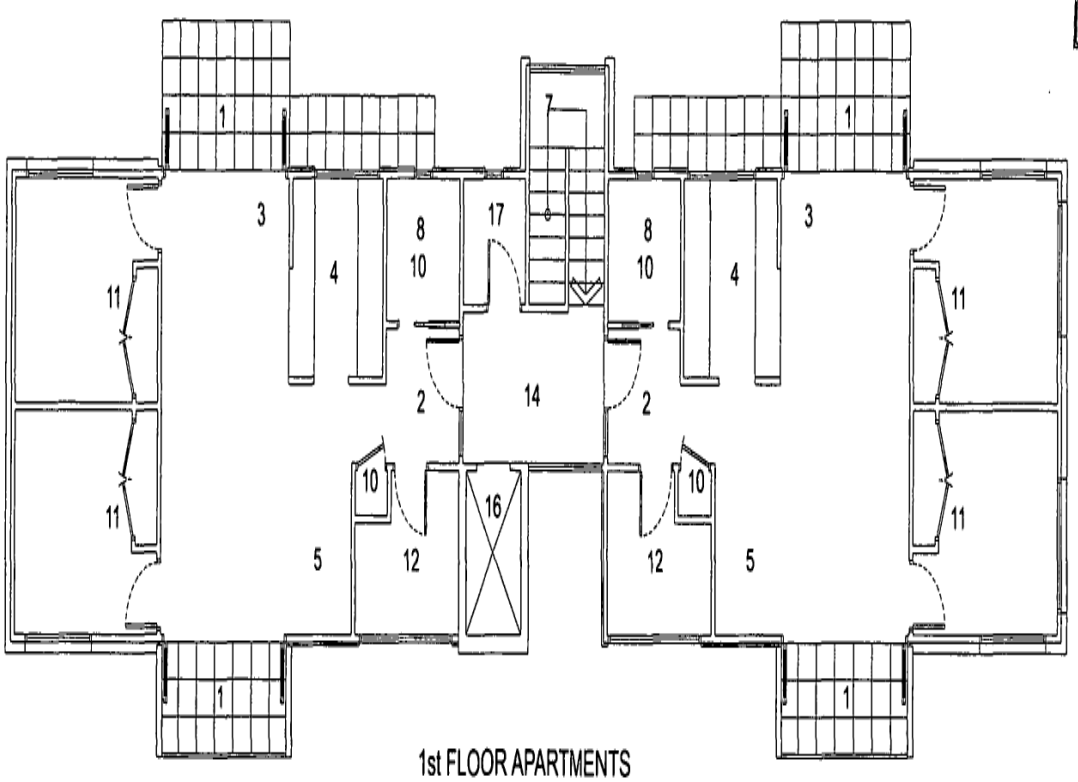
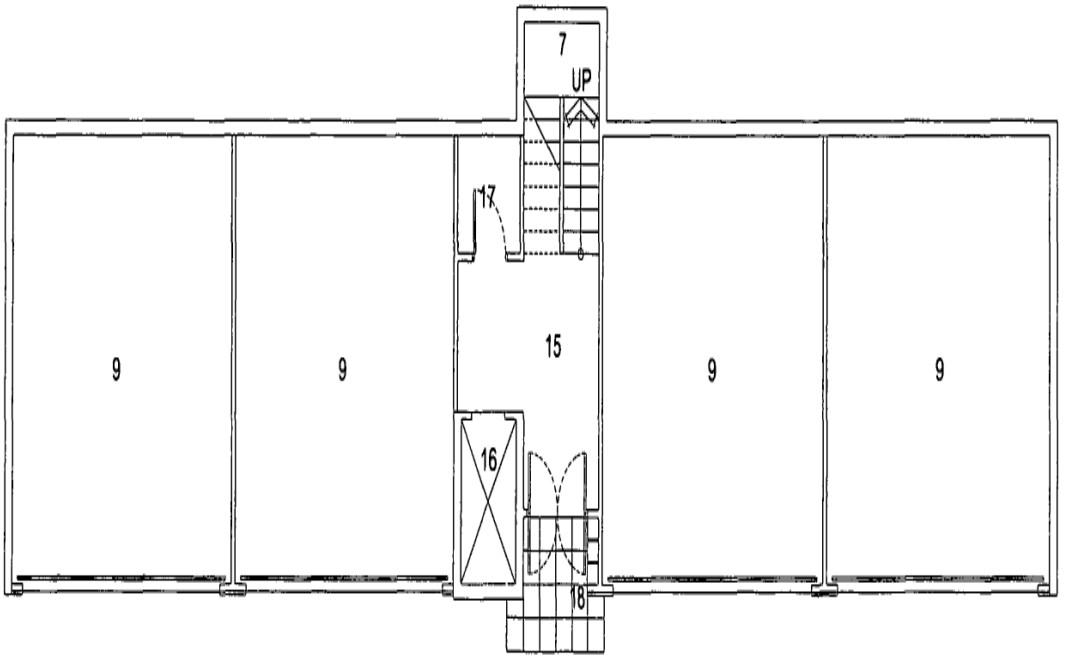
on : RMA 20061077 | 1075
signed: [signature] date: 19/
authorised officer



1st FLOOR APARTMENTS



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

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WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

FLOOR PLAN
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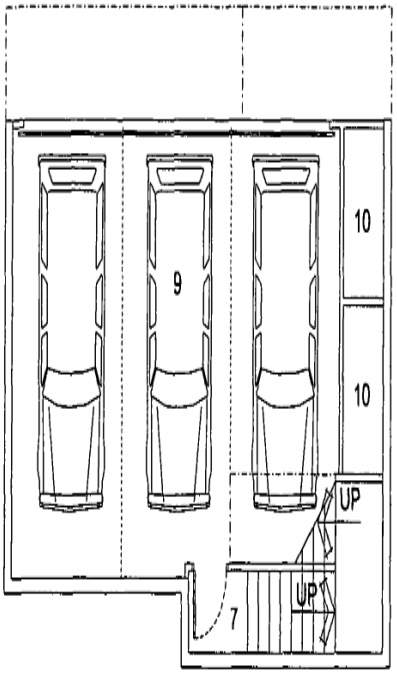
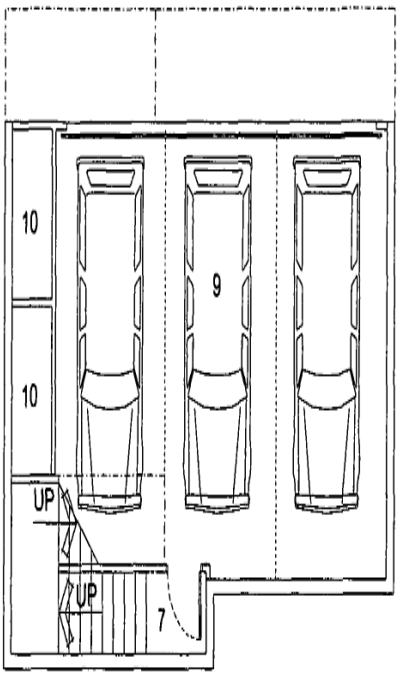
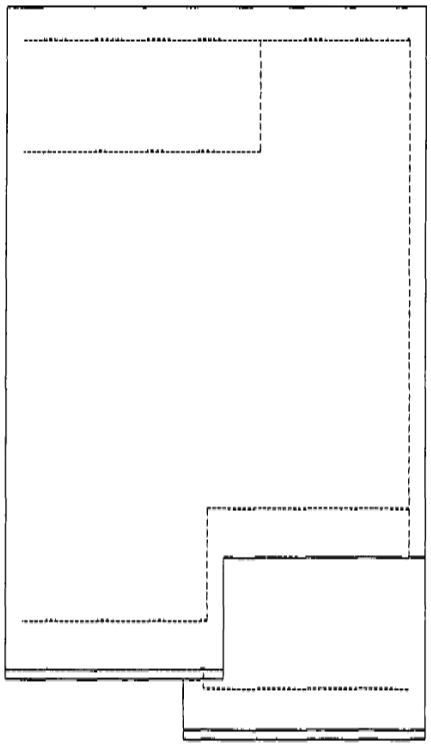
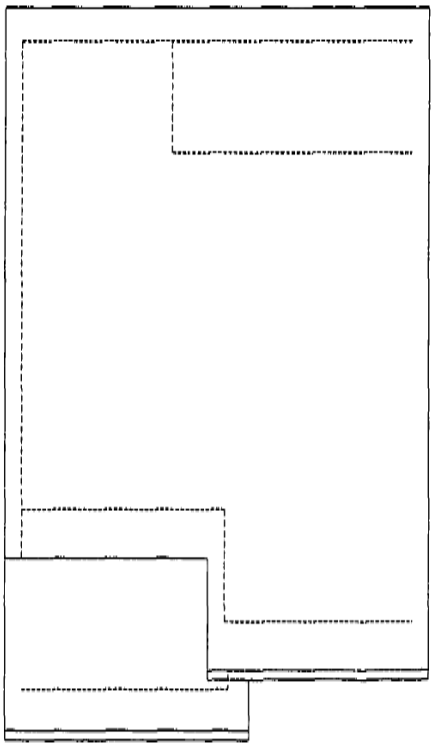
14 JUN 2006
A103-2





LOWER GROUND FLOOR GARAGE





ROOF PLAN

APPROVED
subject to conditions endorsed
on : RMA 20110771 | 10 78
signed: _____ date: 7/10/10
authorised officer

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

Babbage CONSULTANTS
42608

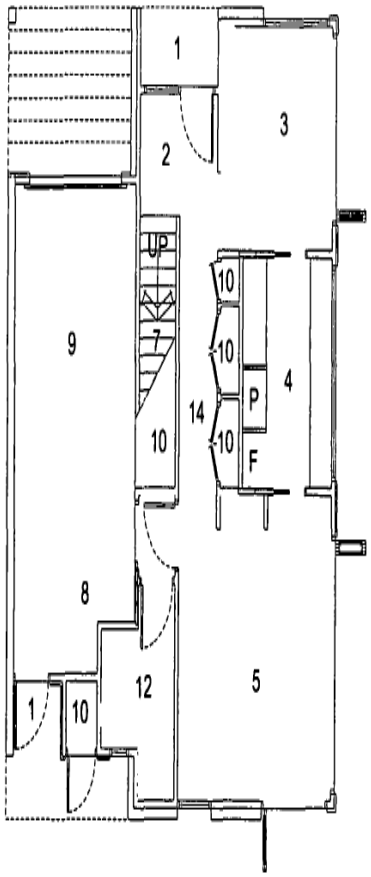
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / UNDERCROFT GARAGE

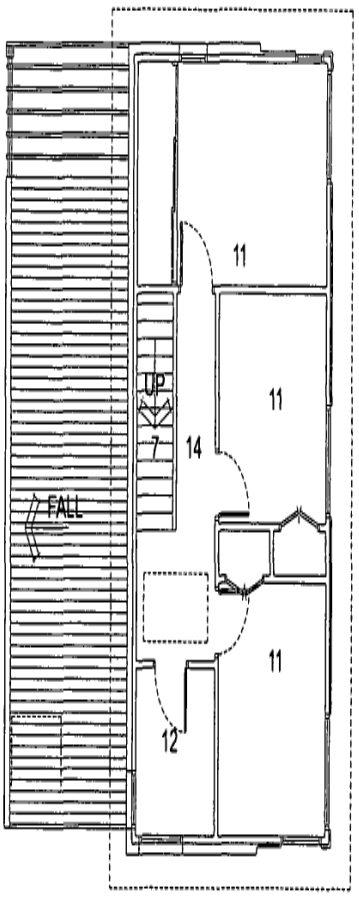
FLOOR PLAN

Scale @A3 1:100
Scale @A1 1:50
7 JUN 2010

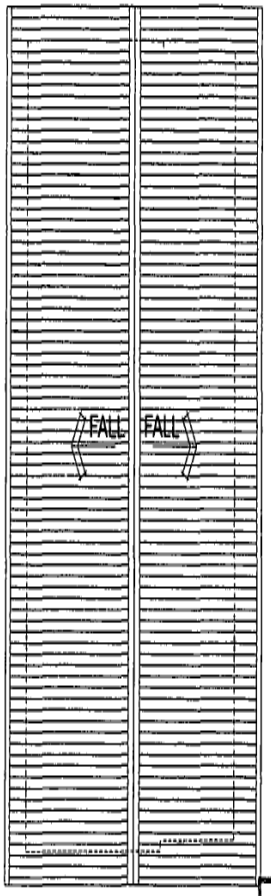
A104-2



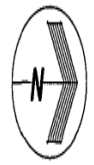
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

APPROVED
subject to conditions endorsed
on : RMA20[illegible]77[illegible]1078
signed: [illegible] date: 19/10/[illegible]
authorised officer

Babbage CONSULTANTS
42608

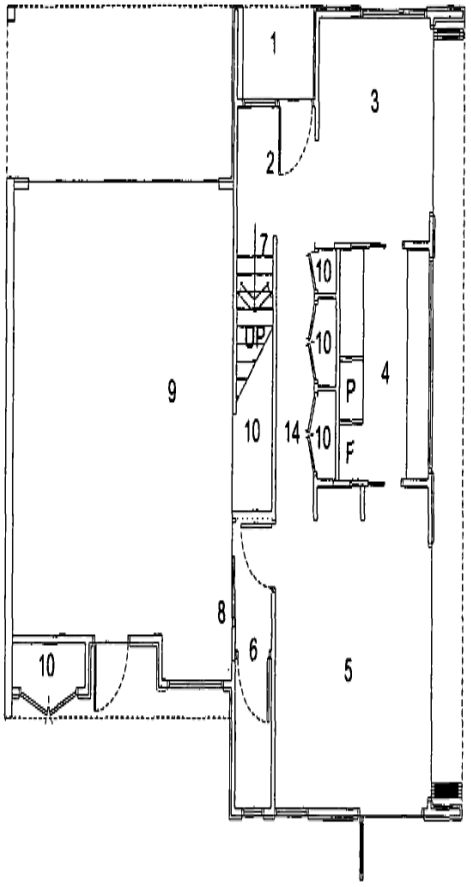
WEST COAST RD HOUSING DEVELOPMENT

TYPE 3 HOUSE - 3 BEDROOM / SINGLE GARAGE

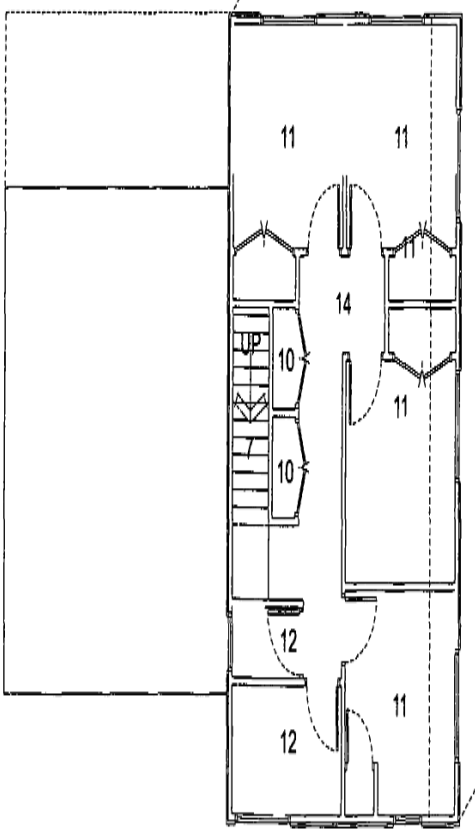
FLOOR PLAN

A105

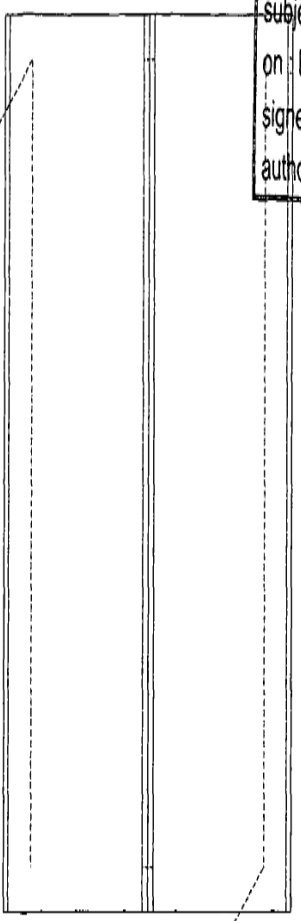
APPROVED
subject to conditions endorsed
on : RMA 20060777/1078
signed: _____ date: 15/6/06
authorised officer



GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

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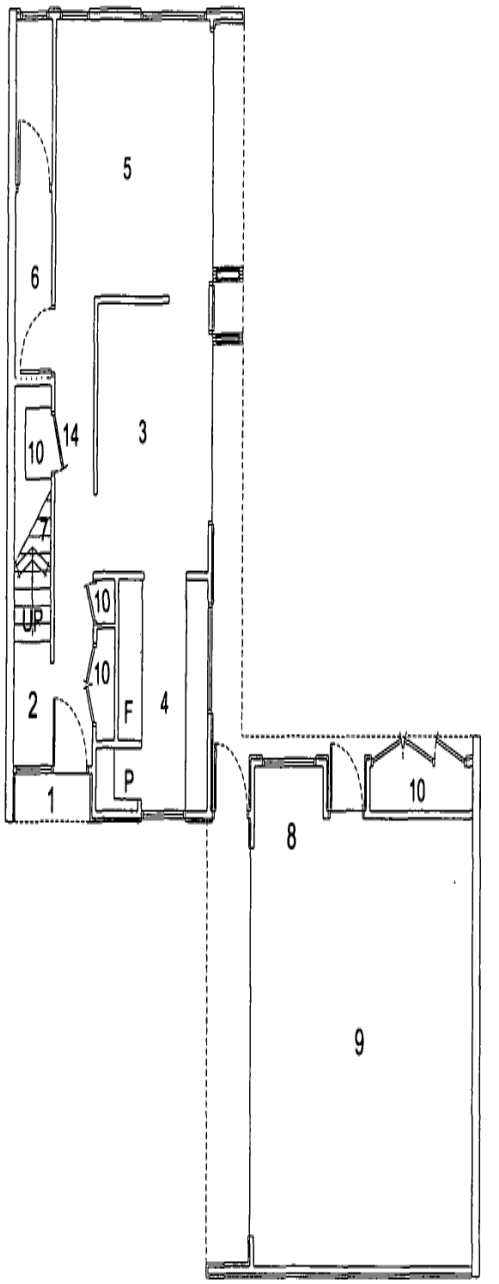
WEST COAST RD HOUSING DEVELOPMENT

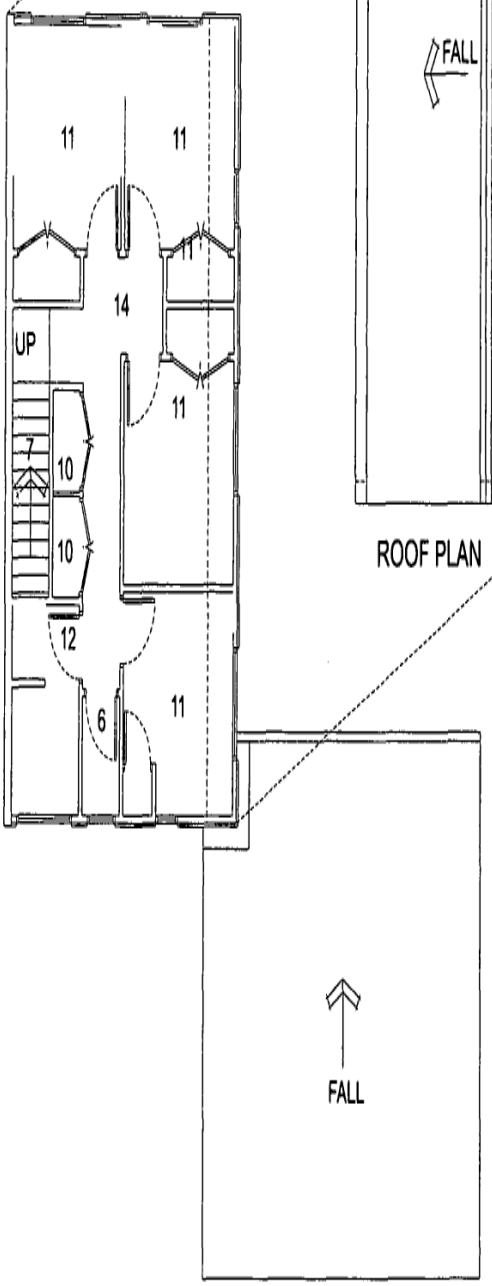
TYPE 4A HOUSE - 4 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A106

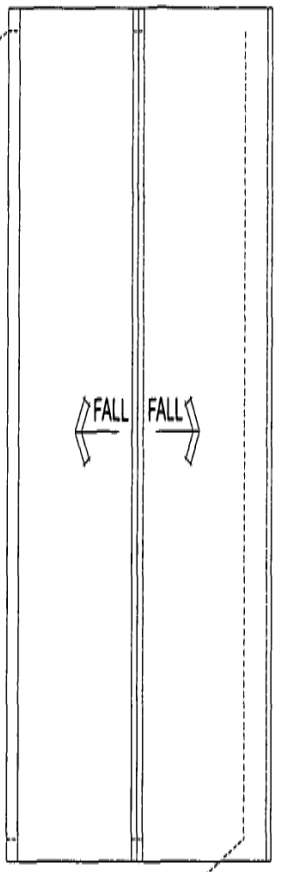
6/23/2006 10:46:54 AM s:\dgn\42600's\42608 - west coast rd\sketch\sheet\A106 4a dc



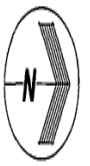
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

APPROVED
subject to conditions endorsed
on : RMA 20110771/1078
signed: _____ date: 9/6/11
authorised officer

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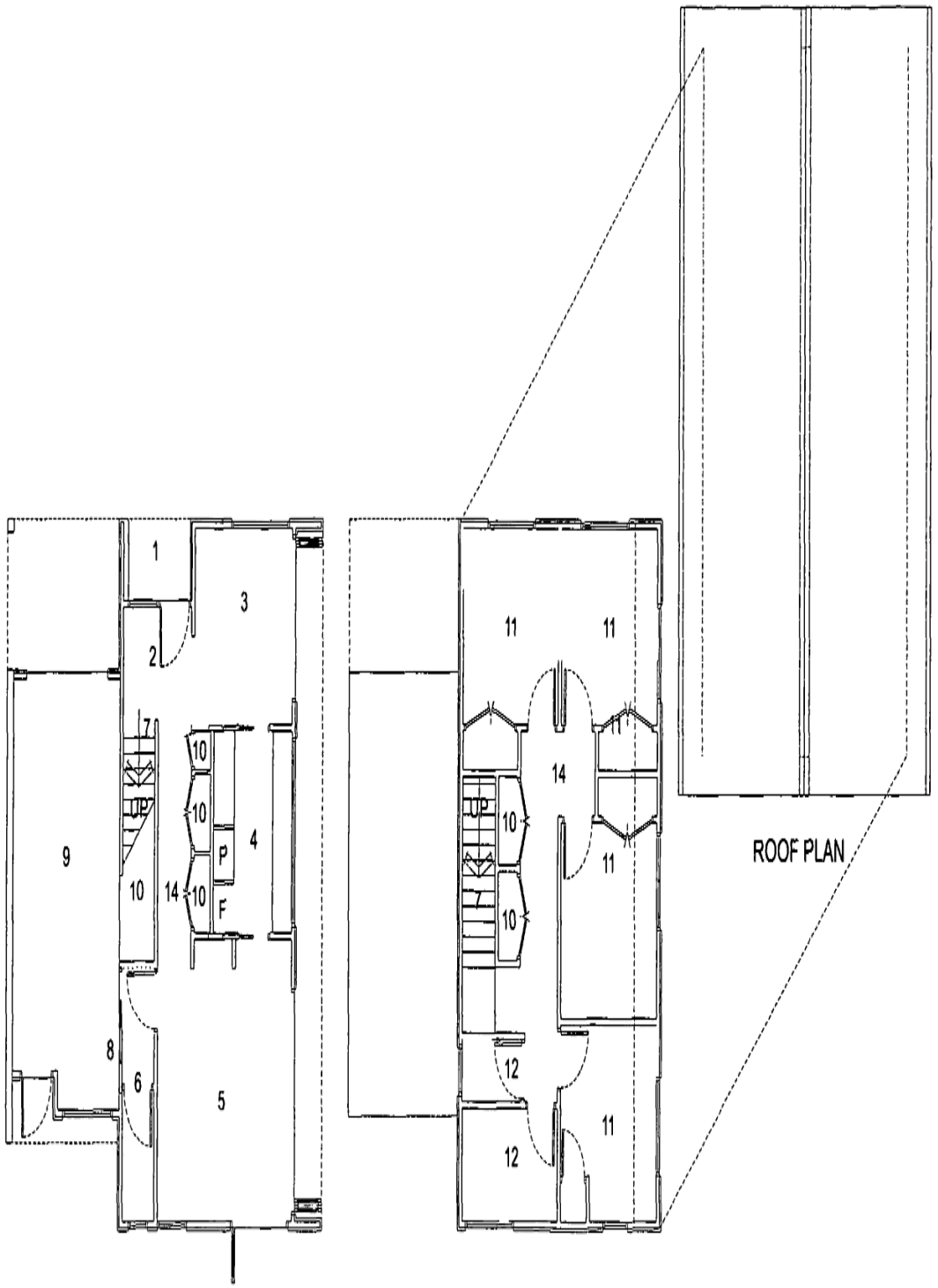
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 4B HOUSE - 4 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
@A1 1:50
14 JUL 2008
A107



GROUND FLOOR PLAN

UPPER FLOOR PLAN

ROOF PLAN

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

APPROVED
subject to conditions endorsed
on : RMA20061071 1078
signed: [signature] date: 19/10/06
authorised officer

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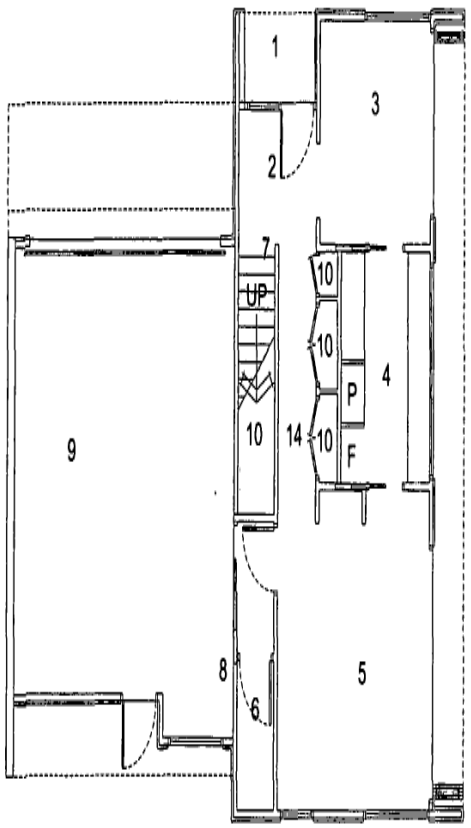
42608

WEST COAST RD HOUSING DEVELOPMENT

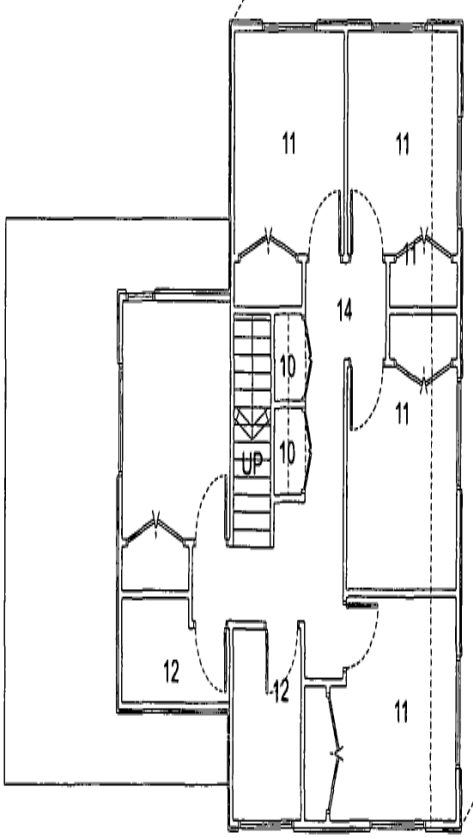
TYPE 4C HOUSE - 4 BEDROOM / SINGLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A108

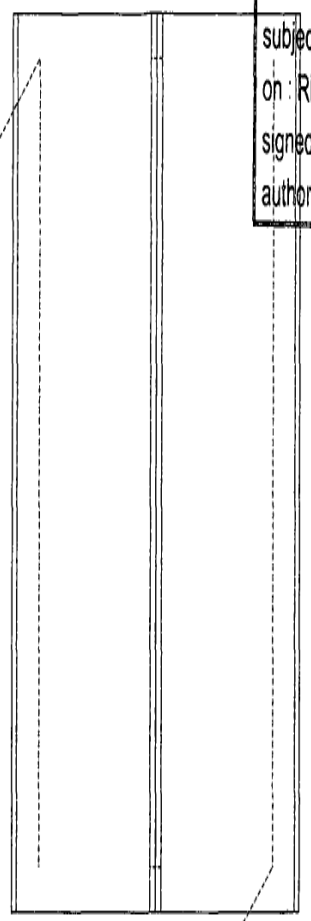
APPROVED
subject to conditions endorsed
on : RMA 20061077 / 10 / 75
signed: [signature] date: 9/10/2
authorised officer



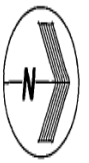
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

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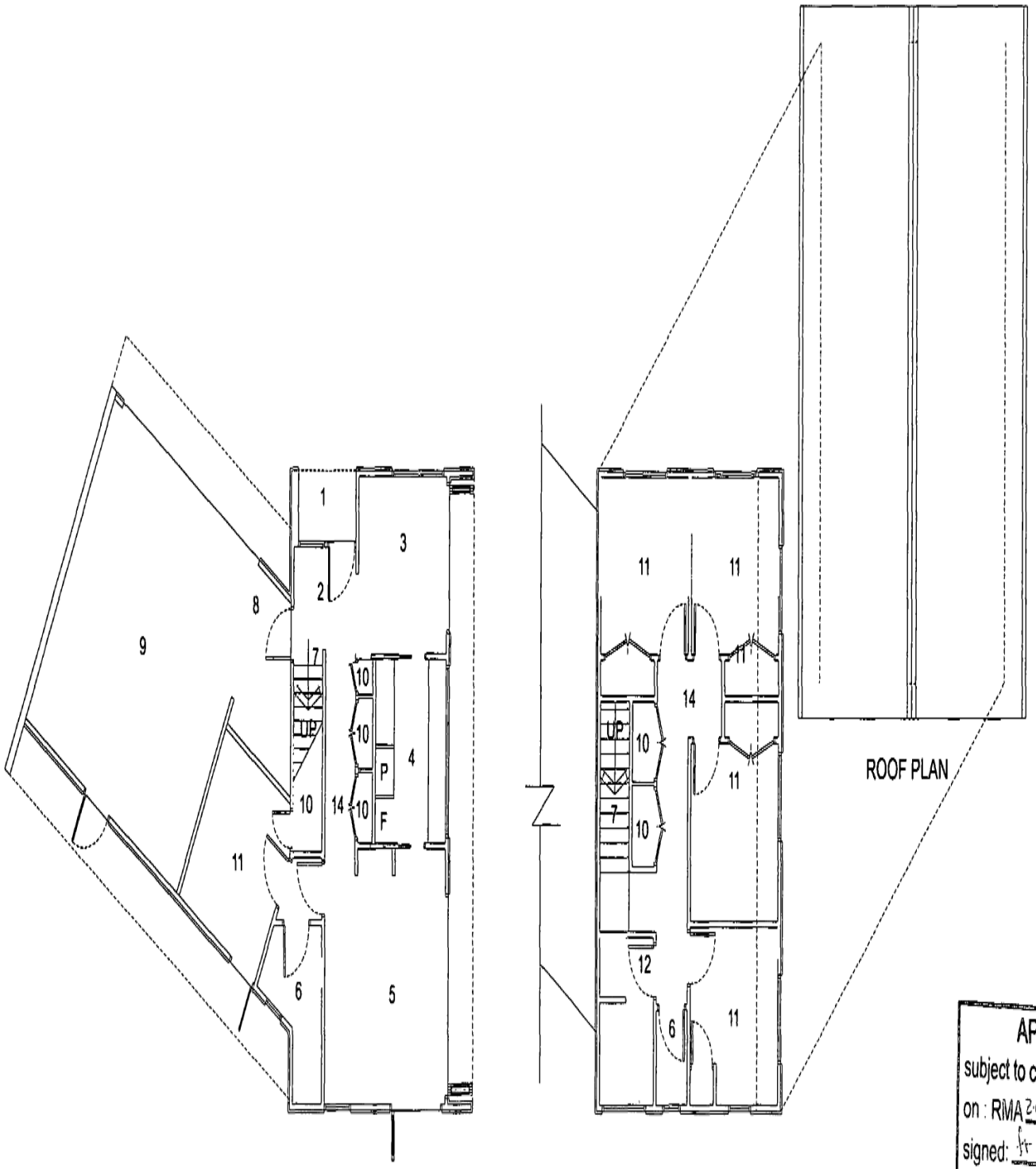
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5A HOUSE - 5 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
A109



GROUND FLOOR PLAN

UPPER FLOOR PLAN

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

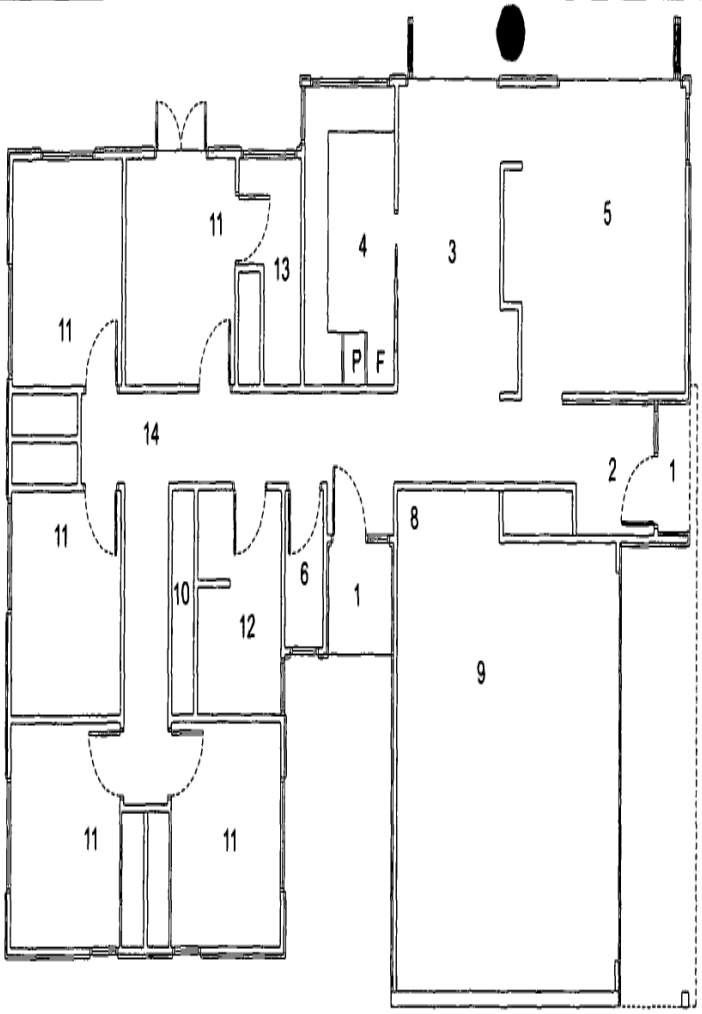
APPROVED
subject to conditions endorsed
on : RMA 20061077/10775
signed: [signature] date: 19/10/06
authorised officer

Babbage
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
A110



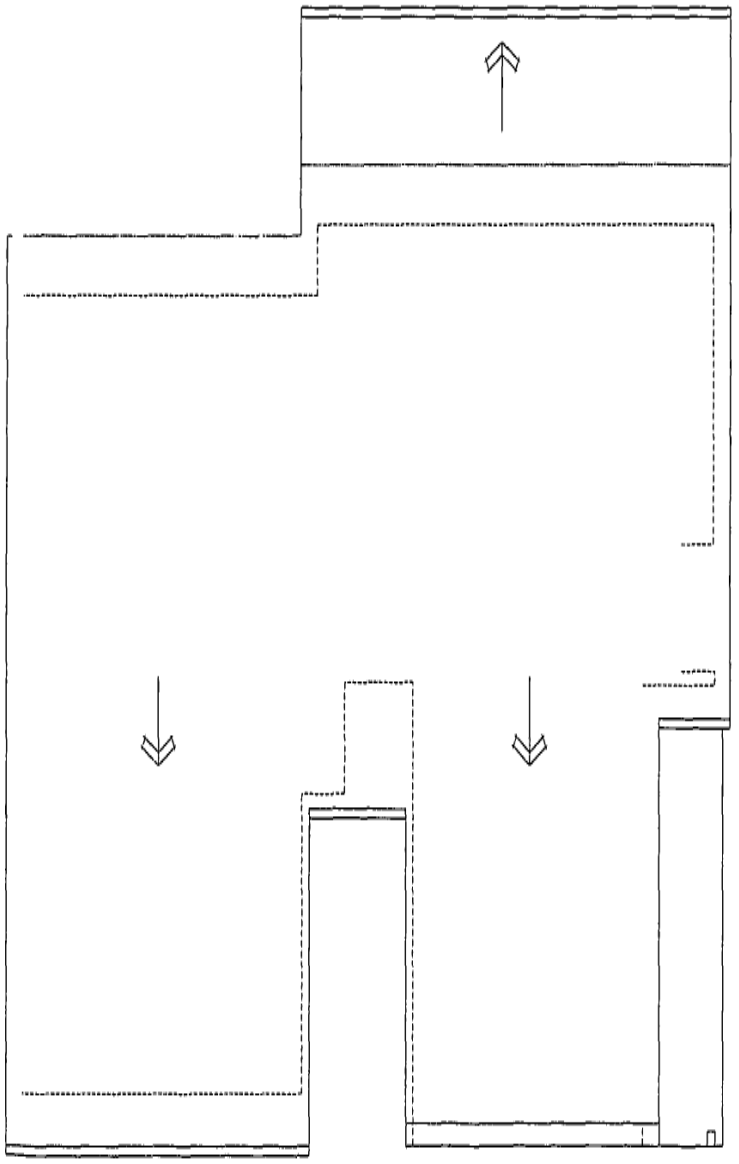
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: [signature] date: 19/10/06
authorised officer

N

PLAN KEY

FLOOR PLAN

1 Covered Porch
2 Entry Hall
3 Dining
4 Kitchen
5 Living
6 WC
7 Stairs
8 Laundry
9 Garage
10 Storage
11 Bedroom
12 Bathroom
13 Ensuite
14 Hallway



ROOF PLAN

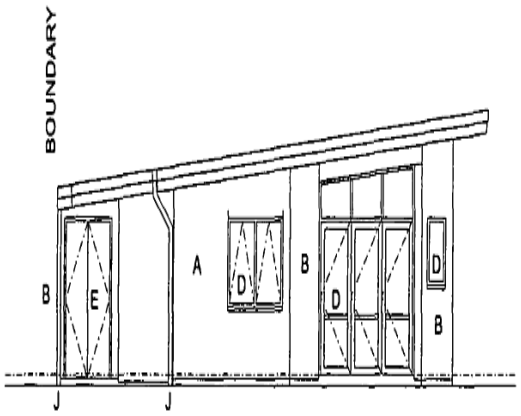
Babbage CONSULTANTS 42608

WEST COAST RD HOUSING DEVELOPMENT

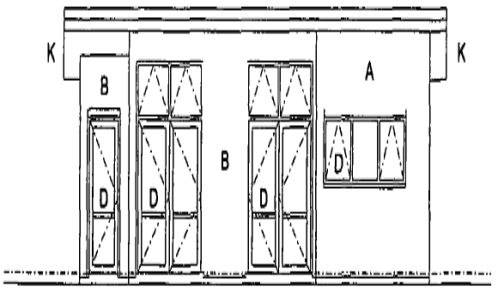
TYPE 5C HOUSE - 5 BEDROOM / DOUBLE GARAGE

FLOOR PLAN
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A111

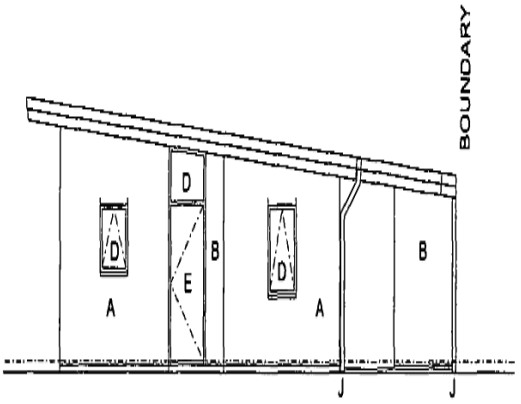
APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: [signature] date: 17/6/07
authorised officer



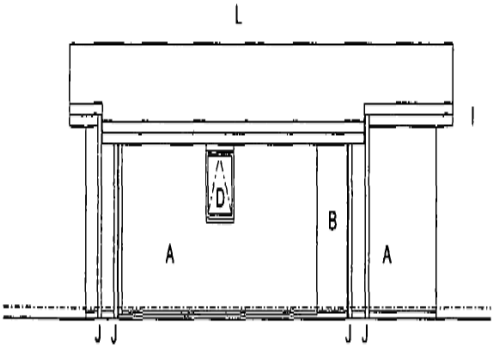
EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

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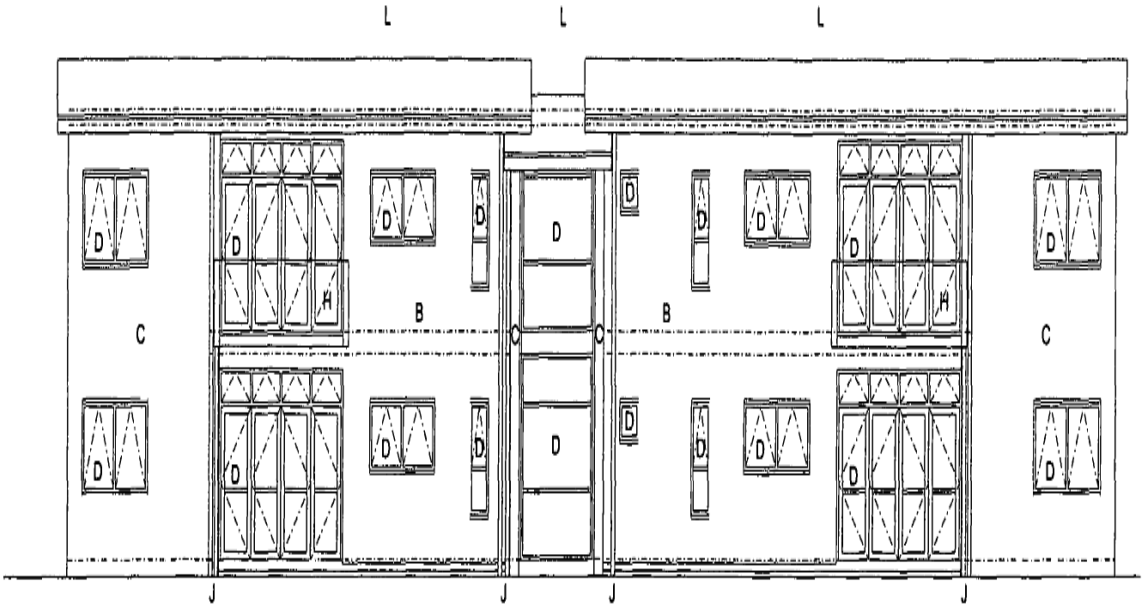
WEST COAST RD HOUSING DEVELOPMENT

TYPE 1 HOUSE - 2 BEDROOM SENIOR / CARPORT

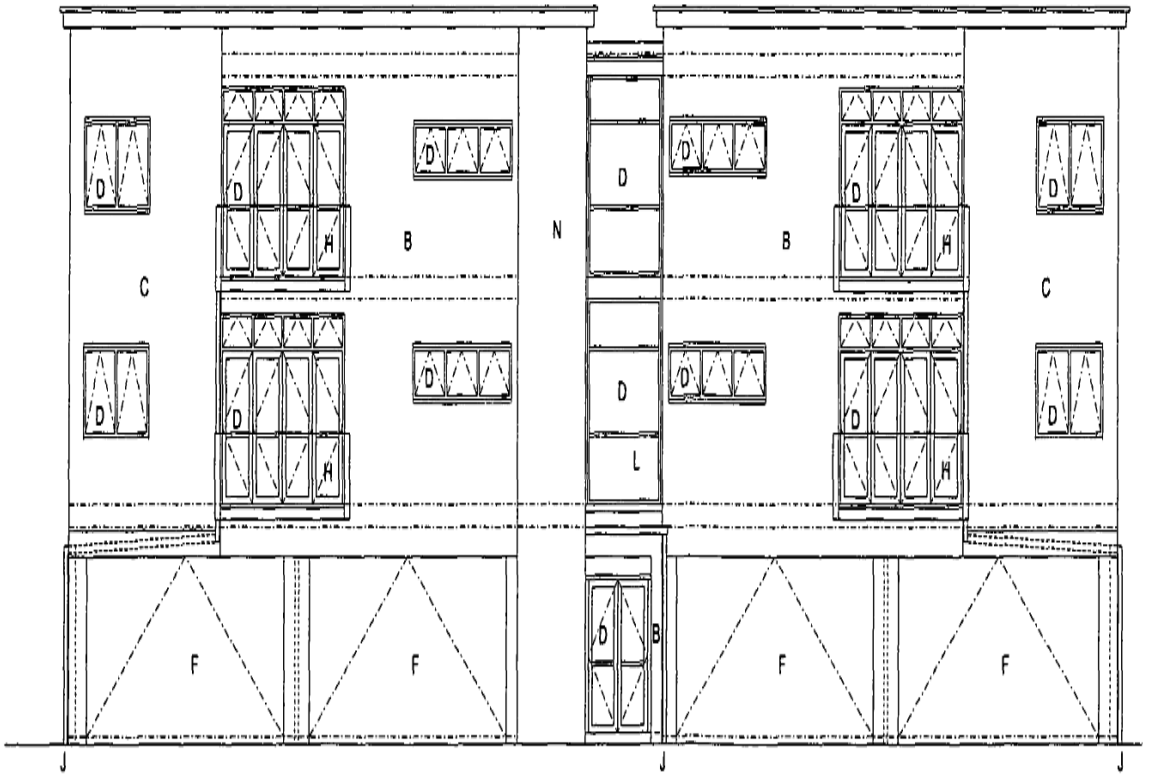
ELEVATIONS

scale @A3 1:100
scale @A1 1:50
14 JUN 2006

A201



WEST ELEVATION



EAST ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

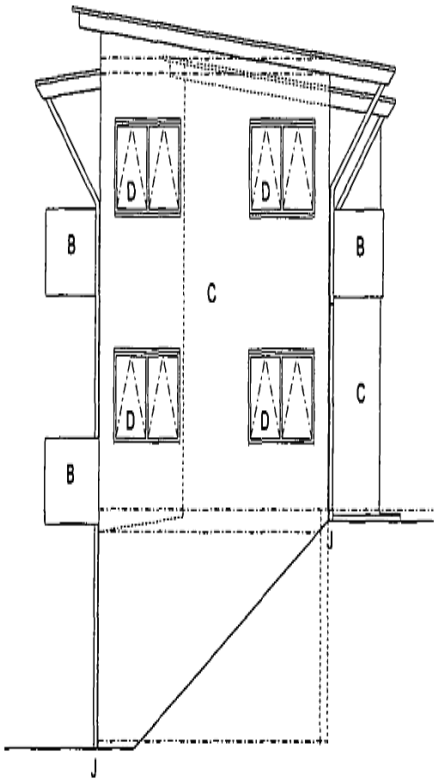
APPROVED
subject to conditions endorsed
on : RMA 2006 107 71 1075
signed: [signature] date: 19/6/06
authorised officer

Babbage CONSULTANTS
42608

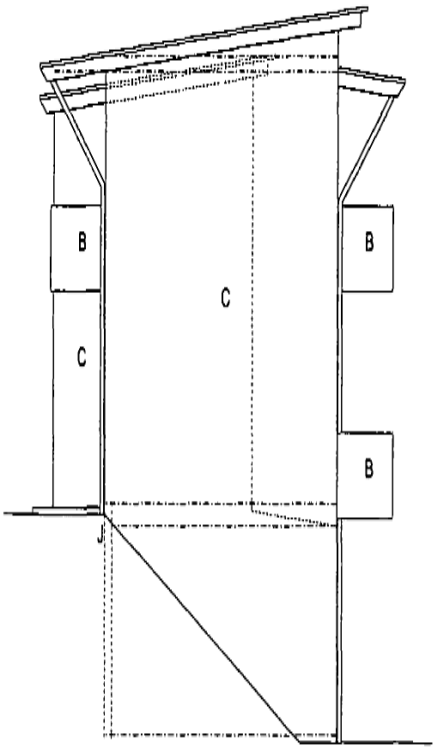
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A2021



NORTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.

B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.

C Architectural masonry veneer.

D Powder coated aluminium window joinery.

E Solid core exterior door in aluminium frame. Paint finish.

F Timber sectional overhead garage door. Paint finish.

G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.

H Glazed-front balconies. Powder coated aluminium fixings.

I Colorsteel gutter and fascia

J UPVC down pipe. Paint finish

K Fibre cement panel soffit. Paint finish.

L Longrun colorsteel roof, corrugate profile

M Optional timber pergola. Paint finish.

N Solid masonry wall.

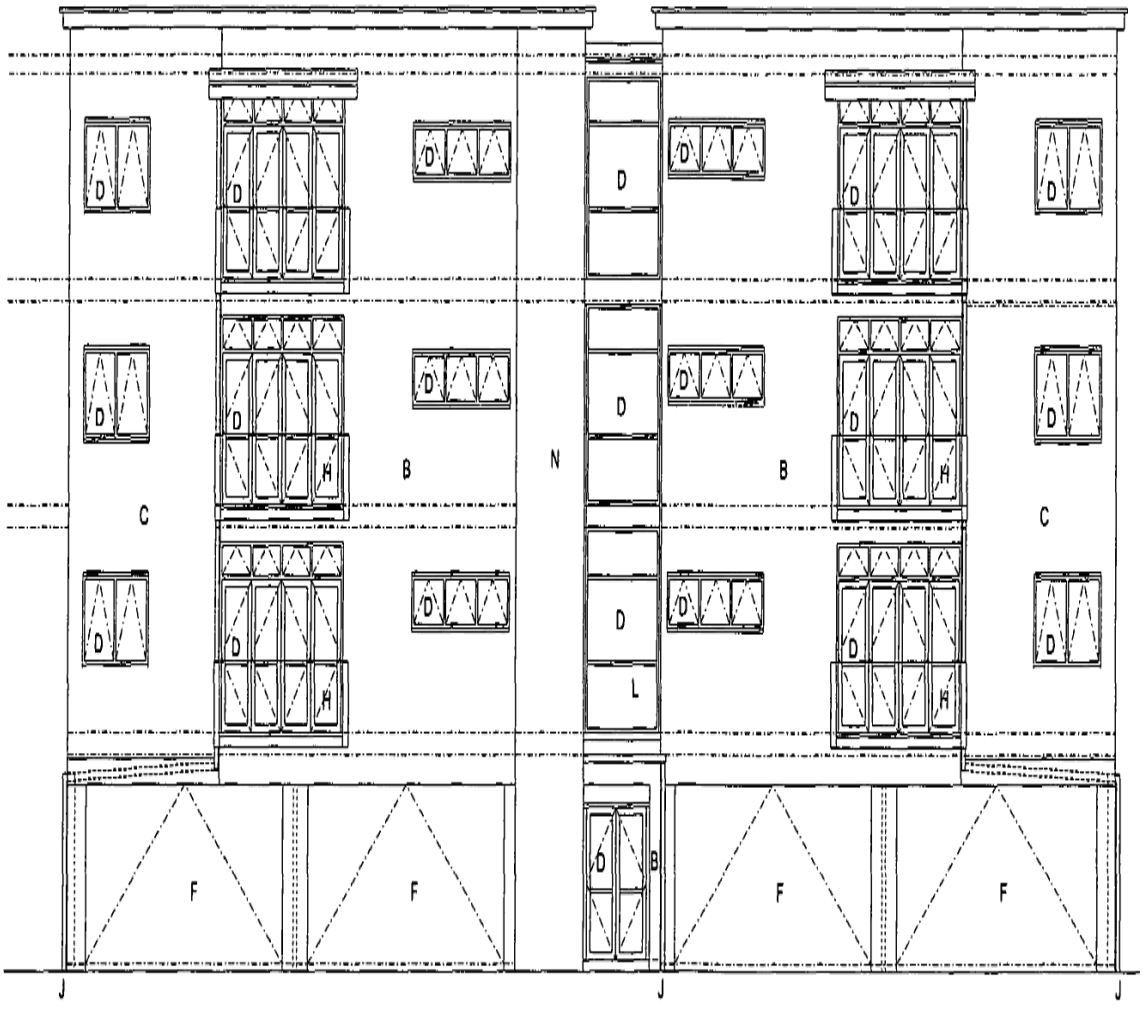
APPROVED
subject to conditions endorsed
on : RMA 20061077/1075
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A202-2



EAST ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 1075
signed: _____ date: 15/10/06
authorised officer

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42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A2034

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20051077 / 10 78
signed: [signature] date: 19/10/06
authorised officer

Babbage Consultants

42608

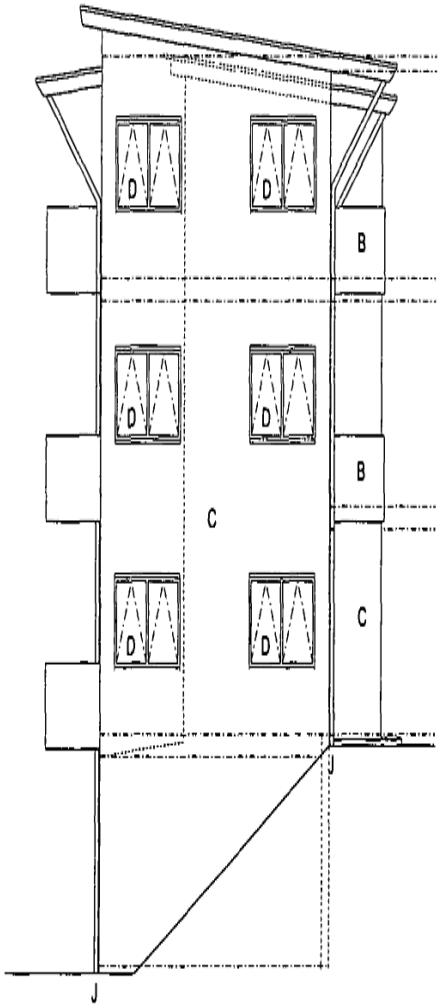
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

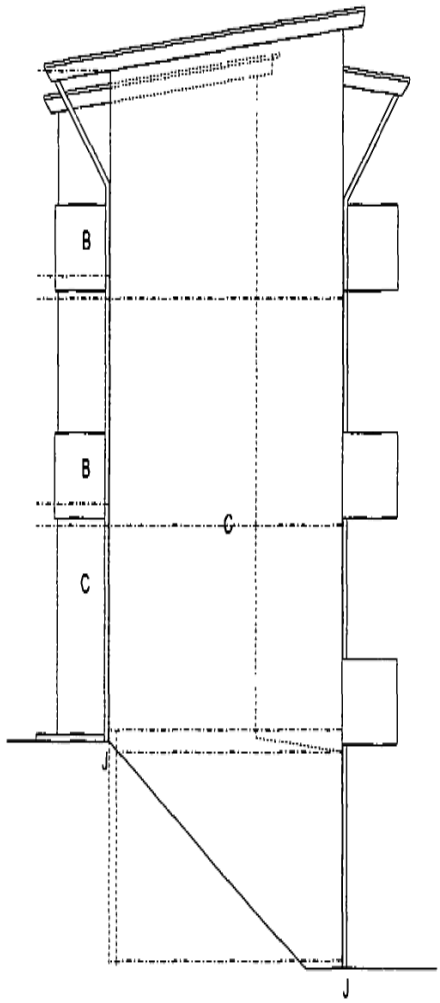
ELEVATIONS

scale @A3 1:100
scale @A1 1:50
14 JUN 2006

A203-2



NORTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

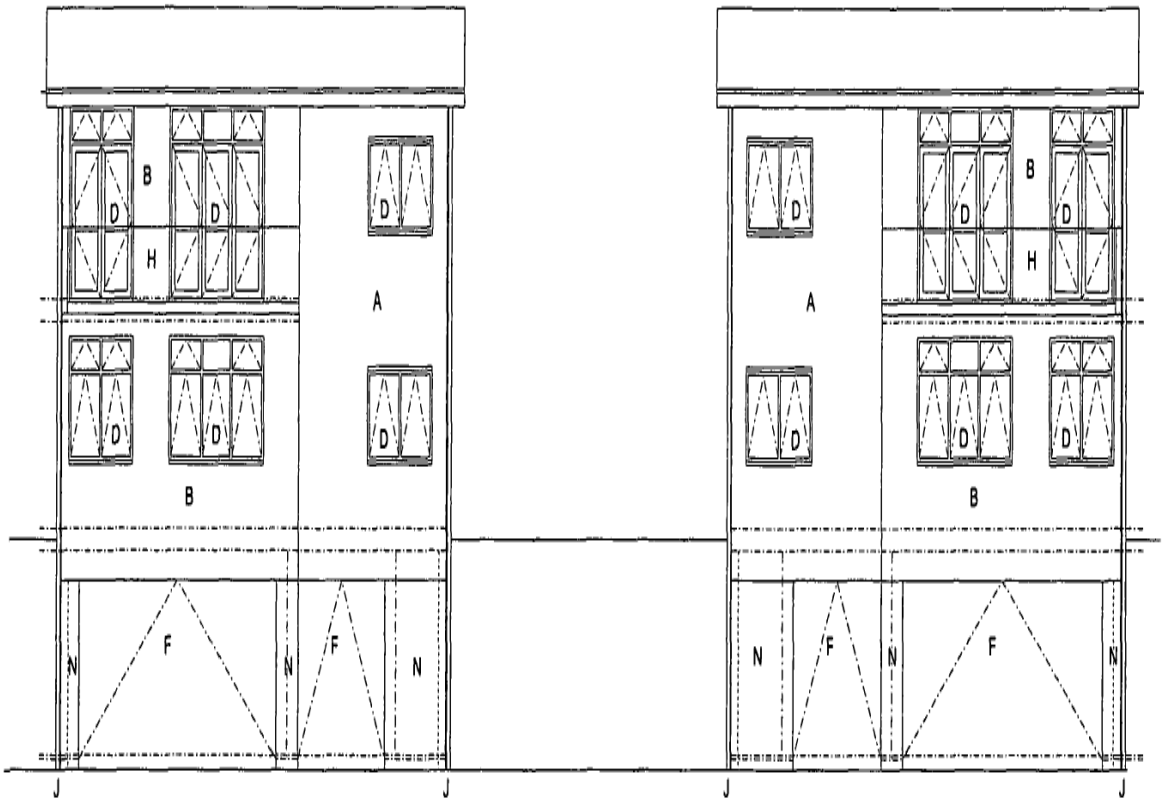
APPROVED
subject to conditions endorsed
on : RMA 20061077/1075
signed: [signature] date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

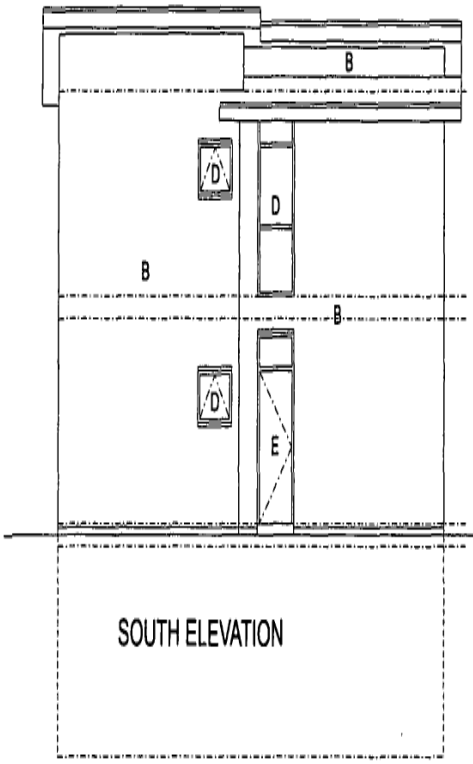
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

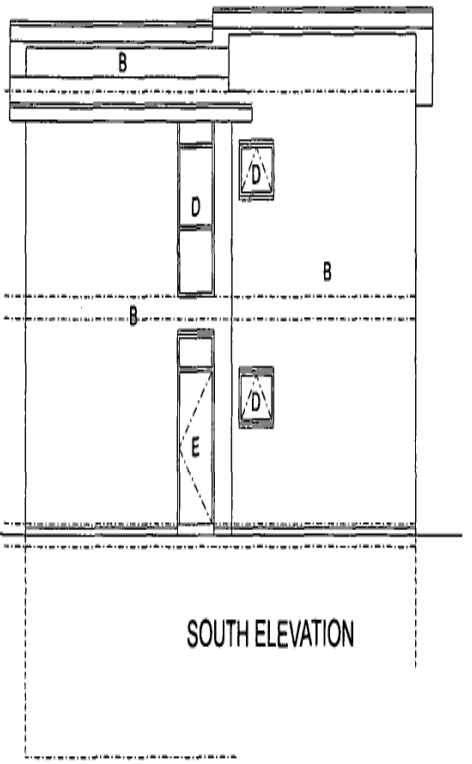
ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A203-3



NORTH ELEVATION



SOUTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: _____ date: 19/10/06
authorised officer

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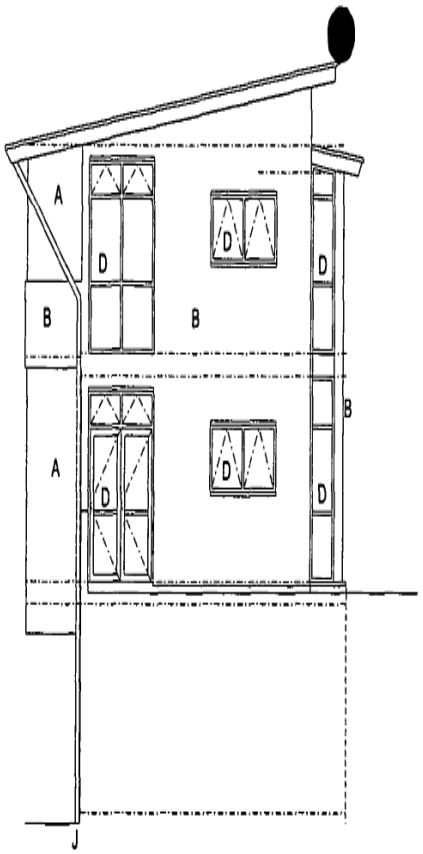
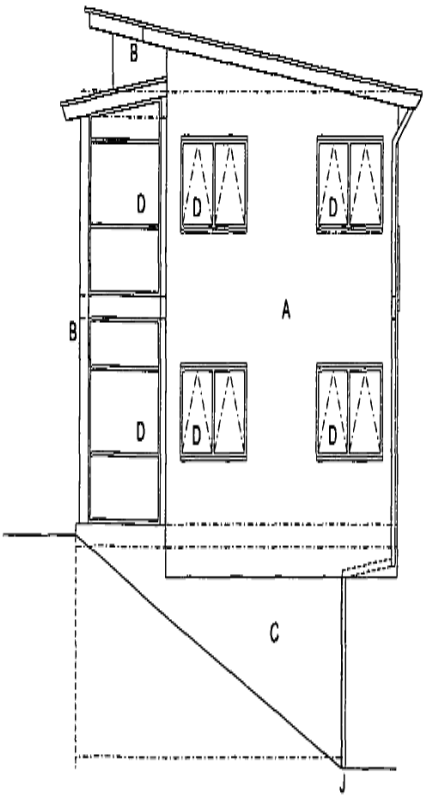
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / SEPARATE CARPORT

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A204-0



WEST ELEVATION



EAST ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 107E
signed: [signature] date: 17/10/06
authorised officer

Babbage CONSULTANTS
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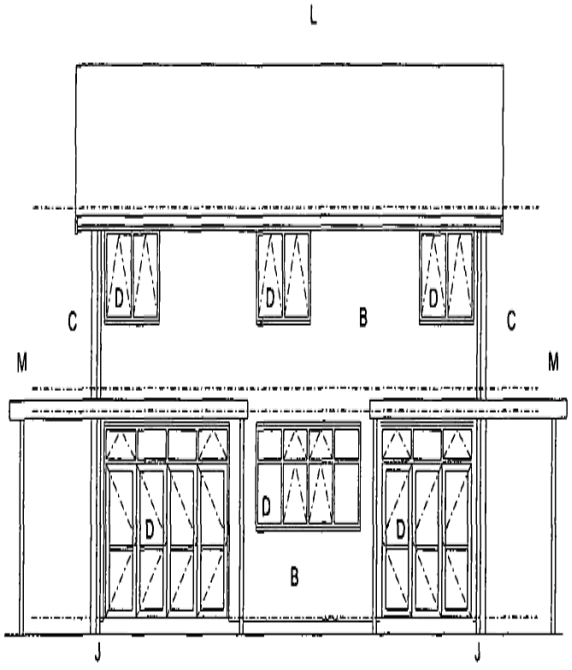
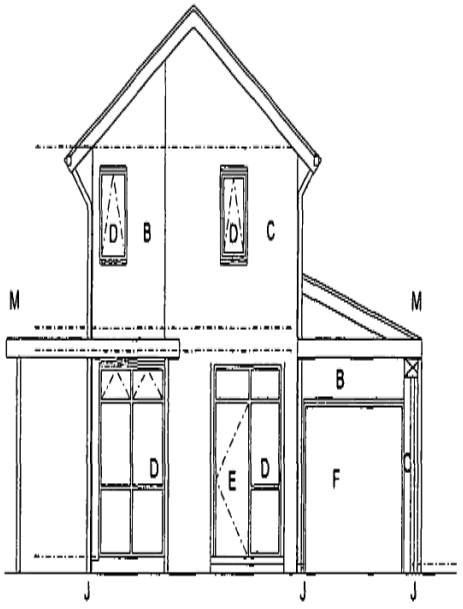
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / SEPARATE CARPORT

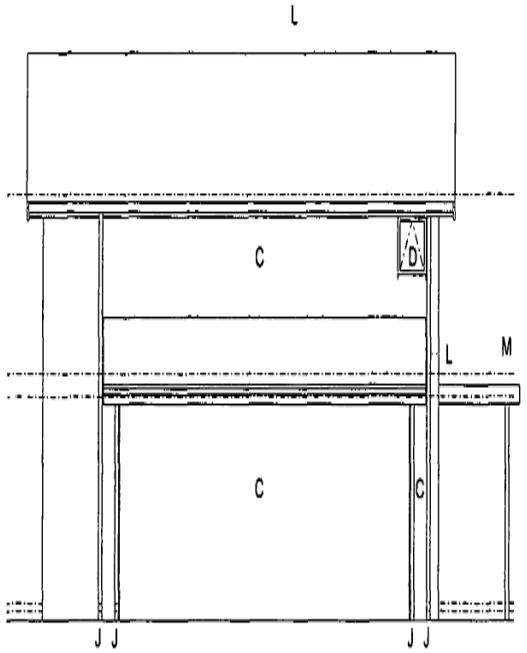
ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JULY 2006
A2042



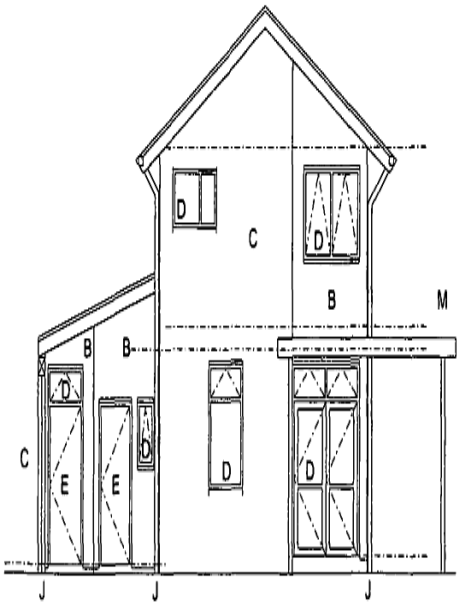
NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 10 7E
signed: [signature] date: 5/10/06
authorised officer

Babbage Consultants
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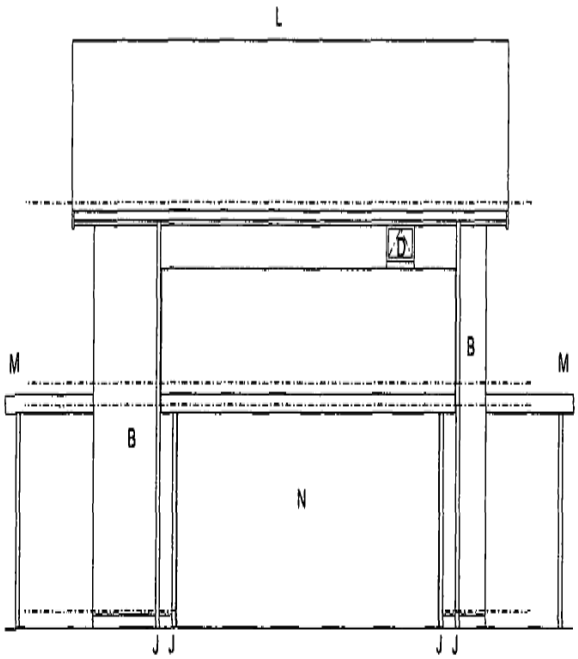
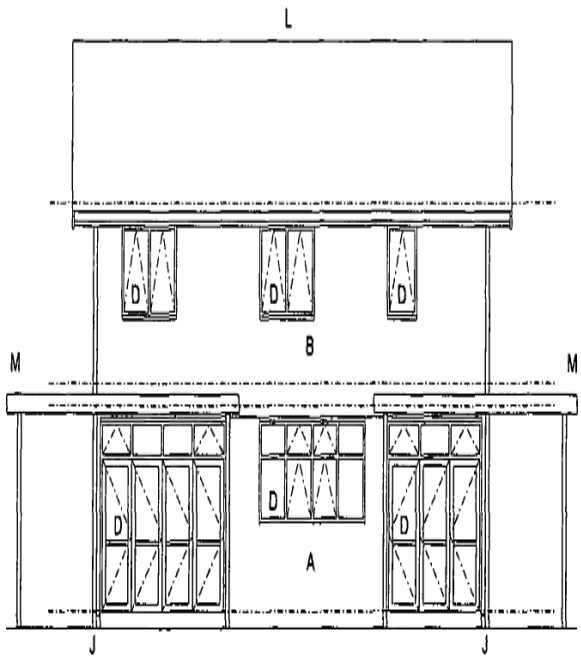
WEST COAST RD HOUSING DEVELOPMENT

TYPE 3 HOUSE - 3 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A205



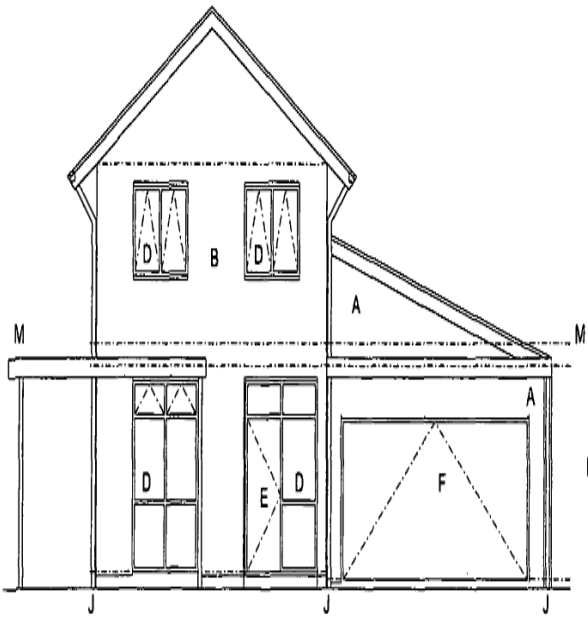
SOUTH ELEVATION

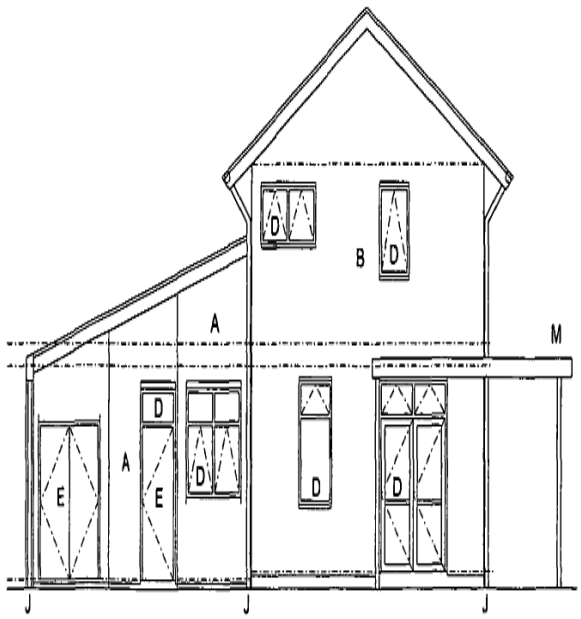


NORTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.





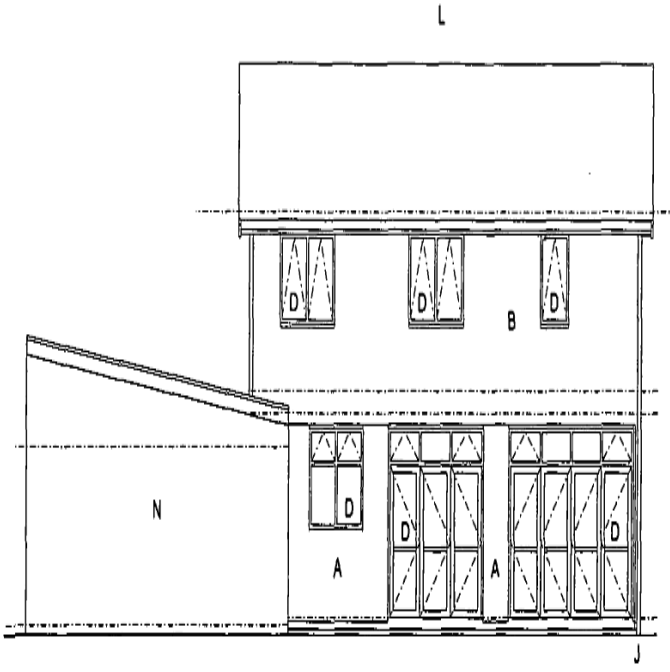
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 19/10/06
authorised officer

Babbage CONSULTANTS
42608

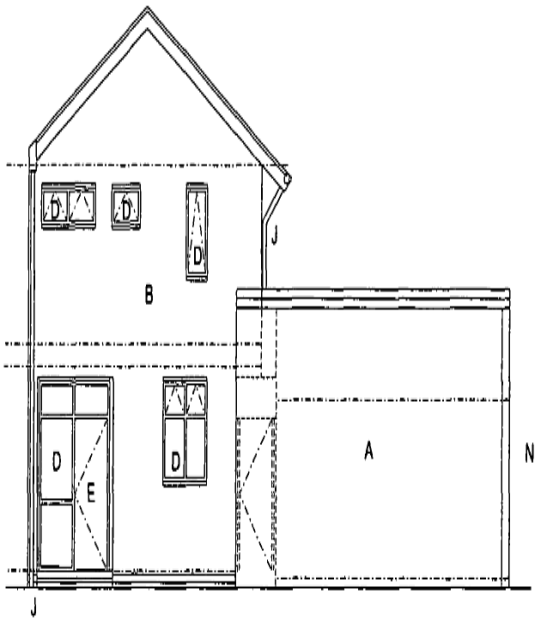
WEST COAST RD HOUSING DEVELOPMENT

TYPE 4A HOUSE - 4 BEDROOM / DOUBLE GARAGE

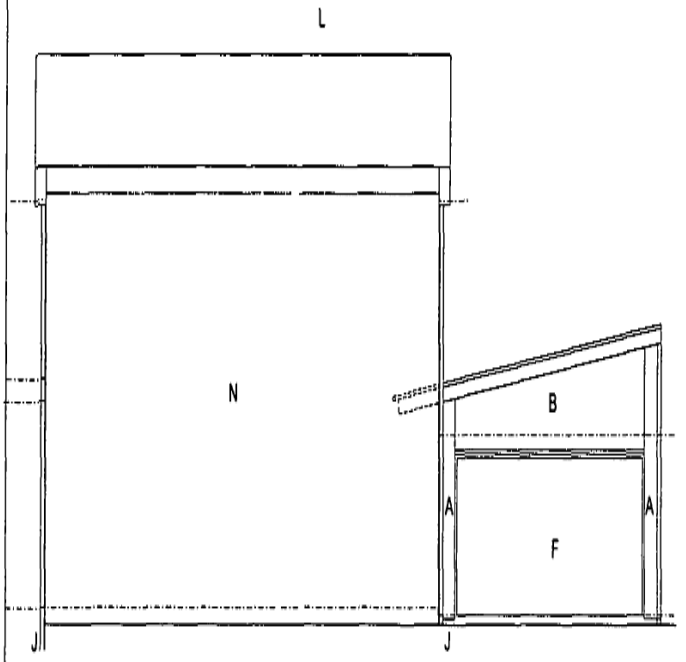
ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A206



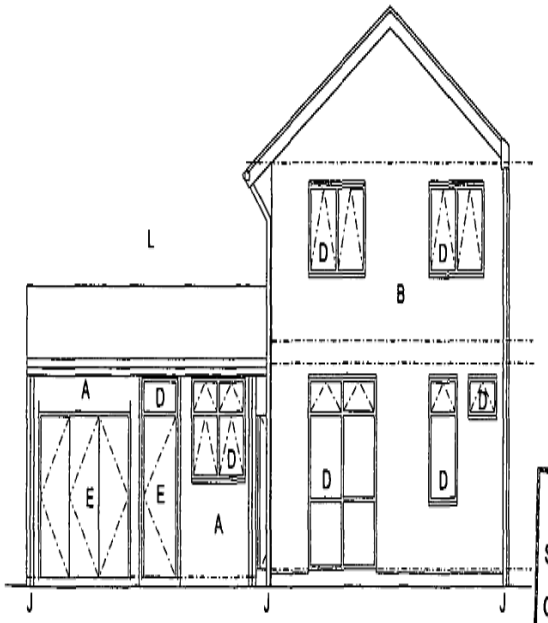
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 / 10 7
signed: _____ date: 9/10
authorised officer

Babbage CONSULTANTS
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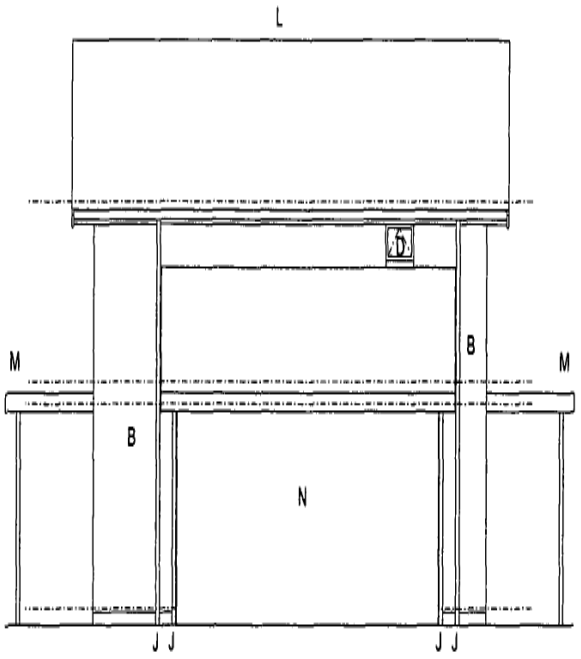
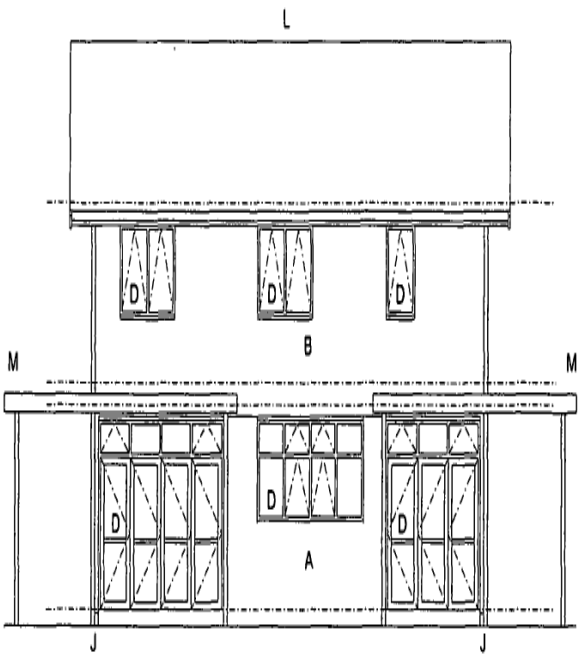
WEST COAST RD HOUSING DEVELOPMENT

TYPE 4B HOUSE - 4 BEDROOM / DOUBLE GARAGE

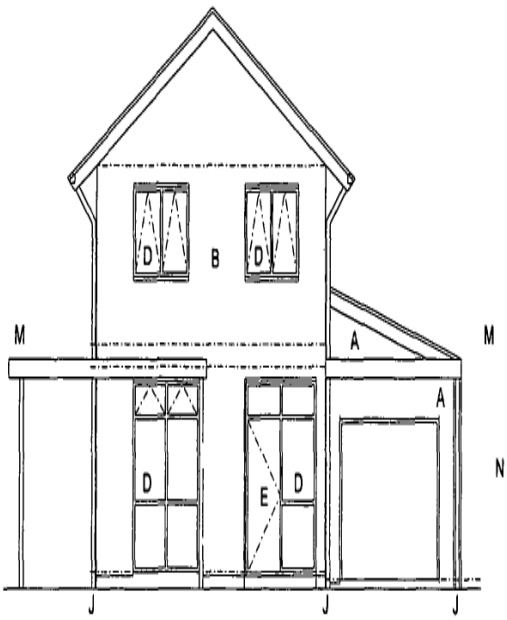
ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A207

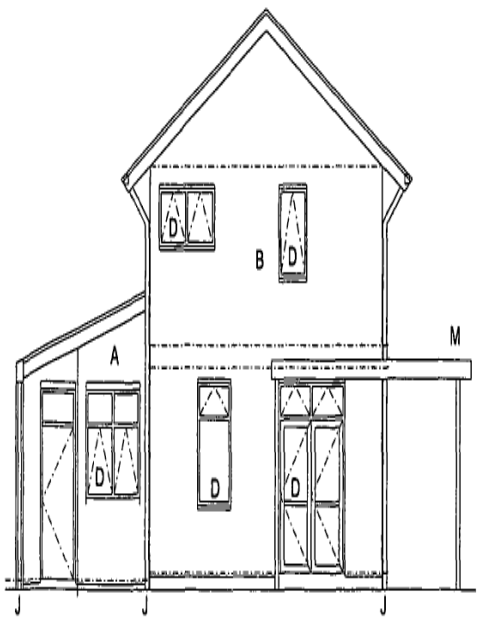


SOUTH ELEVATION



NORTH ELEVATION





ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061677 | 10 75
signed: [signature] date: 19/10
authorised officer

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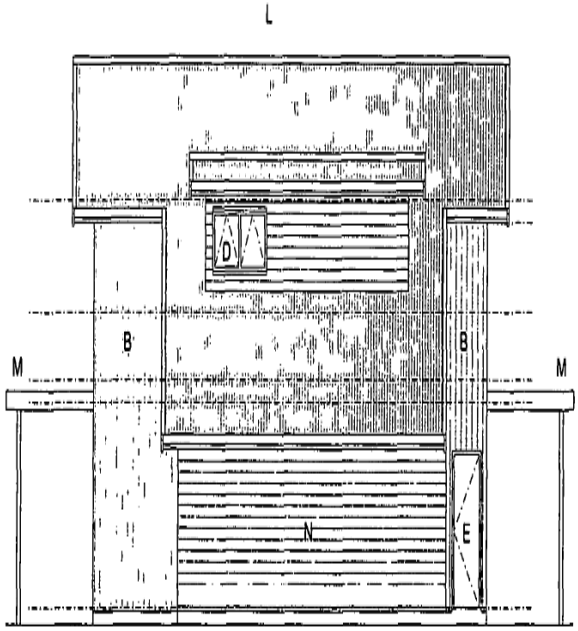
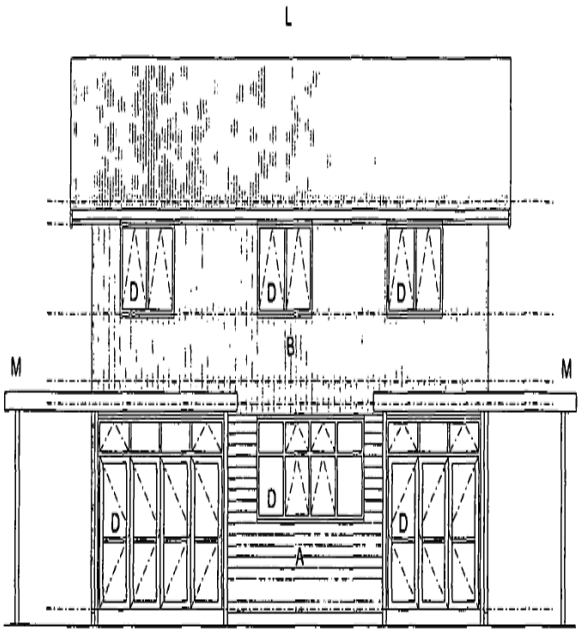
WEST COAST RD HOUSING DEVELOPMENT

TYPE 4C HOUSE - 4 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A208



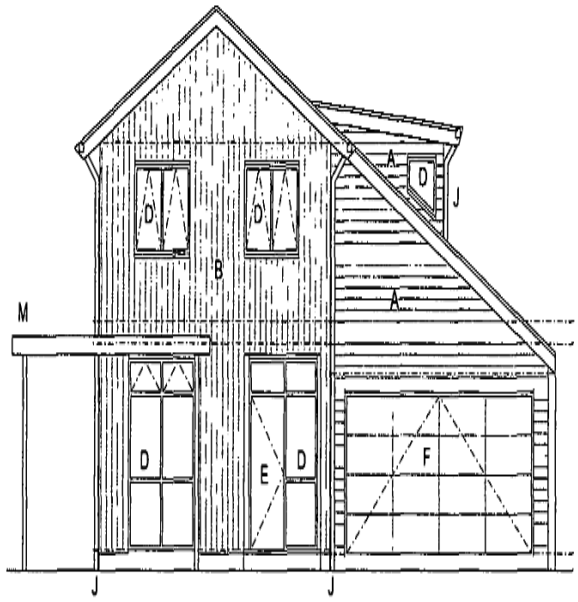
SOUTH ELEVATION



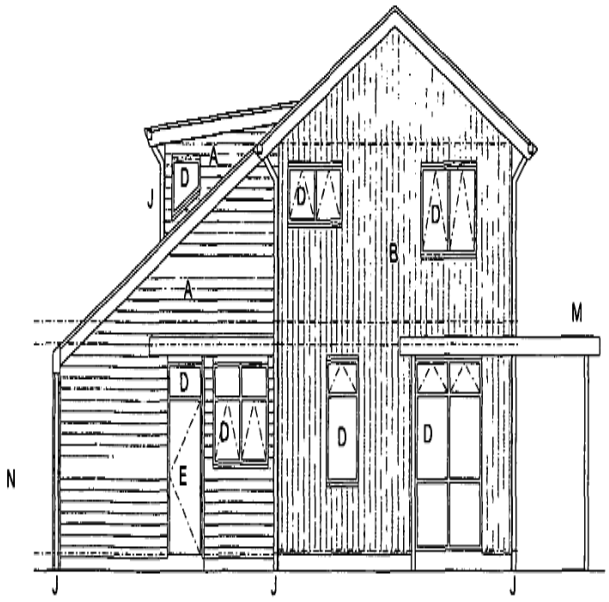
NORTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.



WEST ELEVATION



EAST ELEVATION

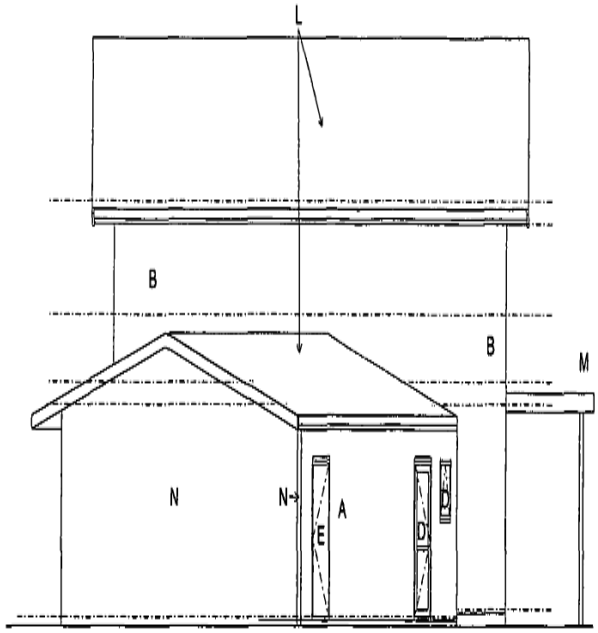
APPROVED
subject to conditions endorsed
on : RMA 2006 1077 / 1078
signed: _____ date: 19/10
authorised officer

Babbage CONSULTANTS
42608

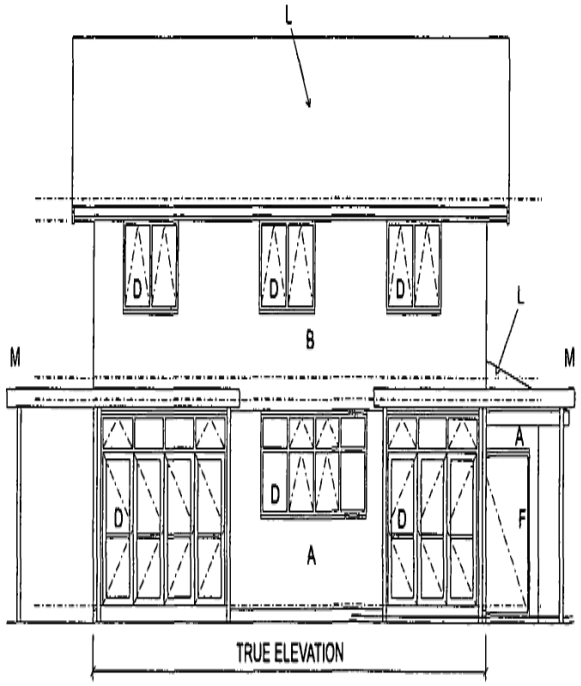
WEST COAST RD HOUSING DEVELOPMENT

TYPE 5A HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @ A3 1:100
scale @ A1 1:50
A209



SOUTH ELEVATION



NORTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

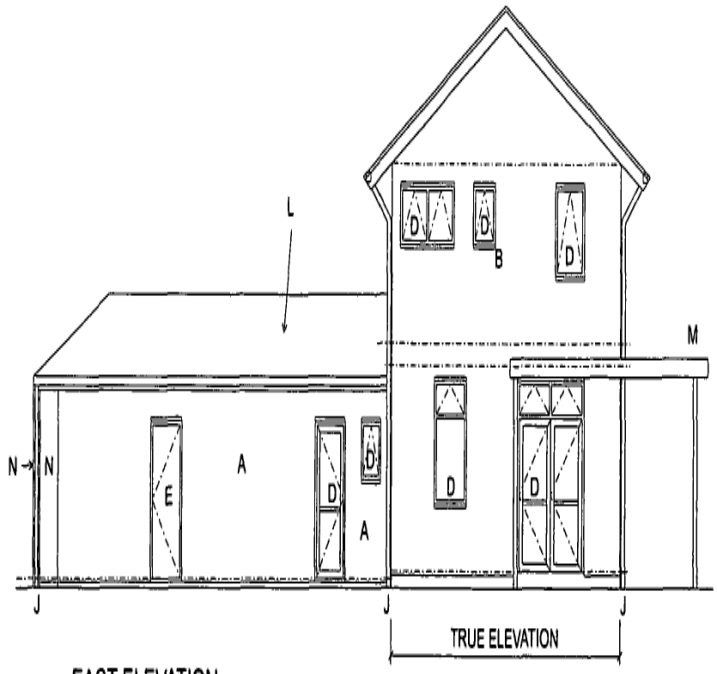
APPROVED
subject to conditions endorsed
on : RMA 20061077/1075
signed: _____ date: 5/10/06
authorised officer

Baldage CONSULTANTS
42608

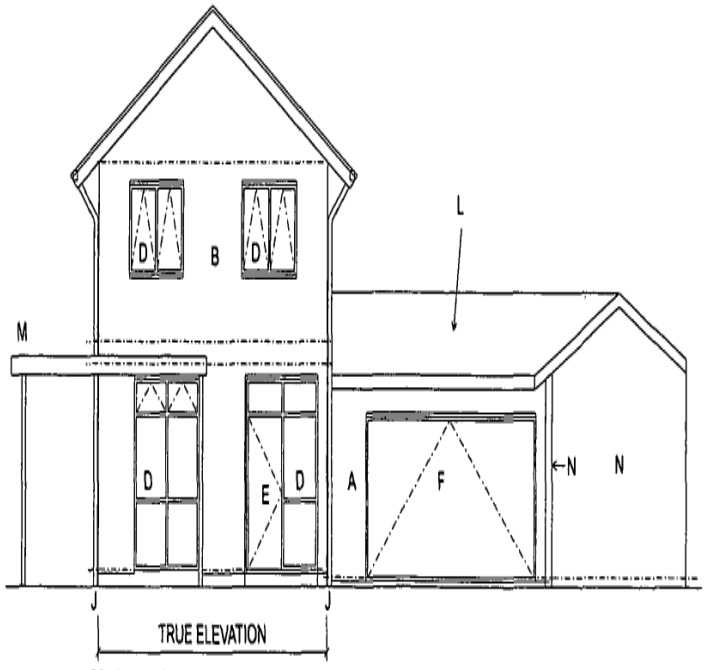
WEST COAST RD HOUSING DEVELOPMENT

TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A210-1



EAST ELEVATION



WEST ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 107
signed: [signature] date: 9/10/07
authorised officer

Babbage

42608

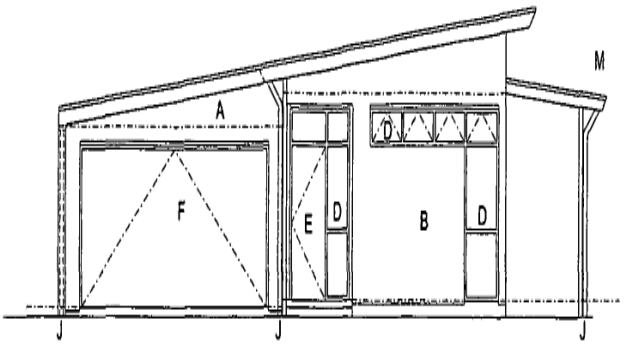
WEST COAST RD HOUSING DEVELOPMENT

TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

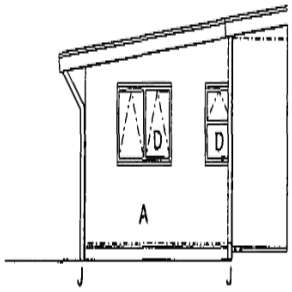
ELEVATIONS

scale @A3 1:100
scale @A1 1:50
14 JUN 2006

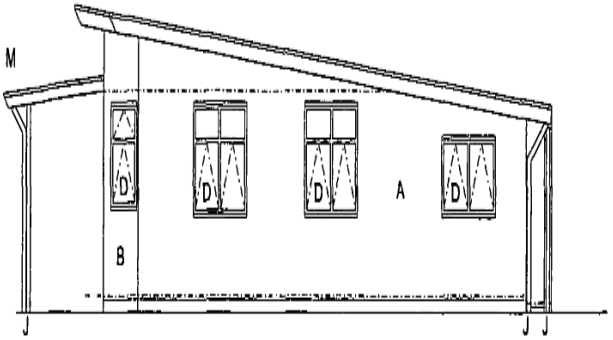
A210-2



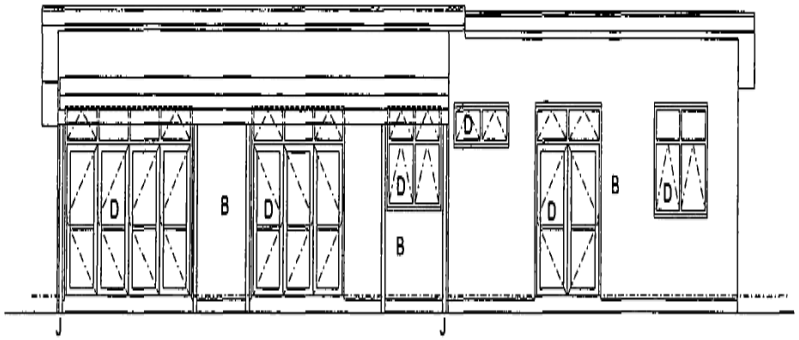
NORTH ELEVATION



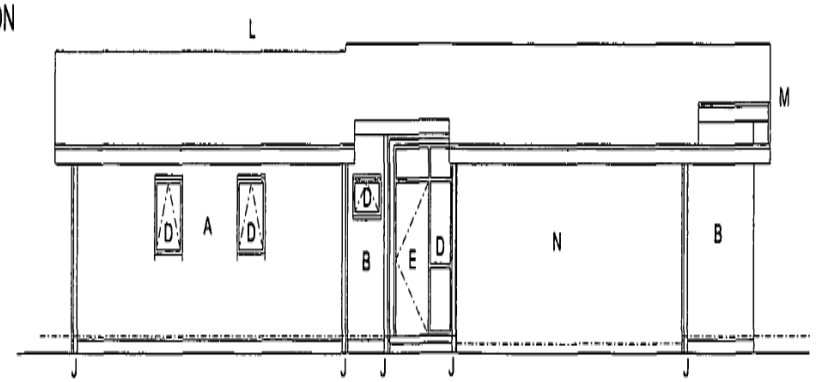
NORTH ELEVATION (COURTYARD)



SOUTH ELEVATION



WEST ELEVATION



ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

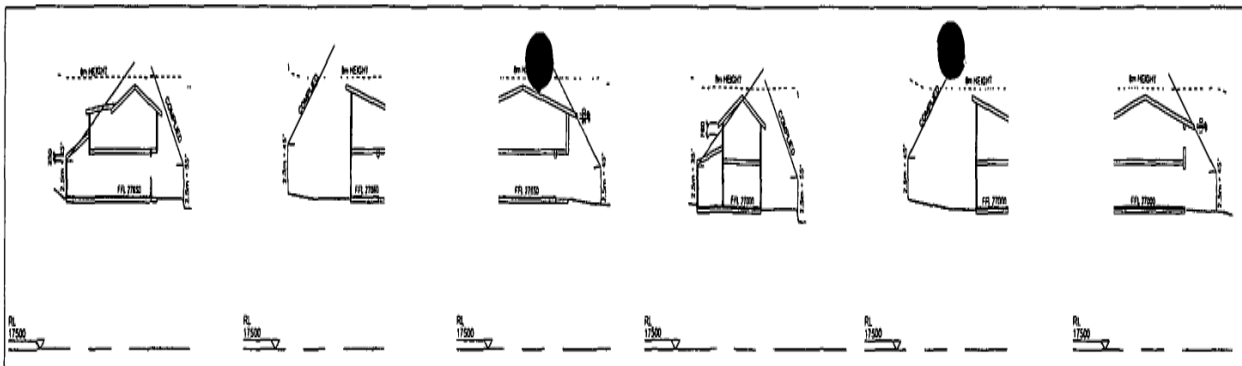
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 075
signed: _____ date: 19/10
authorised officer

Baldage Consultants
42608

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5C HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS
scale @A3 1:100
scale @A1 1:50
14 JUN 2006
A211-1



1 A304 LOT 01 - North & South 1:500

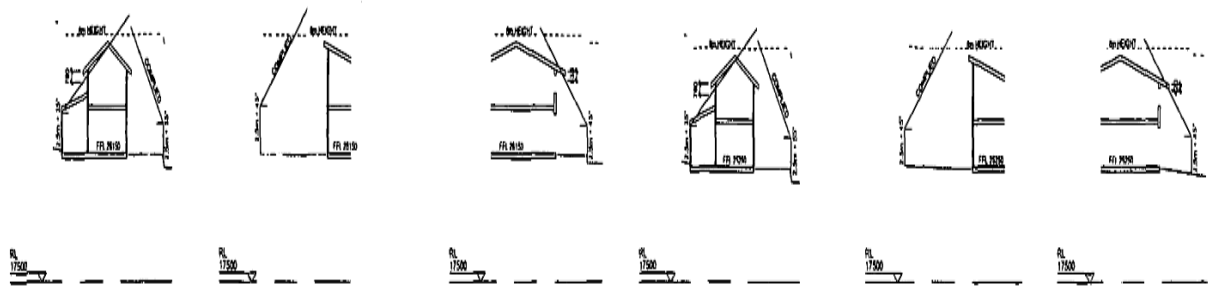
2 A304 LOT 01 - East 1:500

3 A304 LOT 01 - West 1:500

4 A304 LOT 02 - North & South 1:500

5 A304 LOT 02 - East 1:500

6 A304 LOT 02 - West 1 500



7 A304 LOT 03 - North & South 1:500

8 A304 LOT 03 - East 1:500

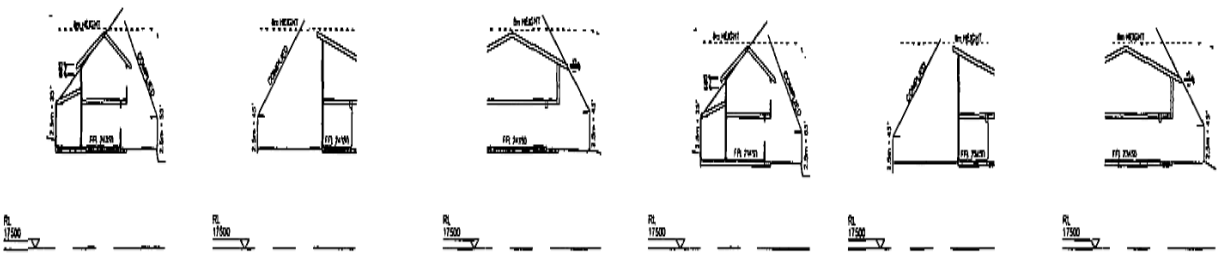
9 A304 LOT 03 - West 1:500

10 A304 LOT 04 - North & South 1:500

11 A304 LOT 04 - East 1:500

12 A304 LOT 04 - West 1:500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: _____ date: 15/11/06
authorised officer



13 A304 LOT 05 - North & South 1:500

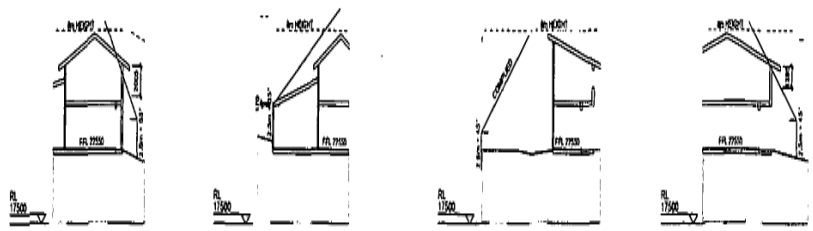
14 A304 LOT 05 - East 1:500

15 A304 LOT 05 - West 1:500

16 A304 LOT 06 - North & South 1:500

17 A304 LOT 06 - East 1:500

18 A304 LOT 06 - West 1:500



19 A304 LOT 07 - North 1:500

20 A304 LOT 07 - South 1:500

21 A304 LOT 07 - East 1:500

22 A304 LOT 07 - West 1:500

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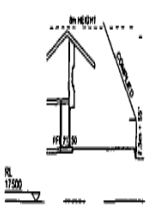
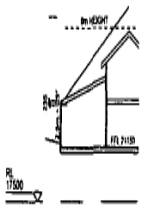
WEST COAST ROAD
HOUSING DEVELOPMENT
BULK & LOCATION STUDY

SECTIONS
STAGE 1A

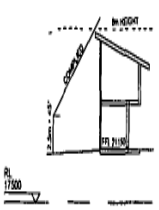
06/02/06
rev. A304



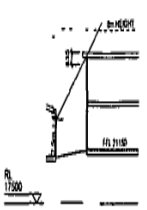
1 A305 LOT 08 - North 1:500



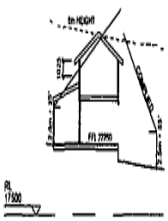
2 A305 LOT 08 - South 1:500



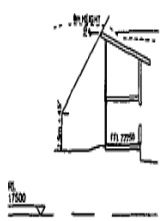
3 A305 LOT 08 - East 1:500



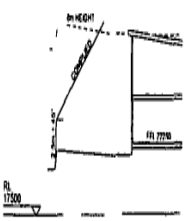
4 A305 LOT 08 - West 1:500



5 A305 LOT 09 - North & South 1:500



6 A305 LOT 09 - East 1:500



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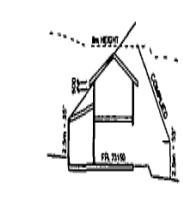
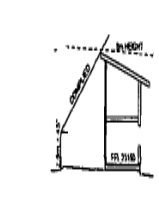
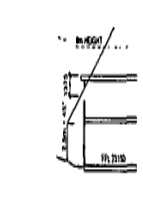


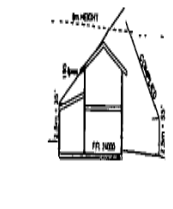
8 A305 LOT 10 - North & South 1:500



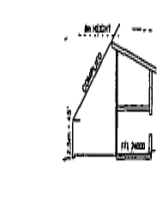
9 A305 LOT 10 - East 1:500



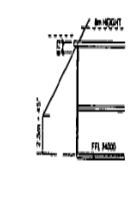
10 A305 LOT 10 - West 1:500



11 A305 LOT 11 - North & South 1:500

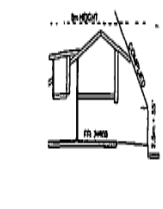


12 A305 LOT 11 - East 1:500



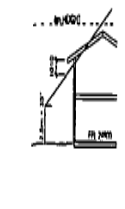
13 A305 LOT 11 - West 1:500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 10 75
signed: [signature] date: 9/10/06
authorised officer

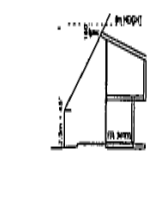


14 A305 LOT 12 - North 1:500

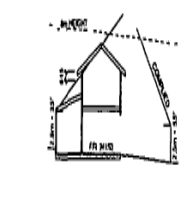
15 A305 LOT 12 - South 1 1:500



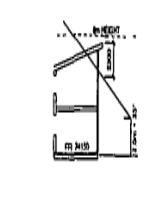
16 A305 LOT 12 - South 2 1:500



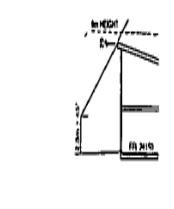
17 A305 LOT 12 - East 1:500



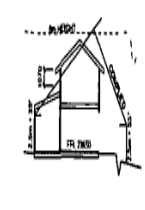
18 A305 LOT 13 - North & South 1 1:500



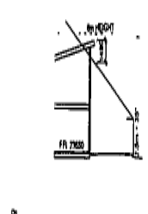
19 A305 LOT 13 - South 2 1:500



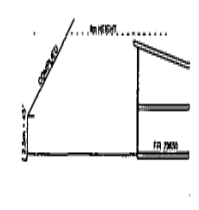
20 A305 LOT 13 - East 1:500



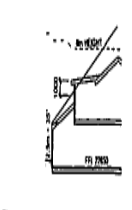
21 A305 LOT 14 - North & South 1 1:500



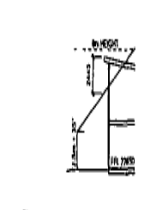
22 A305 LOT 14 - South 2 1:500



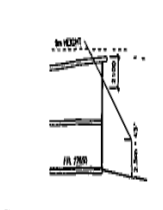
23 A305 LOT 14 - East 1:500



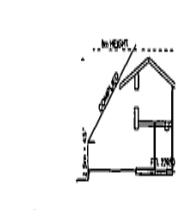
24 A305 LOT 15 - South 1 1:500



25 A305 LOT 15 - South 2 1:500



26 A305 LOT 15 - East 1:500



27 A305 LOT 15 - West 1:500

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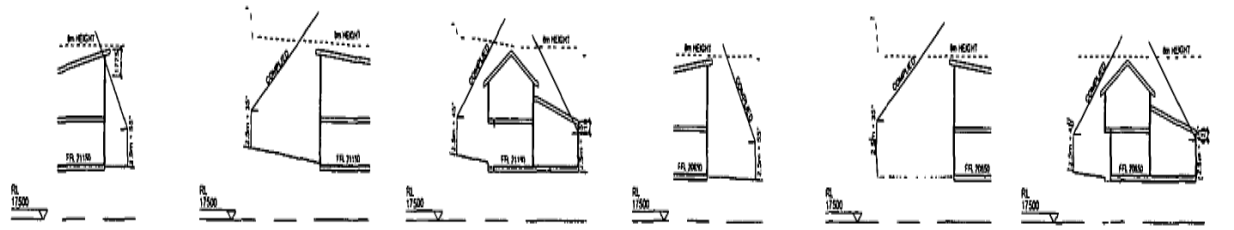
WEST COAST ROAD
HOUSING DEVELOPMENT
BULK & LOCATION STUDY

SECTIONS
STAGE 1B

06/02/06
rev. A305



1 A306 LOT 16 - North 1:500

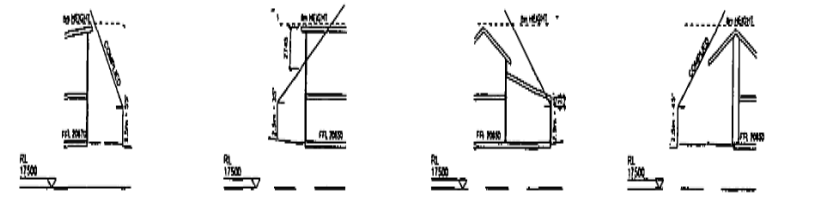
2 A306 LOT 16 - South 1:500

3 A306 LOT 16 - East & West 1:500

4 A306 LOT 17 - North 1:500

5 A306 LOT 17 - South 1:500

6 A306 LOT 17 - East & West 1:500



7 A306 LOT 18 - North 1:500

8 A306 LOT 18 - South 1:500

9 A306 LOT 18 - East 1:500

10 A306 LOT 18 - West 1:500

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subject to conditions endorsed
on : RMA 20060777 [1075
signed: _____ date: 19/10/07
authorised officer

Babbage

scale @ A3 1:500

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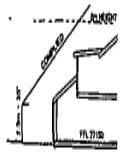
WEST COAST ROAD
HOUSING DEVELOPMENT
BULK & LOCATION STUDY

SECTIONS
STAGE 1B

08/02/06
rev. A306

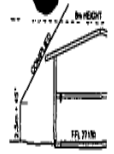
RL 17500

1 / A307 LOT 26 - North 1 : 500



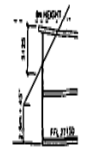
RL 17500

2 / A307 LOT 26 - South 1 : 500



RL 17500

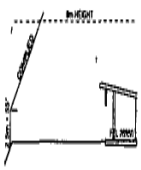
3 / A307 LOT 26 - East 1 : 500



RL 17500

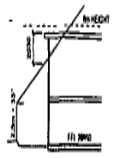
4 / A307 LOT 26 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: [signature] date: 19/10/06
authorised officer



RL 17500

5 / A307 LOT 27 - North 1 : 500

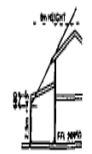


RL 17500

6 / A307 LOT 27 - South 1 : 500

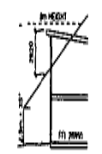
RL 17500

7 / A307 LOT 27 - East 1 : 500



RL 17500

8 / A307 LOT 27 - West 1 : 500

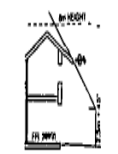


RL 17500

9 / A307 LOT 28 - South 1 : 500

RL 17500

10 / A307 LOT 28 - East 1 : 500



RL 17500

11 / A307 LOT 28 - West 1 : 500

RL 17500

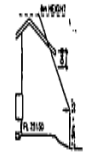
12 / A307 LOT 29 - South 1 : 500

RL 17500

13 / A307 LOT 29 - East 1 : 500

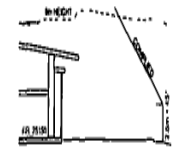
RL 17500

14 / A307 LOT 29 - West 1 : 500



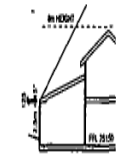
RL 17500

15 / A307 LOT 30 - North 1 : 500



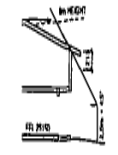
RL 17500

16 / A307 LOT 30 - East 1 1 : 500



RL 17500

17 / A307 LOT 30 - East 2 1 : 500



RL 17500

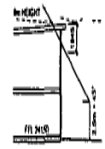
18 / A307 LOT 30 - West 1 : 500

RL 17500

19 / A307 LOT 31 - North 1 : 500

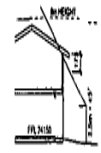
RL 17500

20 / A307 LOT 31 - South 1 : 500



RL 17500

21 / A307 LOT 31 - East 1 : 500



RL 17500

22 / A307 LOT 31 - West 1 : 500

Babbage

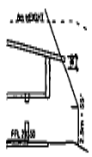
42608

WEST COAST ROAD
HOUSING DEVELOPMENT
BULK & LOCATION STUDY

SECTIONS
STAGE 1C

08 JUN 2006

rev. A307

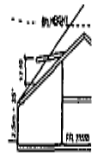


RL 17500

1 A308 LOT 32 - North 1:500

RL 17500

2 A308 LOT 32 - South 1 1:500



RL 17500

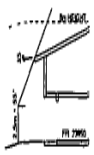
3 A308 LOT 32 - South 2 1:500

4 A308 LOT 32 - West 1:500

APPROVED
subject to conditions endorsed
on : RMA 2061077 | 1075
signed: [signature] date: 19/10/06
authorised officer

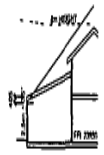
RL 17500

5 A308 LOT 33 - North 1 1:500



RL 17500

6 A308 LOT 33 - North 2 1:500

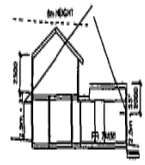


RL 17500

7 A308 LOT 33 - South 1:500

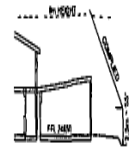
RL 17500

8 A308 LOT 33 - West 1:500



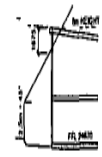
RL 17500

9 A308 LOT 34 - North 1 & South 1:500



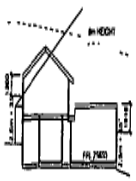
RL 17500

10 A308 LOT 34 - North 2 1:500



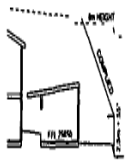
RL 17500

11 A308 LOT 34 - West 1:500



RL 17500

12 A308 LOT 35 - North 1 & South 1 1:500



RL 17500

13 A308 LOT 35 - North 2 1:500

RL 17500

14 A308 LOT 35 - South 2 1:500

Babbage

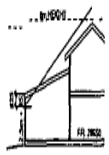
42608

WEST COAST ROAD
HOUSING DEVELOPMENT
BULK & LOCATION STUDY

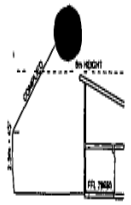
SECTIONS
STAGE 1C

08/06/06
rev. A308

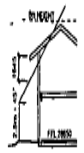
1 A309 LOT 19 - North 1 : 500



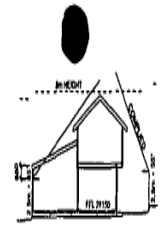
2 A309 LOT 19 - South 1 : 500



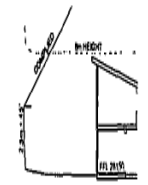
3 A309 LOT 19 - East 1 : 500



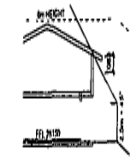
4 A309 LOT 19 -West 1 : 500



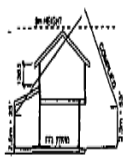
5 A309 LOT 20 - North & South 1 : 500



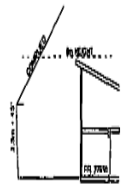
6 A309 LOT 20 - East 1 : 500



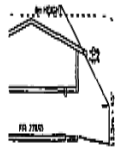
7 A309 LOT 20 - West 1 : 500



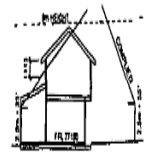
8 A309 LOT 21 - North & South 1 : 500



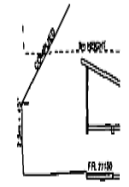
9 A309 LOT 21 - East 1 : 500



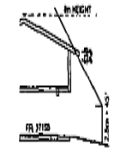
10 A308 LOT 21 - West 1 : 500



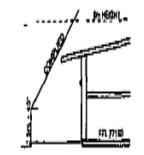
11 A309 LOT 22 - North & South 1 : 500



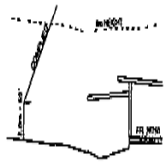
12 A309 LOT 22 - East 1 : 500



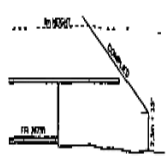
13 A309 LOT 22 - West 1 1 : 500



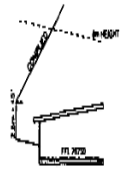
14 A309 LOT 22 - West 2 1 : 500



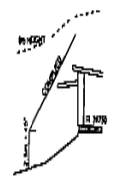
15 A309 LOT 23 - North 1 : 500



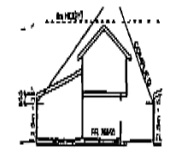
16 A309 LOT 23 - South 1 : 500



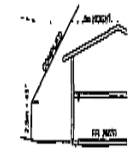
17 A309 LOT 23 - East 1 : 500



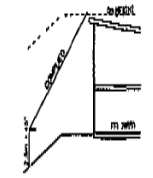
18 A309 LOT 23 - West 1 : 500



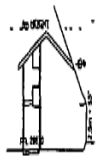
19 A309 LOT 24 - North & South 1 : 500



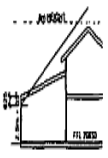
20 A309 LOT 24 - East 1 : 500



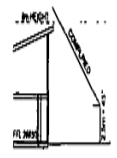
21 A309 LOT 24 - West 1 : 500



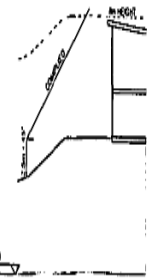
22 A309 LOT 25 - North 1 : 500



23 A309 LOT 25 - South 1 : 500



24 A309 LOT 25 - East 1 : 500



25 A309 LOT 25 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: _____ date: 14/6/06
authorised officer

Babbage

42608

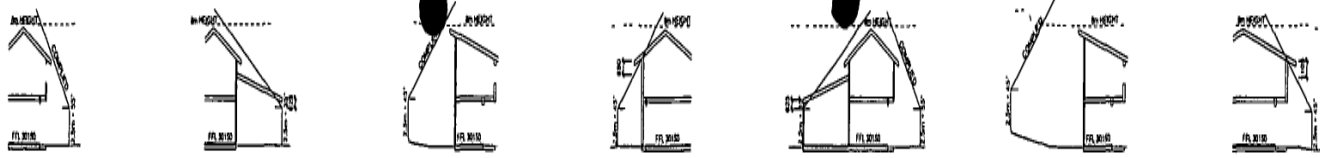
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTIONS STAGE 1D

06 JUN 2006

rev. A309



1 A310 LOT 36 - North 1:500

2 A310 LOT 36 - South 1:500

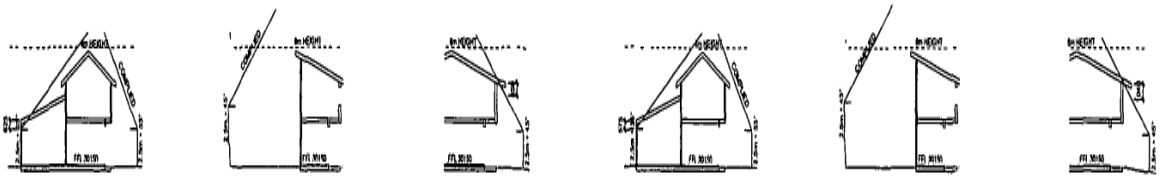
3 A310 LOT 36 - East 1:500

4 A310 LOT 36 - West 1:500

5 A310 LOT 37 - North & South 1:500

6 A310 LOT 37 - East 1:500

7 A310 LOT 37 - West 1:500



8 A310 LOT 38 - North & South 1:500

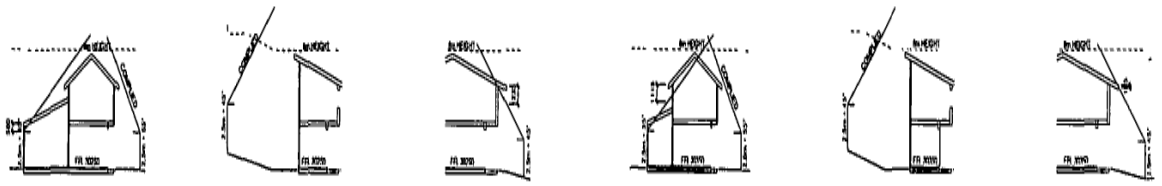
9 A310 LOT 38 - East 1:500

10 A310 LOT 38 - West 1:500

11 A310 LOT 39 - North & South 1:500

12 A310 LOT 39 - East 1:500

13 A310 LOT 39 - West 1:500



14 A310 LOT 40 - North & South 1:500

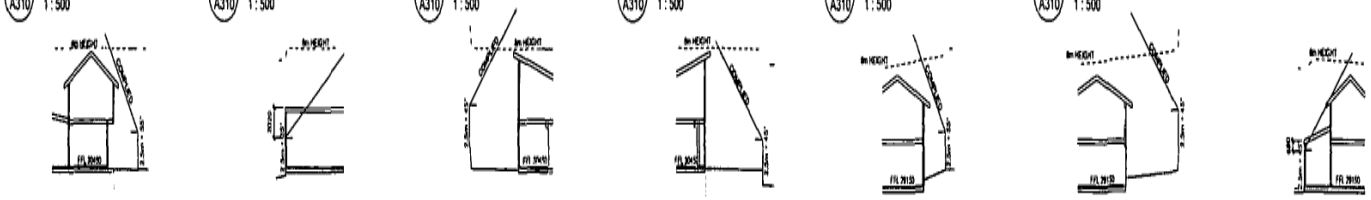
15 A310 LOT 40 - East 1:500

16 A310 LOT 40 - West 1:500

17 A310 LOT 41 - North & South 1:500

18 A310 LOT 41 - East 1:500

19 A310 LOT 41 - West 1:500



23 A310 LOT 42 - North 1:500

24 A310 LOT 42 - South 1:500

25 A310 LOT 42 - East 1:500

26 A310 LOT 42 - West 1:500

20 A310 LOT 43 - North 1:500

21 A310 LOT 43 - East 1:500

22 A310 LOT 43 - West 1:500

APPROVED
subject to conditions endorsed
on : RMA 20061077116 15
signed: [illegible] date: 7/11/06
authorised officer

Babbage

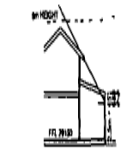
42608

WEST COAST ROAD
HOUSING DEVELOPMENT
BULK & LOCATION STUDY

SECTIONS
STAGE 2A

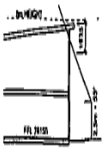
06 JUN 2006
rev. A310

1 A311 LOT 44 - South 1 : 500



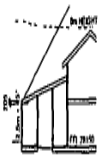
2 A311 LOT 44 - East 1 : 500

3 A311 LOT 44 - West 1 : 500

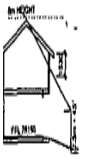


4 A311 LOT 45 - North 1 : 500

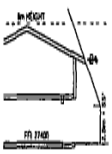
5 A311 LOT 45 - South 1 : 500



6 A311 LOT 45 - East 1 : 500

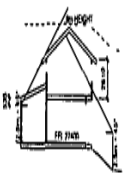


7 A311 LOT 45 - West 1 : 500

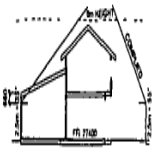


8 A311 LOT 46 - North 1 : 500

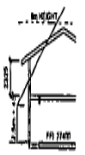
9 A311 LOT 46 - South 1 : 500



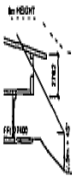
10 A311 LOT 46 - East & West 1 : 500



11 A311 LOT 47 - North & South 1 : 500

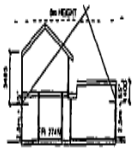


12 A311 LOT 47 - East 1 : 500

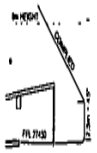


13 A311 LOT 47 - West 1 : 500

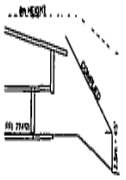
APPROVED
subject to conditions endorse
on : RMA 20061077 | 1675
signed: [signature] date: 11/
authorised officer



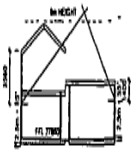
14 A311 LOT 48 - North & South 1 : 500



15 A311 LOT 48 - East 1 : 500

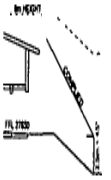


16 A311 LOT 48 - West 1 : 500

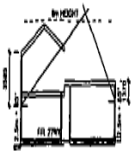


17 A311 LOT 49 - North & South 1 : 500

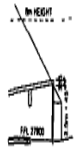
18 A311 LOT 49 - East 1 : 500



19 A311 LOT 49 - West 1 : 500

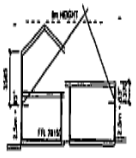


20 A311 LOT 50 - North & South 1 : 500



21 A311 LOT 50 - East 1 : 500

22 A311 LOT 50 - West 1 : 500



23 A311 LOT 51 - North & South 1 : 500

24 A311 LOT 51 - East 1 : 500

25 A311 LOT 51 - West 1 : 500

Babbage
42608

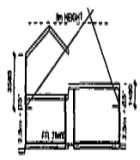
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTIONS STAGE 2A & 2B

08/08/06

rev. A311

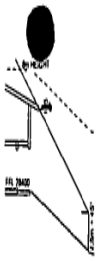


RL 17500

1 A312 LOT 52 - North & South 1:500

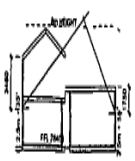
RL 17500

2 A312 LOT 52 - East 1:500



RL 17500

3 A312 LOT 52 - West 1:500

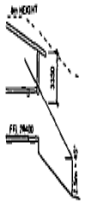


RL 17500

4 A312 LOT 53 - North & South 1:500

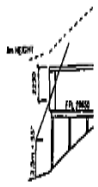
RL 17500

5 A312 LOT 53 - East 1:500



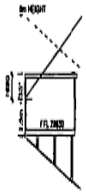
RL 17500

6 A312 LOT 53 - West 1:500



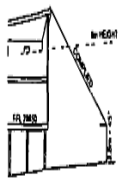
RL 17500

7 A312 LOT 54 - North 1:500



RL 17500

8 A312 LOT 54 - South 1:500

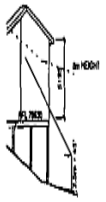


RL 17500

9 A312 LOT 54 - East 1 1:500

RL 17500

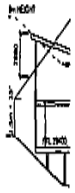
10 A312 LOT 54 - East 2 1:500



RL 17500

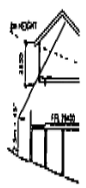
11 A312 LOT 54 - West 1:500

APPROVED
subject to conditions endorsed
on : RMA 20061071 | 1075
signed: [illegible] date: 19/6/06
authorised officer



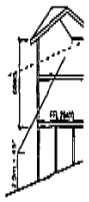
RL 17500

13 A312 LOT 55 - South 1:500



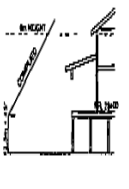
RL 17500

14 A312 LOT 55 - East 1:500



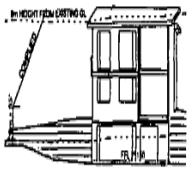
RL 17500

12 A312 LOT 55 - West 1 1:500



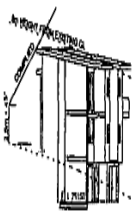
RL 17500

15 A312 LOT 55 - West 2 1:500



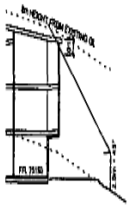
RL 17500

16 A312 LOT 56 - North 1:500



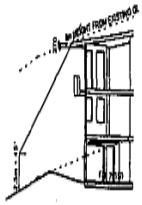
RL 17500

17 A312 LOT 56 - East 1:500



RL 17500

18 A312 LOT 56 - West 1 1:500



RL 17500

19 A312 LOT 56 - West 2 1:500

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www.A1 1:500 42608

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTIONS STAGE 2B

06/08/06

rev. A312

RL 17500

1 A313 LOT 57 - North 1 : 500

RL 17500

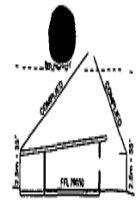
2 A313 LOT 57 - East 1 : 500

RL 17500

3 A313 LOT 57 - West 1 1 : 500

RL 17500

4 A313 LOT 57 - West 2 1 : 500

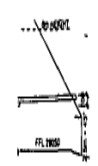


RL 17500

5 A313 LOT 58 - North & South 1 : 500

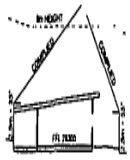
RL 17500

6 A313 LOT 58 - East 1 : 500



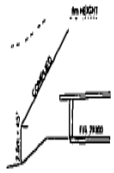
RL 17500

7 A313 LOT 58 - West 1 : 500



RL 17500

8 A313 LOT 59 - North & South 1 : 500



RL 17500

9 A313 LOT 59 - East 1 : 500

RL 17500

10 A313 LOT 59 - West 1 : 500

RL 17500

11 A313 LOT 60 - South 1 : 500

RL 17500

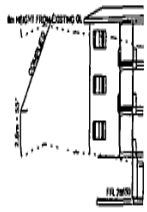
12 A313 LOT 60 - East 1 1 : 500

RL 17500

13 A313 LOT 60 - East 2 1 : 500

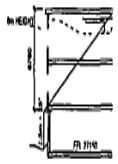
RL 17500

14 A313 LOT 60 - West 1 : 500



RL 17500

15 A313 LOT 61 - North 1 : 500



RL 17500

16 A313 LOT 61 - South 1 : 500

RL 17500

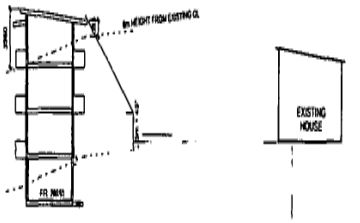
17 A313 LOT 61 - East 1 1 : 500

RL 17500

18 A313 LOT 61 - East 2 1 : 500

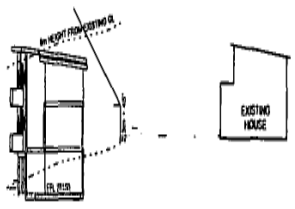
RL 17500

19 A313 LOT 61 - East 3 1 : 500



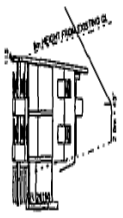
RL 17500

20 A313 LOT 61 - West 1 1 : 500



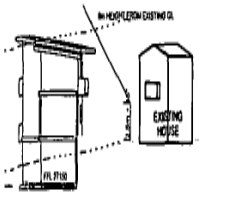
RL 17500

22 A313 LOT 61 - West 3 1 : 500



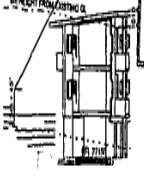
RL 17500

21 A313 LOT 61 - West 2 1 : 500



RL 17500

23 A313 LOT 61 - West 4 1 : 500



RL 17500

24 A313 LOT 61 - West 5 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061017 file 75
signed: _____ date: 17/1
authorised officer

Babbage

scale @ a3 1:500

42608

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTION STAGE 3

06/15/06

rev. A313

PLANS AND SPECIFICATIONS
APPROVED
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ON: RMA 20061077 | 1078
SIGNED [signature] DATE: 17·10·06
AUTHORISED OFFICER

Received
16 OCT 2006

NZ Housing Foundation
Babbage Consultants

423-429 West Coast Road, Henderson - Housing Development **Rev C**

Additional information on proposed planting

13-Oct-06

Plant species, stock and spacings for planting types B, C, D, E and F shown on Landscape Concept drawings LSP 01 and LSP 02

All native planting stock is to be eco-sourced from plants propagated from the Waitakere region
Plant quantities in the schedules below are indicative only, and are calcuated per 1000 square metres. The full extent of the planting areas is shown on drawings LSP 01 and 02 Rev C

Types B and C: Re-vegetation shrub and tree mixes:

Planting on higher stream bank areas
Area sq m 1000

	BOTANICAL NAME	pot size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
BC1	*Dacrycarpus dacrydioides*	PB8	150-180	10%	5 to 10	0.9	123	secondary tree species, short stake
BC2	*Cordyline australis*	PB5	30-45	10%	5 to 10	0.9	123	
BC3	*Cortaderia fulvida*	PB5	30-45	10%	10 to 20	1.2	69	Do not plant within 2.5m of paths
BC4	*Phormium tenax*	PB3	30-45	10%	20 to 30	1.0	100	
BC5	*Leptospermum scoparium*	PB3	30-45	10%	20 to 30	0.9	123	
BC6	*Hoheria populnea*	PB3	30-45	10%	20 to 30	1.0	100	
BC7	*Carpodetus serratus*	PB5	30-45	10%	5 to 10	0.9	123	plant in partial shade of existing trees
BC8	*Hedycaria arborea*	PB5	30-45	10%	5 to 10	0.9	123	plant in partial shade of existing trees
BC9	*Coprosma lucida*	PB3	30-45	20%	10 to 20	1.0	200	
TOTAL plants per 1000 sq m				**100%**			**963**	

Types B and C: Re-vegetation shrub and tree mixes continued:

Riparian areas outside common flood areas

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
BC10	*Vitex lucens*	PB8	100-150	8%	20 to 30	1.0	80	secondary tree species, short stake
BC11	*Podocarpus totara*	PB8	150-180	6%	20 to 30	1.0	60	secondary tree species, short stake
BC12	*Phyllocladus trichomanoides*	PB8	150-180	5%	20 to 30	1.0	50	secondary tree species, short stake
BC13	*Coprosma robusta*	PB3	30-45	10%	10 to 20	1.2	69	
BC14	*Aristotelia serrata*	PB3	30-45	5%	5 to 10	1.2	35	
BC15	*Sophora microphylla*	PB3	30-45	5%	3 to 5	0.9	62	
BC16	*Cyathea medullaris*	PB3	30-45	3%	3 to 5	1.0	30	plant in partial shade of existing trees
BC17	*Cyathea dealbata*	PB3	30-45	4%	3 to 5	1.0	40	plant in partial shade of existing trees
BC18	*Leptospermum scoparium*	PB3	30-45	8%	10 to 30	0.9	99	
BC19	*Myrsine australis*	PB3	30-45	15%	10 to 20	0.9	185	
BC20	*Melicytus ramiflorus*	PB3	30-45	10%	10 to 20	1.2	69	
BC21	*Pseudopanax arboreus*	PB3	30-45	5%	5 to 10	1.2	35	
BC22	*Corokia buddleioides*	PB3	30-45	5%	5 to 10	0.9	62	
BC23	*Olearia furfuracea*	PB3	30-45	5%	5 to 10	1.0	50	
BC24	*Cortaderia fulvida*	PB5	30-45	6%	10 to 20	1.2	42	Do not plant within 2.5m of paths
TOTAL plants per 1000 sq m				**100%**			**736**	

PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077 | 1078
SIGNED [signature] DATE: 17.10.06
AUTHORISED OFFICER

Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks:

Planting on upper bank: Generally moist ground with high water table and occasional flooding

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D1	*Dianella nigra*	PB3	30 - 45	8%	10 to 20	0.8	125	plant in partial shade of existing trees
D2	*Dacrycarpus dacrydioides*	PB8	150-180	5%	5 to 10	0.6	139	secondary tree species, short stake
D3	*Cyathea dealbata*	PB3	20 - 40	5%	10 to 20	0.7	102	plant in partial shade of existing trees
D4	*Cyatea medullaris*	PB3	20 - 40	5%	10 to 20	0.7	102	
D5	*Carex flagellifera*	PB3	20 - 40	15%	10 to 20	0.7	306	
D6	*Carex lessoniana*	PB3	20 - 40	15%	10 to 20	0.7	306	
D7	*Baumea tenax*	PB3	20 - 40	15%	10 to 20	0.7	306	
D8	*Phormium tenax*	PB3	20 - 40	15%	10 to 20	0.7	306	
D9	*Cordyline australis*	PB5	30-45	9%	5 to 10	0.9	111	
D10	*Coprosma robusta*	PB3	30-45	8%	10 to 20	1.0	80	
TOTAL plants per 1000 sq m				**100%**			**1692**	

PLANS AND SPECIFICATIONS
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Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks continued:

Marginal emergents: marsh areas and below winter water levels

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D9	*Baumea articulata*	PB3	30 - 45	15%	10 to 20	0.8	234	
D10	*Cyperus ustulatus*	PB3	20 - 40	15%	10 to 20	0.7	306	
D11	*Baumea teretifolia*	PB3	20 - 40	15%	10 to 20	0.7	306	
D12	*Carex lessoniana*	PB3	20 - 40	10%	10 to 20	0.7	204	
D13	*Carex virgata*	PB3	20 - 40	15%	10 to 20	0.7	306	
D14	*Juncus pallidus*	PB3	20 - 40	10%	10 to 20	0.7	204	
D15	*Carex secta*	PB3	20 - 40	10%	10 to 20	0.7	204	
D+A105	*Typha orientalis*	PB3	20 - 40	10%	10 to 20	0.7	204	
TOTAL plants per 1000 sq m				**100%**			**1969**	

PLANS AND SPECIFICATIONS
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Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks continued:

Lower stream bank: ground above common water levels but subject to flooding

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D17	*Blechnum novae zelandiae*	PB3	30 - 45	20%	10 to 20	0.8	313	
D18	*Dacrycarpus dacrydioides*	PB3	30 - 45	10%	5 to 10	0.6	278	
D19	*Cyperus ustulatus*	PB3	20 - 40	5%	10 to 20	0.7	102	
D20	*Phormium tenax*	PB3	30 - 45	20%	10 to 20	1.0	200	
D21	*Cortaderia fulvida*	PB3	30 - 45	10%	5 to 10	0.8	156	
D22	*Carex virgata*	PB3	30 - 45	20%	10 to 20	0.8	313	
D23	*Dicksonia squarrosa*	PB3	30 - 45	5%	3 to 5	0.9	62	
D24	*Carex secta*	PB3	30 - 45	10%	10 to 20	0.9	123	
TOTAL plants per 1000 sq m				**100%**			**1546**	

PLANS AND SPECIFICATIONS
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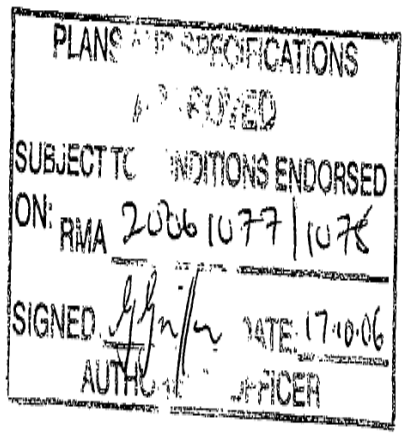
Type E: Low to medium height amenity shrub planting for reserve to include following:

Planting in reserves at road sides, and adjacent to house lot boundaries							
	BOTANICAL NAME	**Size**	**Plant Height (cm)**	**% of total plants used**	**Plant in Groups of:**	**Spacing (m)**	**COMMENTS**
E1	*Coprosma* 'Hawera'	PB5	30-45	15%	10to 20	0.9	
E2	*Coprosma* 'Taiko'	PB5	30-45	15%	5 to 10	0.9	
E3	*Hebe* 'First Light'	PB5	30-45	15%	3 to 5	0.7	
E4	*Hebe* 'Wiri Charm'	PB5	30-45	10%	3 to 5	0.7	
E5	*Phormium* 'Green Dwarf'	PB5	30-45	18%	3 to 5	0.9	
E6	*Hebe topiaria*	PB5	30-45	5%	3 to 5	0.6	
E7	Coleonema *'Winter Charm'*	PB5	30-45	5%	3 to 5	0.7	
E8	*Yucca filimentosa* 'Ivory'	PB5	30-45	2.5%	3 to 5	0.5	
E9	*Grevillea* 'Mt. Tambouritha'	PB5	30-45	10%	3 to 5	0.8	
E10	*Viburnum* 'Emerald Lustre'	PB*	30-45	2.5%	3 to 5	2.0	specimens and small groups with ground cover below
E11	*Luculia grandifolia*	PB8	30-45	2.5%	3 to 5	2.0	specimens and small groups with ground cover below
TOTAL plants per 1000 sq m				**100%**			



Type F: Mix of low growing sedges for ground cover in attenuation ponds:

Planting in areas to take flooding during periods of heavy and prolonged rainfall

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
F1	*Carex lessoniana*	1Litre	20 - 40	20%	10 to 20	0.8	313	
F2	*Carex lambertiana*	1Litre	20 - 40	10%	10 to 20	0.7	204	
F3	*Carex dipsacea*	1Litre	20 - 40	20%	10 to 20	1.0	200	
F4	*Carex flagellifera*	1Litre	20 - 40	15%	10 to 20	0.8	234	
F5	*Carex litorosa*	1Litre	20 - 40	20%	10 to 20	0.8	313	
F6	*Carex secta*	1Litre	20 - 40	15%	10 to 20	0.9	185	
TOTAL plants per 1000 sq m				**100%**			**1449**	

PLANS AND SPECIFICATIONS
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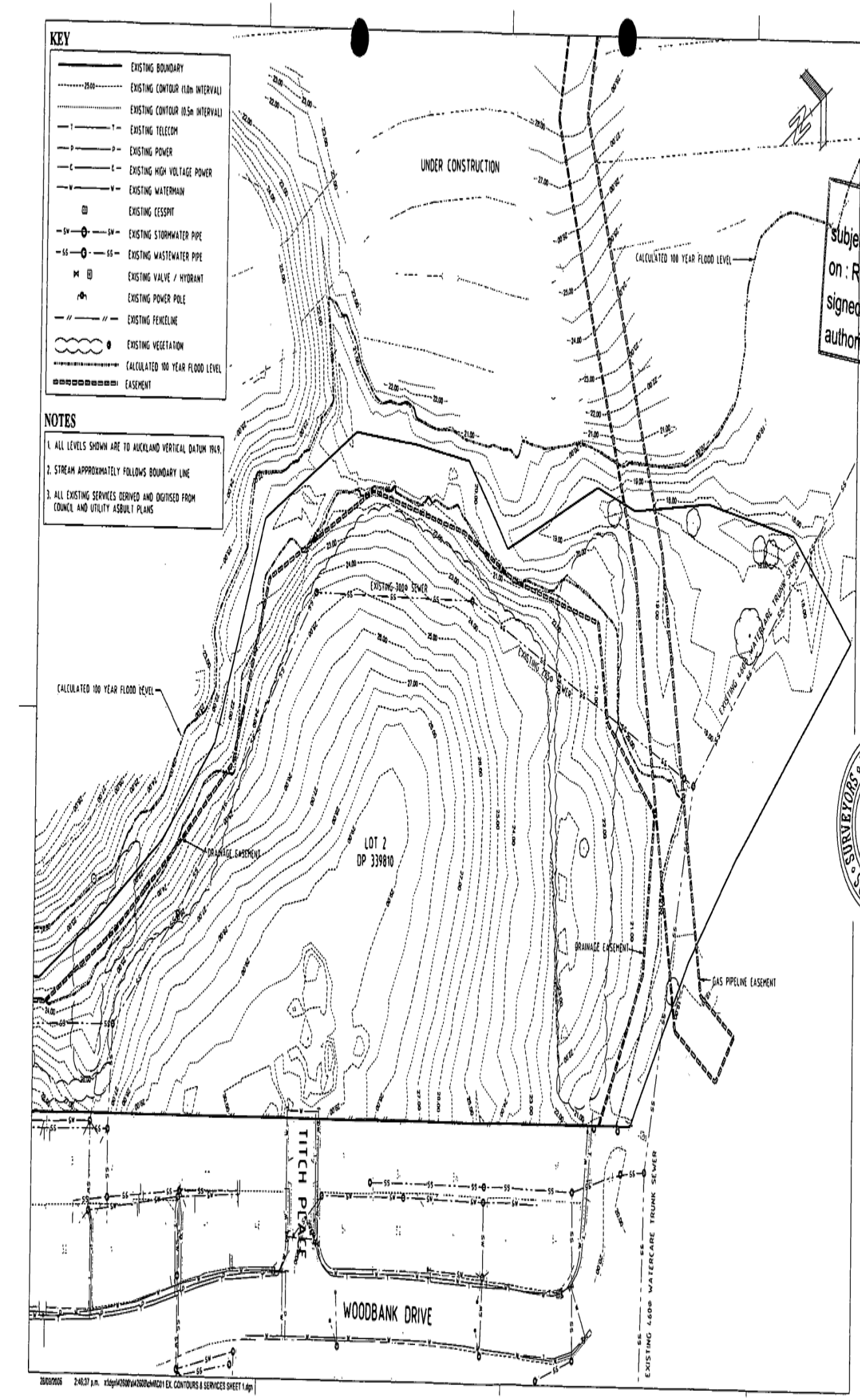

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A	1.09.06	CONTOURS AMENDED	FK	DMR

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AUCKLAND 1 - NEW ZEALAND
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admin@babbage.co.nz

CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
TOPOGRAPHICAL PLAN (SHEET 1)

29 SEP 2006

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
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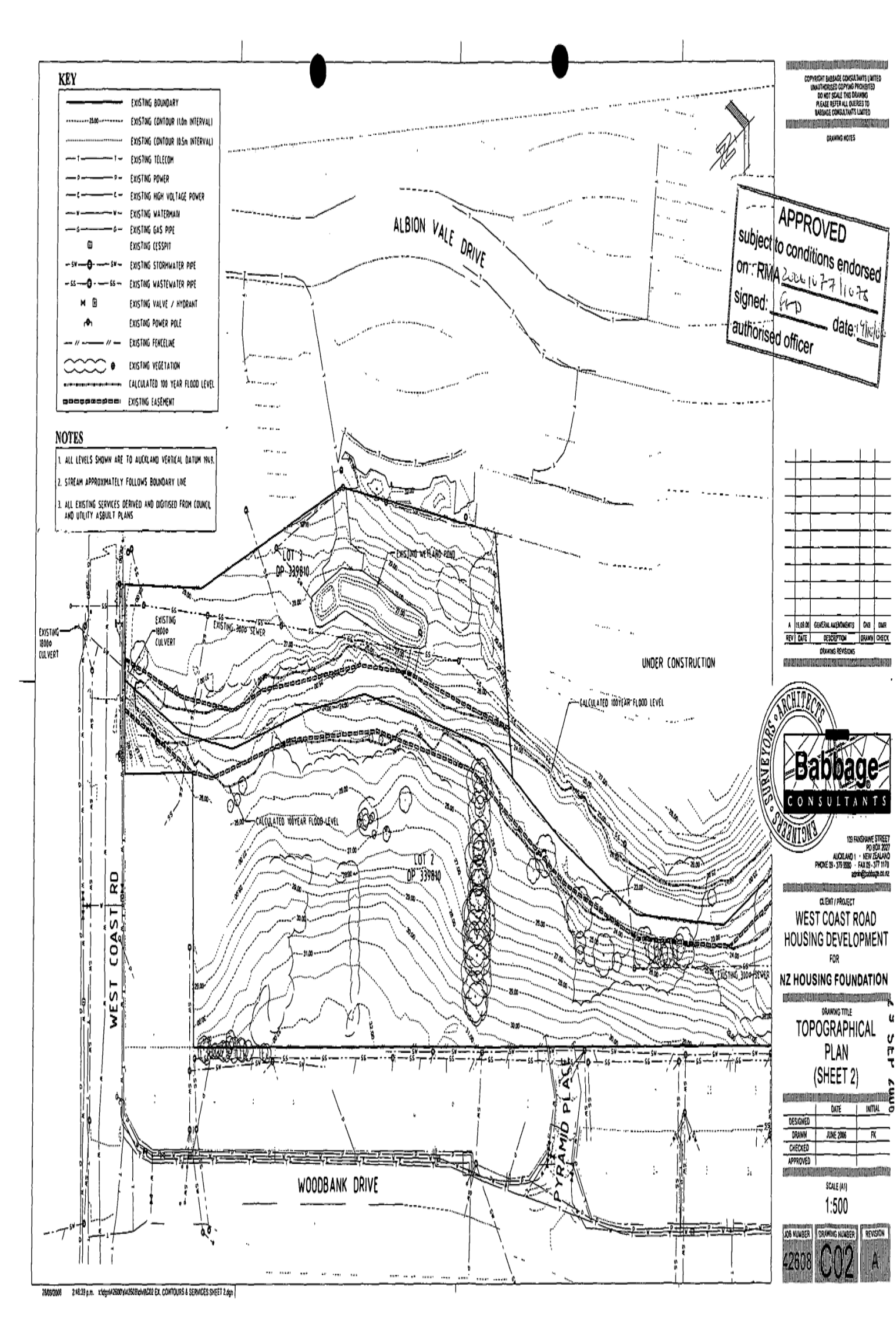
28/09/2006 2:40:37 p.m. x:\dgn\4260\4260BdgnMC01 EX. CONTOURS & SERVICES SHEET 1.dgn


KEY
EXISTING BOUNDARY
EXISTING CONTOUR (1.0m INTERVAL)
EXISTING CONTOUR (0.5m INTERVAL)
EXISTING TELECOM
EXISTING POWER
EXISTING HIGH VOLTAGE POWER
EXISTING WATERMAIN
EXISTING GAS PIPE
EXISTING CESSPIT
EXISTING STORMWATER PIPE
EXISTING WASTEWATER PIPE
EXISTING VALVE / HYDRANT
EXISTING POWER POLE
EXISTING FENCELINE
EXISTING VEGETATION
CALCULATED 100 YEAR FLOOD LEVEL
EXISTING EASEMENT
NOTES
1. ALL LEVELS SHOWN ARE TO AUCKLAND VERTICAL DATUM 1949.
2. STREAM APPROXIMATELY FOLLOWS BOUNDARY LINE
3. ALL EXISTING SERVICES DERIVED AND DIGITISED FROM COUNCIL AND UTILITY ASBUILT PLANS
ALBION VALE DRIVE
LOT 3 DP 339810
EXISTING WETLAND POND
EXISTING 1800ø CULVERT
EXISTING 300ø SEWER
EXISTING 1800ø CULVERT
UNDER CONSTRUCTION
CALCULATED 100YEAR FLOOD LEVEL
CALCULATED 100YEAR FLOOD LEVEL
LOT 2 DP 339810
EXISTING 300ø SEWER
WEST COAST RD
PYRAMID PLACE
WOODBANK DRIVE
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signed: GP
date: 19/6/06
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A 15.08.06 GENERAL AMENDMENTS CNS DMR
REV DATE DESCRIPTION DRAWN CHECK
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133 FANSHAWE STREET
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admin@babbage.co.nz
CLIENT / PROJECT
WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION
DRAWING TITLE
TOPOGRAPHICAL PLAN (SHEET 2)
DATE INITIAL
DESIGNED
DRAWN JUNE 2006 FK
CHECKED
APPROVED
SCALE (A1)
1:500
JOB NUMBER 42608
DRAWING NUMBER C02
REVISION A
28/09/2006 2:46:39 p.m. x:\dgn\42600's\42608\civil\C02 EX. CONTOURS & SERVICES SHEET 2.dgn

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on : RMA 20061077/1078
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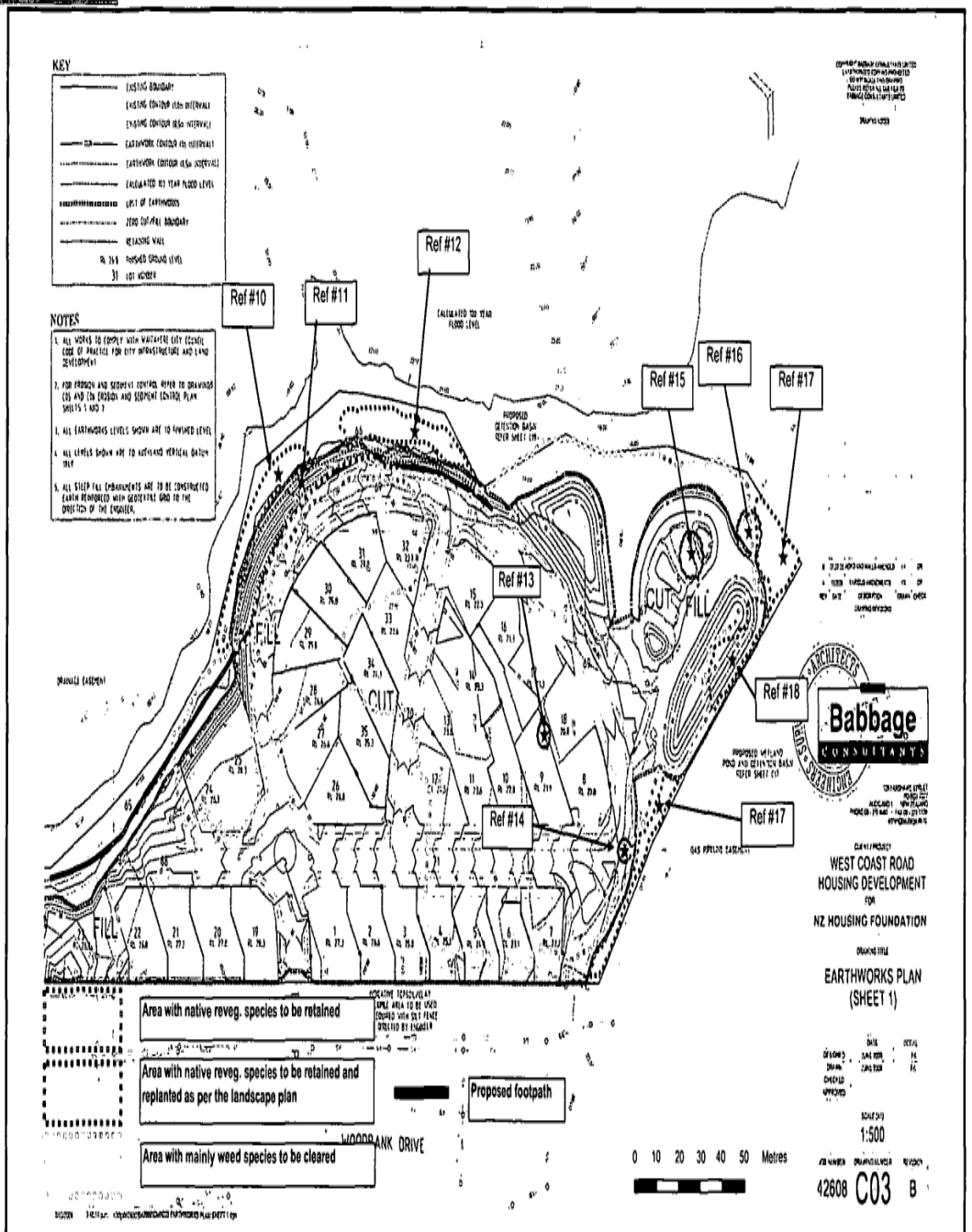
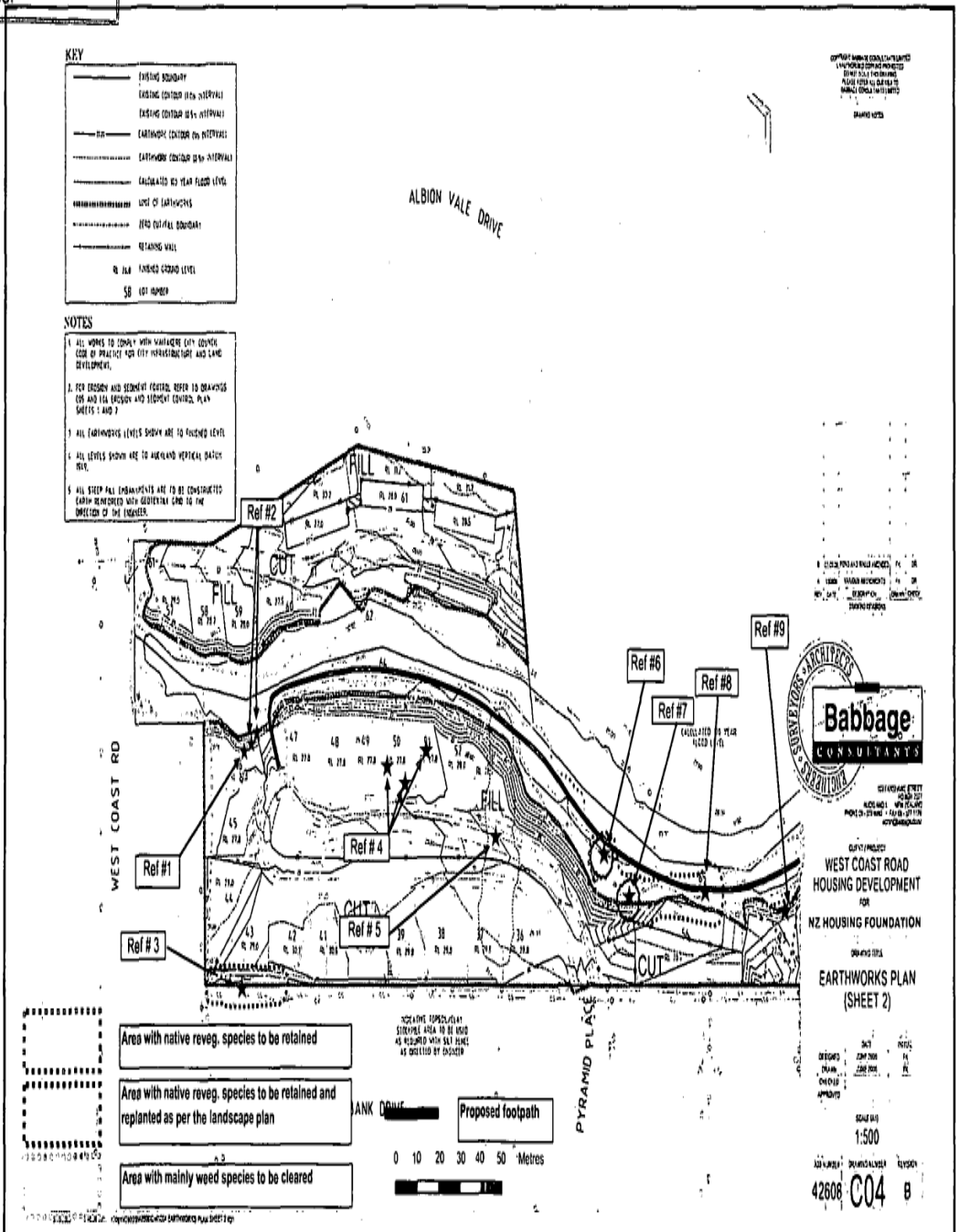
authorised officer



Housing Foundation NZ, West Coast Road Development. (Part of 423-429 West Coast Road), vegetation and major features, Sheet 1	
Date: 9 October 2006	Approved by:
Drawn by: Willy Coenradi	Scale: See Key

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1078
signed: _____ date: 19/10/06
authorised officer



Housing Foundation NZ, West Coast Road Development. (Part of 423-429 West Coast Road), vegetation and major features plan, Sheet 2

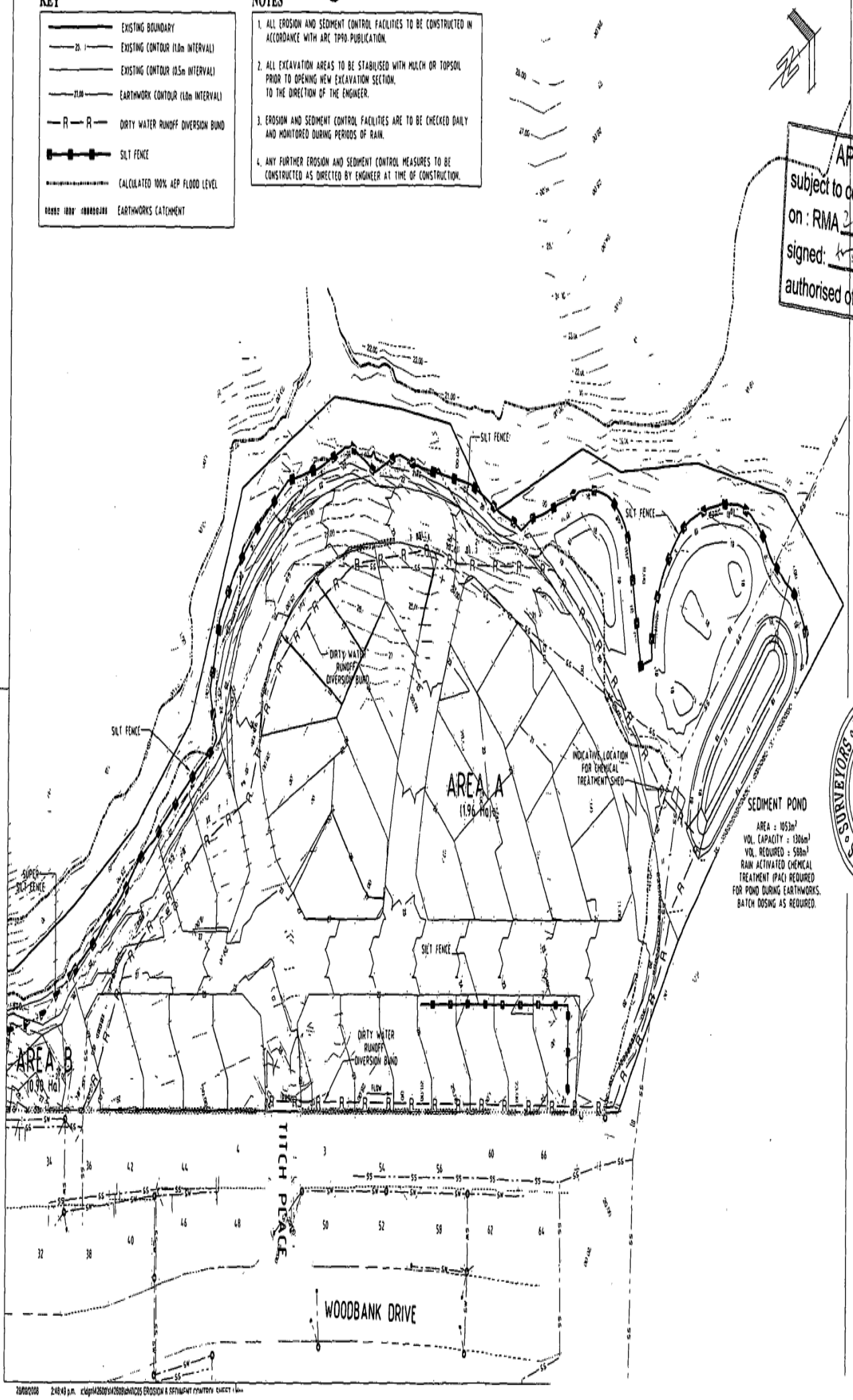
Date: 9 October 2006	Approved by:
Drawn by: Willy Coenradi	Scale: See Key

KEY

- EXISTING BOUNDARY
- EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- EARTHWORK CONTOUR (1.0m INTERVAL)
- DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION, TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EROSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.



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B	07.09.06	POND & LEVELS AMENDED	FK	DR
A	150806	VARIOUS AMENDMENTS	FK	DR

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125 FANSHAWE STREET
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	GW
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C05	B

13 SEP 2006

KEY

- EXISTING BOUNDARY
- 72.00 EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- 77.00 EARTHWORK CONTOUR (1.0m INTERVAL)
- R R DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT .01
- SUPER SILT FENCE
- C C CLEAN WATER RUNOFF DIVERSION BUND
- DECANT EARTH BUND

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION. TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EROSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.

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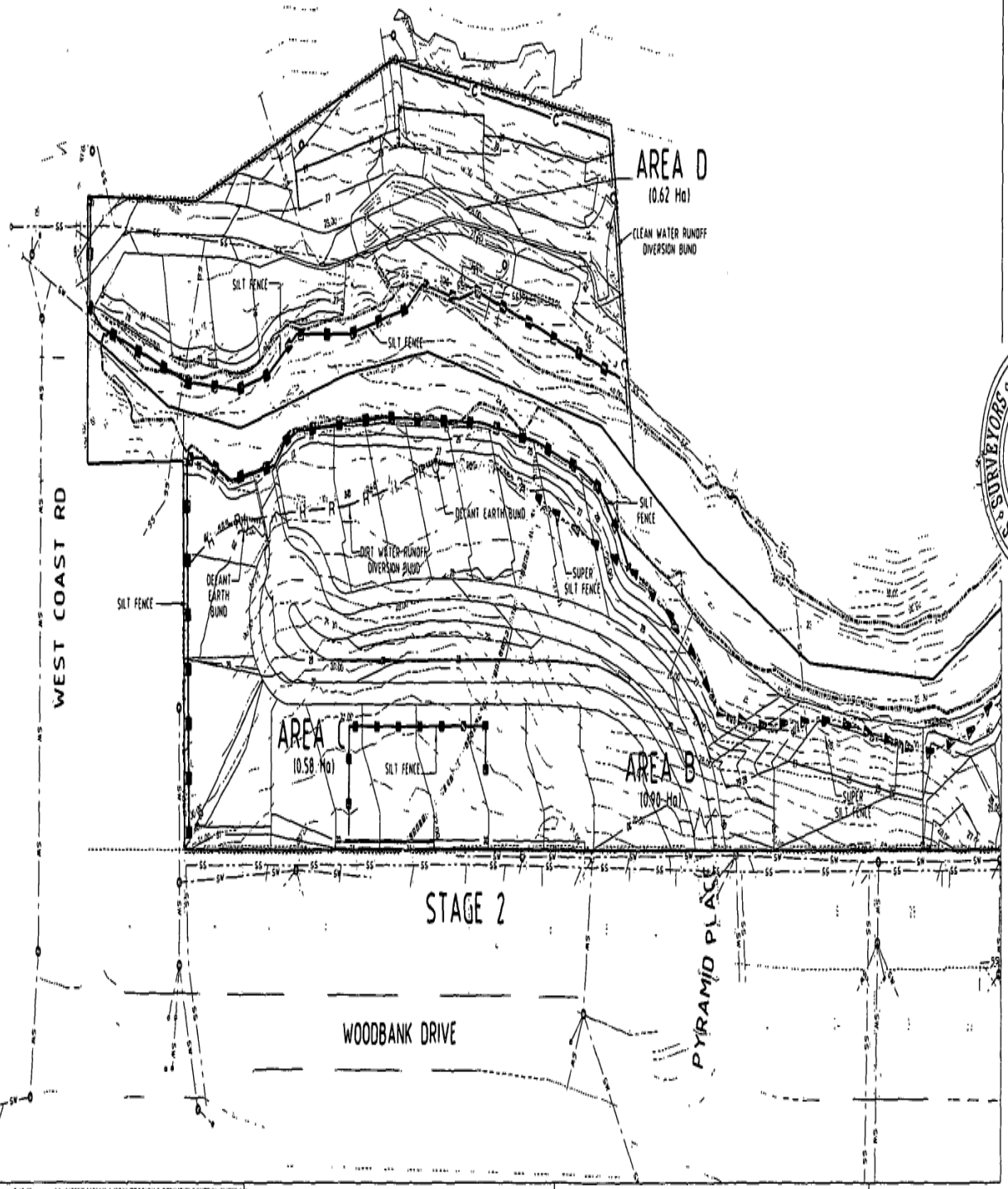

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B	07.09.06	LEVELS AMENDED	FK	DR
A	150806	VARIOUS AMENDMENTS	FK	DR

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	GW
CHECKED	JUNE 2006	GW
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C06	B

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DRAWING NOTES

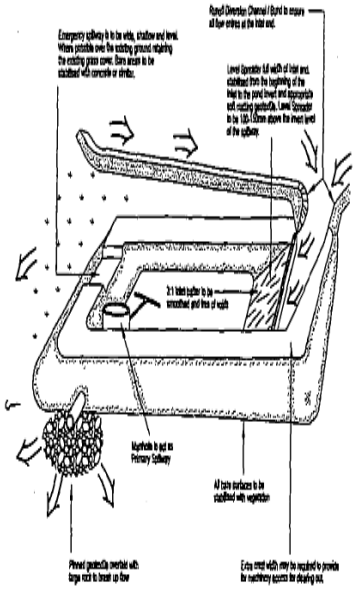
1. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE OPERATIONAL PRIOR TO ANY OTHER WORKS COMMENCING ON SITE. THE CONTRACTOR SHALL ARRANGE AND ATTEND A PRELIMINARY SEDIMENT CONTROL MEETING WITH THE ENGINEER AND COUNCIL.

2. A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE ON SITE DURING WORK HOURS AND ALL PERSONNEL INVOLVED IN THE EARTHWORKS ACTIVITIES ON SITE INCLUSIVE OF SUB-CONTRACTORS) SHALL BE FAMILIAR WITH THE CONSENT AND PLAN REQUIREMENTS AS THE RELATE TO EROSION AND SEDIMENT CONTROL.

3. ALL "CLEAN WATER" RUNOFF FROM THE STABILISED SURFACES, INCLUDING CATCHMENT AREAS ABOVE THE SITE, SHALL BE DIVERTED AWAY FROM THE EARTHWORKS AREAS VIA A STABILISED SYSTEM, SO AS TO PREVENT EROSION

4. ALL EROSION AND SEDIMENT CONTROL SHALL COMPLY WITH "EROSION AND SEDIMENT GUIDELINES FOR LAND DISTURBING ACTIVITIES: ARC TECHNICAL PUBLICATION No.90, UPDATED MARCH 1999 AND ANY AMENDMENTS TO THIS DOCUMENT. DIVERSION OF "CLEAN WATER" FROM THE UPSTREAM CATCHMENTS AROUND THE EARTHWORKS AREA SHALL BE BY MEANS OF DIVERSION DRAINS AND / OR OTHER APPROVED METHODS.

5. FURTHER SEDIMENT CONTROL WORKS MAY BE REQUIRED BY THE ENGINEER AS THE PROJECT ADVANCES. THESE WILL BE INSTALLED AS AND WHERE REQUIRED BY THE ENGINEER. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT THE SITE HAS EFFECTIVE SILT DETENTION FACILITIES OPERATING AT ALL TIMES.



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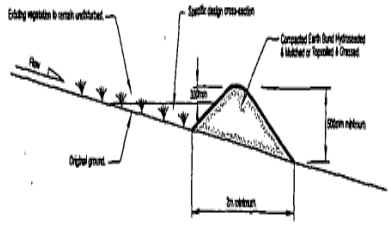
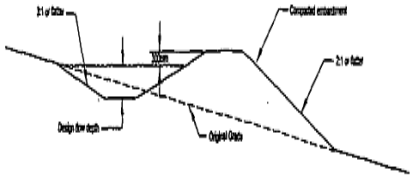
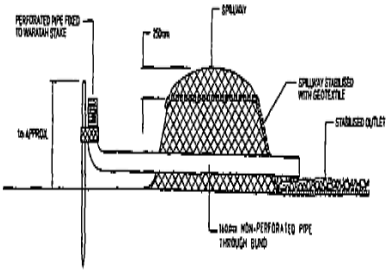


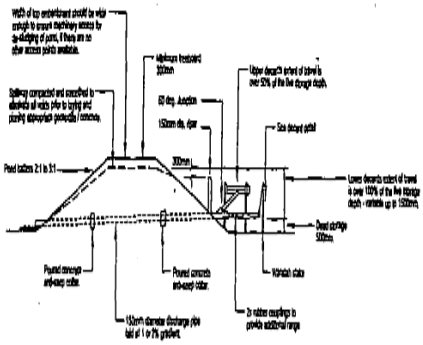
CLEANWATER RUNOFF DIVERSION BUND CROSS-SECTION



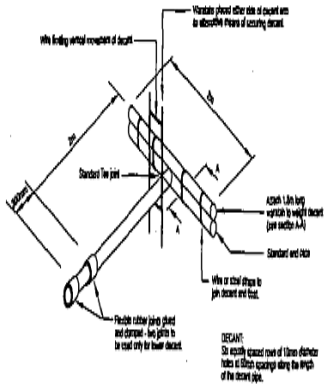
DIRTY WATER DIVERSION BUND CROSS-SECTION



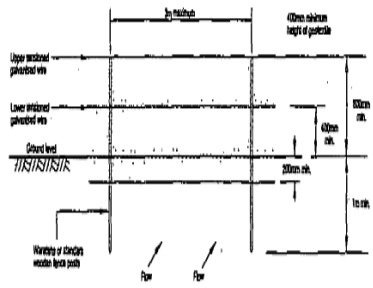
CROSS SECTION OF DECANT EARTH BUND



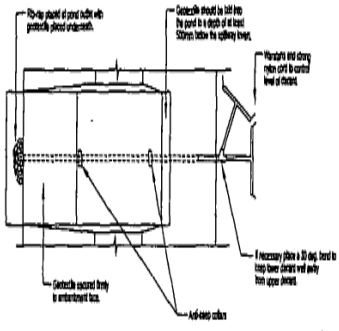
CROSS SECTION



PERSPECTIVE VIEW

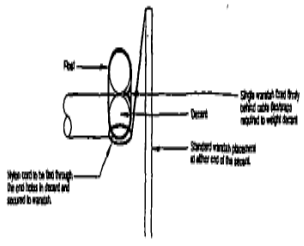


ELEVATION



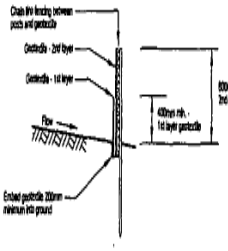
PLAN

SEDIMENT RETENTION POND



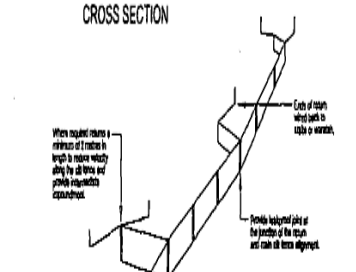
SECTION A - A

DECANT DETAIL



CROSS SECTION

SUPER SILT FENCE DETAIL



STANDARD FABRIC JOINT

CROSS SECTION

PERSPECTIVE VIEW

SILT FENCE DETAIL

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	15/9/06	SUPER SILT FENCE DETAILS ADDED	GB	FK

DRAWING REVISIONS

Babbage CONSULTANTS
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128 FANSHAWE STREET
PO BOX 2027
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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

SEDIMENT CONTROL DETAILS

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

NTS

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C07	A

29 SEP 2006

KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- DRAINAGE EASEMENT
- SWMH C7 — PROPOSED STORMWATER LINE
- SSMH 4C — PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED CATCHPIT/DOUBLE CATCHPIT
- (P11) DCP5 — EXISTING CATCHPIT/DOUBLE CATCHPIT
- 31 LOT NUMBER

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAITAKERE CITY COUNCIL'S (WCC) CODE OF PRACTICE FOR CITY INFRASTRUCTURE AND LAND DEVELOPMENT.
2. ALL MANHOLES ARE 1050Ø UNLESS NOTED OTHERWISE.
3. ALL CATCHPIT LEADS ARE 225Ø UNLESS NOTED OTHERWISE.
4. ALL PIPELINES UNDER ROADS OR ACCESSWAYS SHALL BE BACKFILLED WITH APPROVED COMPACTED HARDFILL TO DESIGN SUBGRADE LEVEL.
5. ALL EXISTING MANHOLES SHALL BE ADJUSTED TO SUIT FINISHED GROUND LEVELS.
6. THE CONTRACTOR IS TO CONFIRM THE POSITION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO WORKS COMMENCING.
7. ALL WORK ON EXISTING WCC SEWER TO BE UNDERTAKEN BY AN APPROVED CONTRACTOR. THIS INCLUDES LOWERING AND EXTENTION OF EXISTING MANHOLES.
8. ALL DRAINAGE LINES UNDER RETAINING WALLS TO COMPLY WITH WCC REQUIREMENTS.

APPROVED
subject to conditions endorsed
on : RMA 2060172 (c)(i)
signed: _____ date: 9/10/08
authorised officer

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REV	DATE	DESCRIPTION	DRAWN	CHECK
C	210906	SSMH 32 ADDED	FK	DR
B	150805	POND ADDED	FK	DR
A	150806	VARIOUS AMENDMENTS	FK	DR

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

DRAINAGE PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C10	C

28/09/2006 2:46:12 p.m. x:\dgn\42600's\42608\Civil\C10 DRAINAGE PLAN SHEET 1.dgn

KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- DRAINAGE EASEMENT
- SWMH L5 — PROPOSED STORMWATER LINE
- SSMH 9C — PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED CATCHPIT/DOUBLE CATCHPIT
- (P11 • DCPS ■) EXISTING CATCHPIT/DOUBLE CATCHPIT
- PROPOSED SWALE
- 58 LOT NUMBER

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAITAKERE CITY COUNCIL'S (WCC) CODE OF PRACTICE FOR CITY INFRASTRUCTURE AND LAND DEVELOPMENT.
2. ALL MANHOLES ARE 1050ø UNLESS NOTED OTHERWISE.
3. ALL CATCHPIT LEADS ARE 225ø UNLESS NOTED OTHERWISE.
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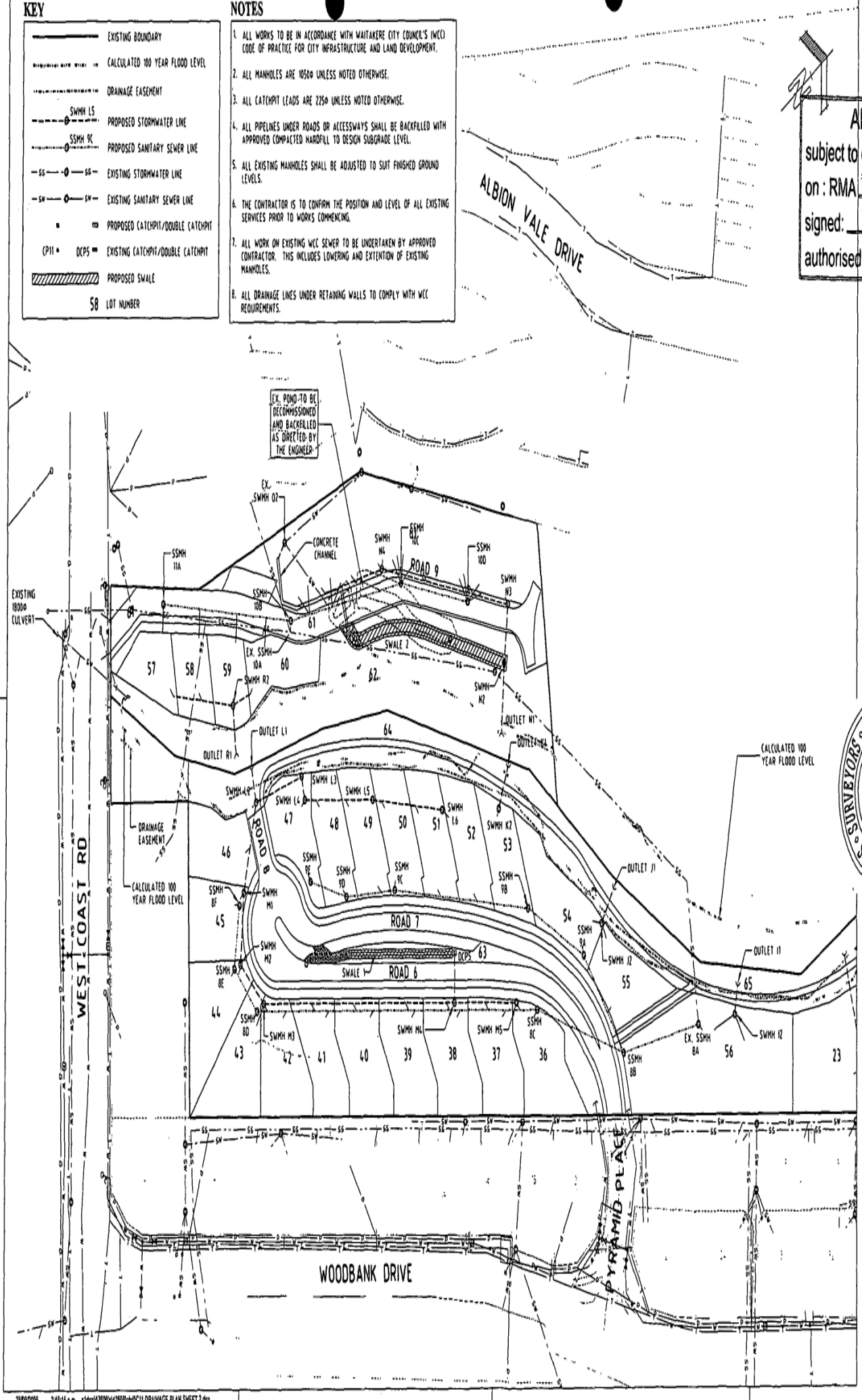
5. ALL EXISTING MANHOLES SHALL BE ADJUSTED TO SUIT FINISHED GROUND LEVELS.
6. THE CONTRACTOR IS TO CONFIRM THE POSITION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO WORKS COMMENCING.
7. ALL WORK ON EXISTING WCC SEWER TO BE UNDERTAKEN BY APPROVED CONTRACTOR. THIS INCLUDES LOWERING AND EXTENTION OF EXISTING MANHOLES.
8. ALL DRAINAGE LINES UNDER RETAINING WALLS TO COMPLY WITH WCC REQUIREMENTS.



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signed: FD date: 19/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	27.09.06	SWALE ADDED	FK	DR

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

DRAINAGE PLAN (SHEET 2)

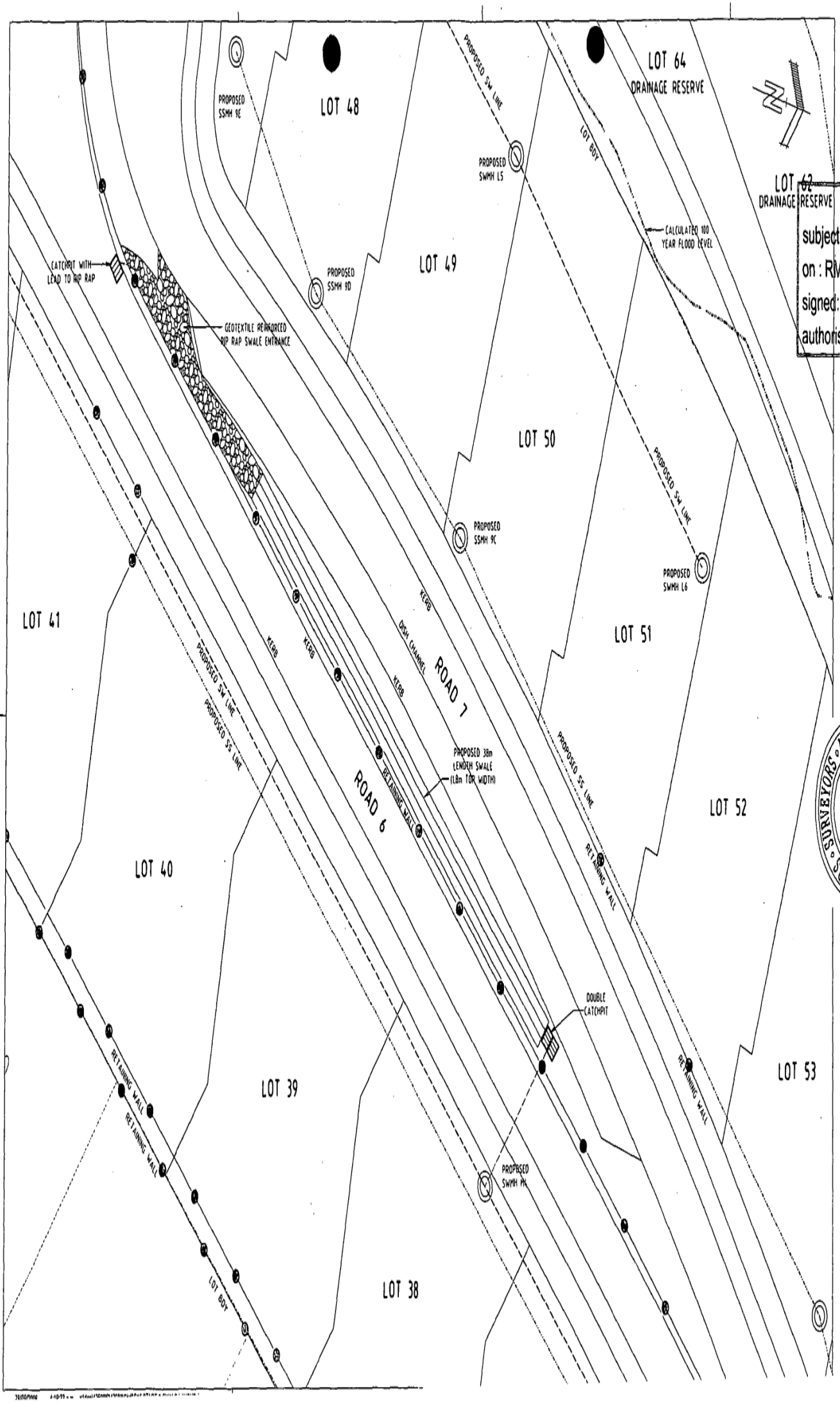
25 SEP 2006

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42808	C11	A



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authorised officer

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admin@babbage.co

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMEN

FOR

NZ HOUSING FOUNDATIO

DRAWING TITLE

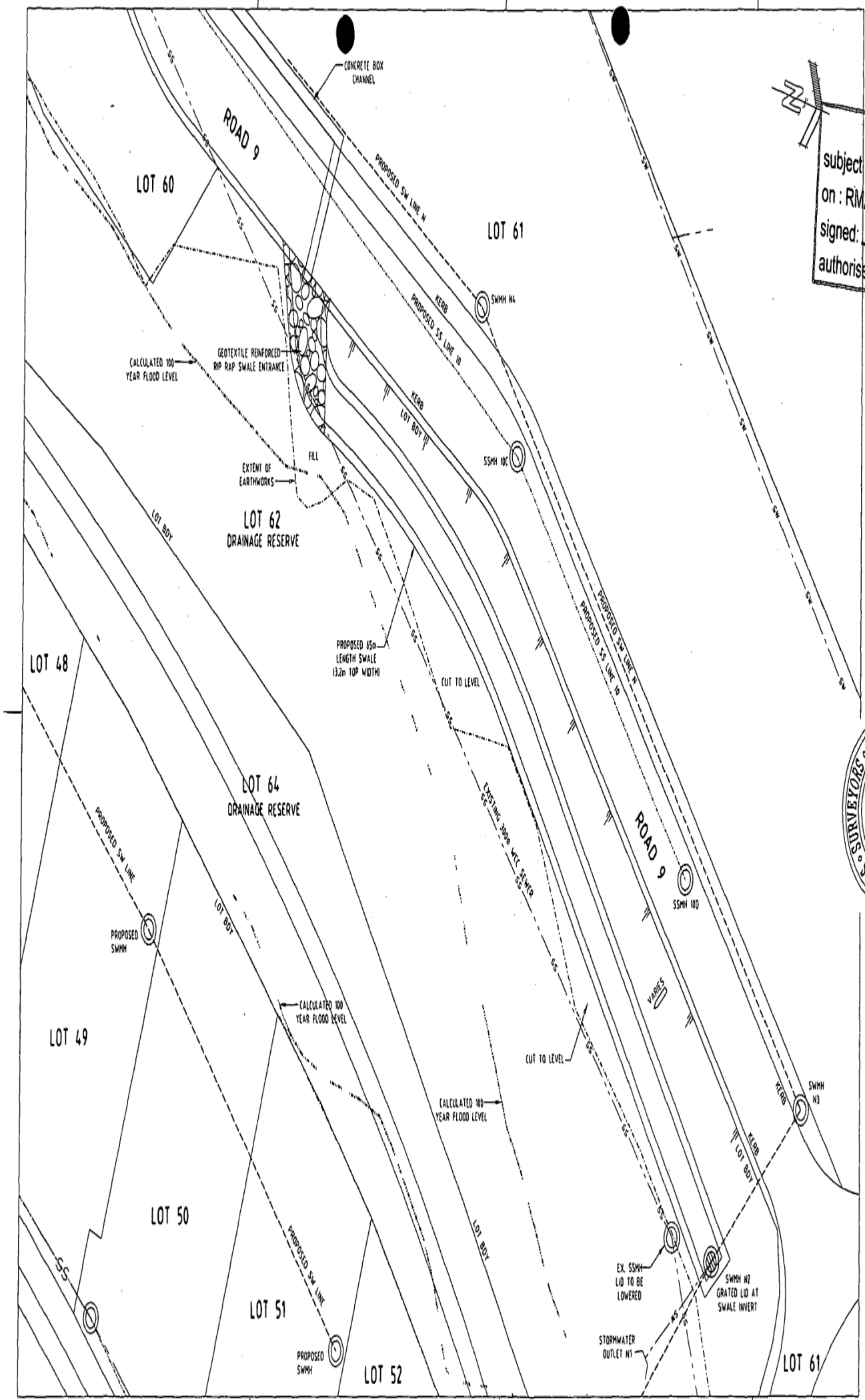
STAGE 2
SWALE LAYOUT

	DATE	INITIAL
DESIGNED	SEPT 2006	FK
DRAWN	SEPT 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:125

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C15	-



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signed: _____ date: 19/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.07.06	SWALE REPLACES POND	FK	GMR

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

STAGE 3
SWALE LAYOUT

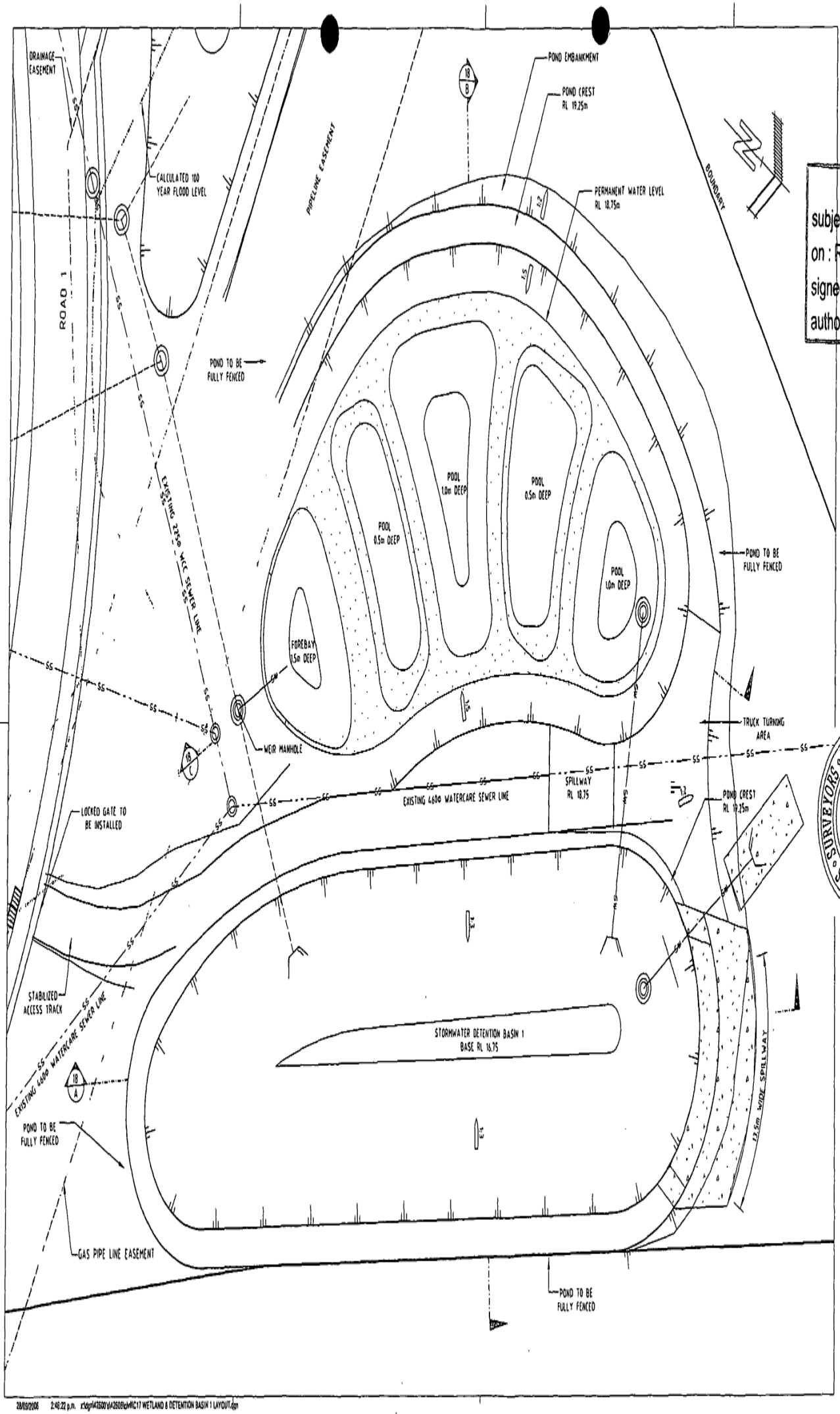
	DATE	INITIAL
DESIGNED	JUNE 2006	DMR
DRAWN	JUNE 2006	MJD
CHECKED		
APPROVED		

SCALE (A1)

1:125

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C16	A

28/09/2006 2:46:17 p.m. x:\dgn\42600's\42608\dwg\C16 STAGE 3 SWALE LAYOUT.dgn



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signed: _____ date: 19/

authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	0808	VARIOUS AMENDMENTS	FK	

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admin@babbage.co.nz

CLIENT / PROJECT
WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
WETLAND & DETENTION BASIN 1 LAYOUT

29 SEP 2008

	DATE	INITIAL
DESIGNED	JUNE 2008	DMR
DRAWN	JUNE 2008	GW
CHECKED		
APPROVED		

SCALE (A1)
1:125

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C17	A

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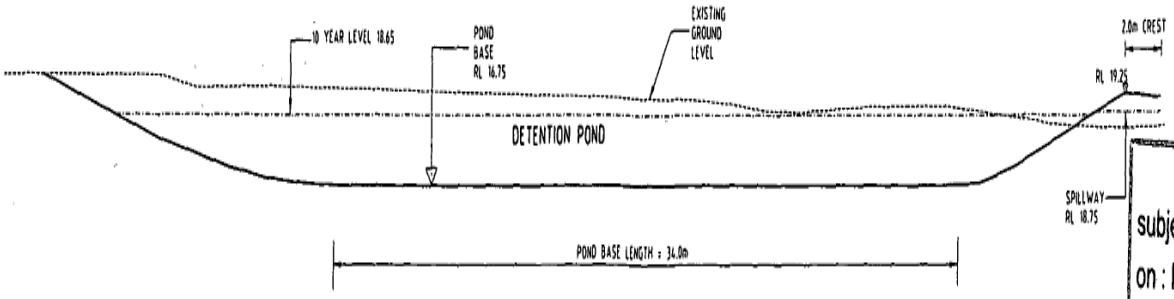
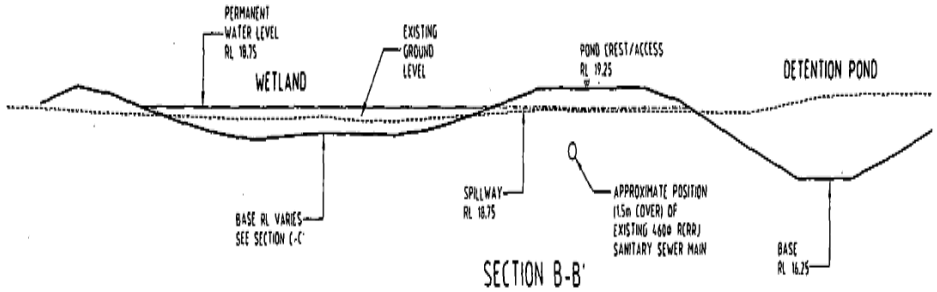
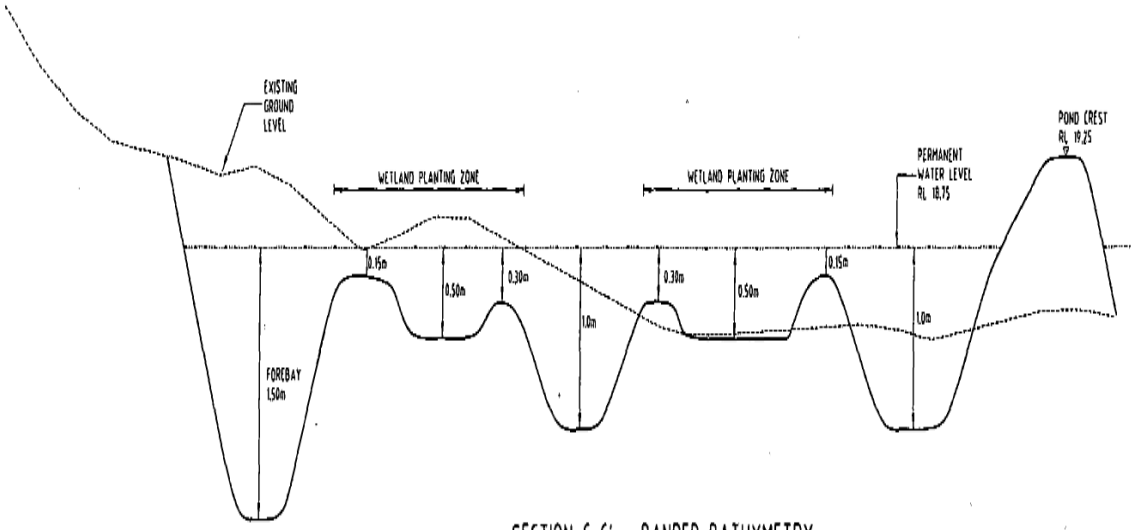


SECTION A-A'
SCALE 1:100

APPROVED
subject to conditions endorsed
on : RMA 2006 1077 | 01
signed: FP date: 19/
authorised officer



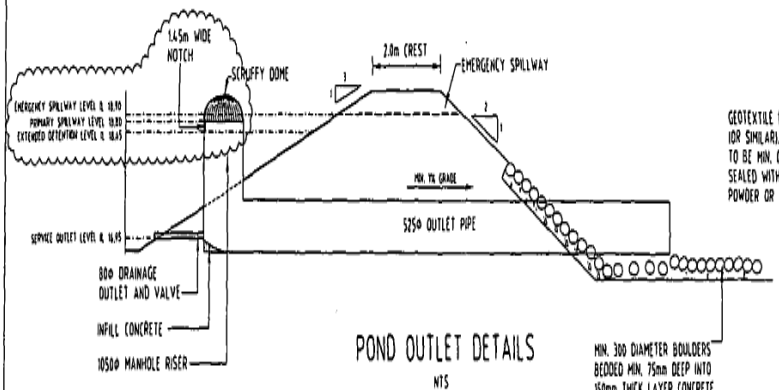
SECTION B-B'
SCALE 1:100



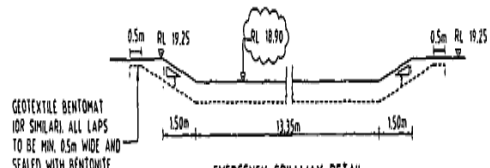
SECTION C-C' - BANDED BATHYMETRY
SCALE HORT 1:100 VERT 1:20

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	10.08.06	WORDING AMENDED	FK	
A	28.06.06	WORDING AMENDED	DMR	

DRAWING REVISIONS



POND OUTLET DETAILS
NTS



EMERGENCY SPILLWAY DETAIL
NTS

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CLIENT / PROJECT
WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
POND DETAILS PLAN

	DATE	INITIALS
DESIGNED	JUNE 2006	DMR
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
AS SHOWN

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C18	B

29 SEP 2006

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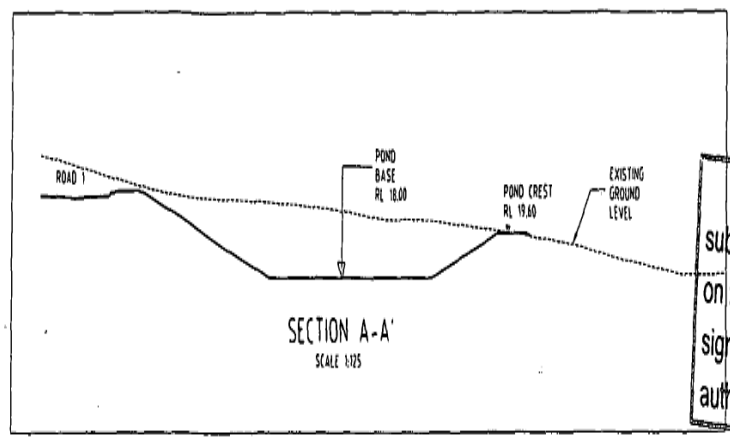

SECTION A-A'
SCALE 1:125

APPROVED
subject to conditions endorsed
on: RMA 2060677 / 10078
signed: _____ date: 19/10
authorised officer

CALCULATED 100 YEAR FLOOD LEVEL

POND CREST RL 19.60m

7.5m WIDE SPILLWAY

STORMWATER DETENTION BASIN 2
BASE RL 18.00

PIPELINE EASEMENT

ROAD 1

DRAINAGE EASEMENT

POND TO BE FULLY FENCED

GAS PIPE LINE EASEMENT

ROUNDABT

EXISTING 300ø VSC SEWER LINE

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

DETENTION BASIN 2 LAYOUT

29 SEP 2006

	DATE	INITIAL
DESIGNED	AUG 2006	DMR
DRAWN	AUG 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C19	-

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DRAWING NOTES

KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- PROPOSED STORMWATER LINE
- PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED CESSPIT/DOUBLE CESSPIT
- EXISTING CESSPIT/DOUBLE CESSPIT
- PROPOSED PRAM CROSSING
- K&C VERTICAL KERB & CHANNEL
- K&N VERTICAL KERB & NIB
- DC DISH CHANNEL
- 31 LOT NUMBER

APPROVED
subject to conditions endorsed
on : RMA 20061077 / 1078
signed: _____ date: 19/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	27.09.06	INTERSECTIONS AMENDED	FK	DMR

DRAWING REVISIONS

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

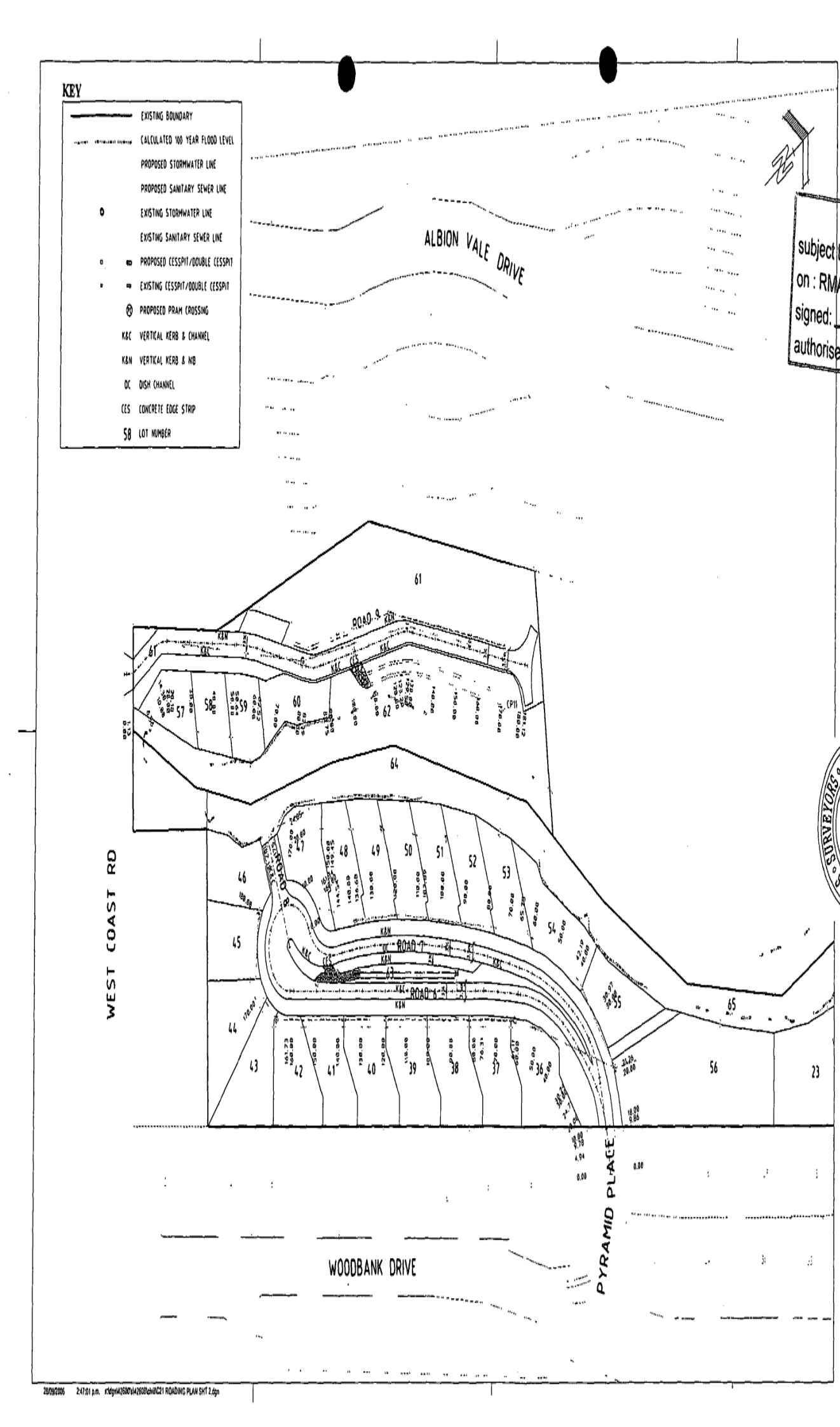
DRAWING TITLE

ROADING PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C20	A



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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.09.06	SWALE ADDED	FK	GMR

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

ROADING PLAN
(SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C21	A

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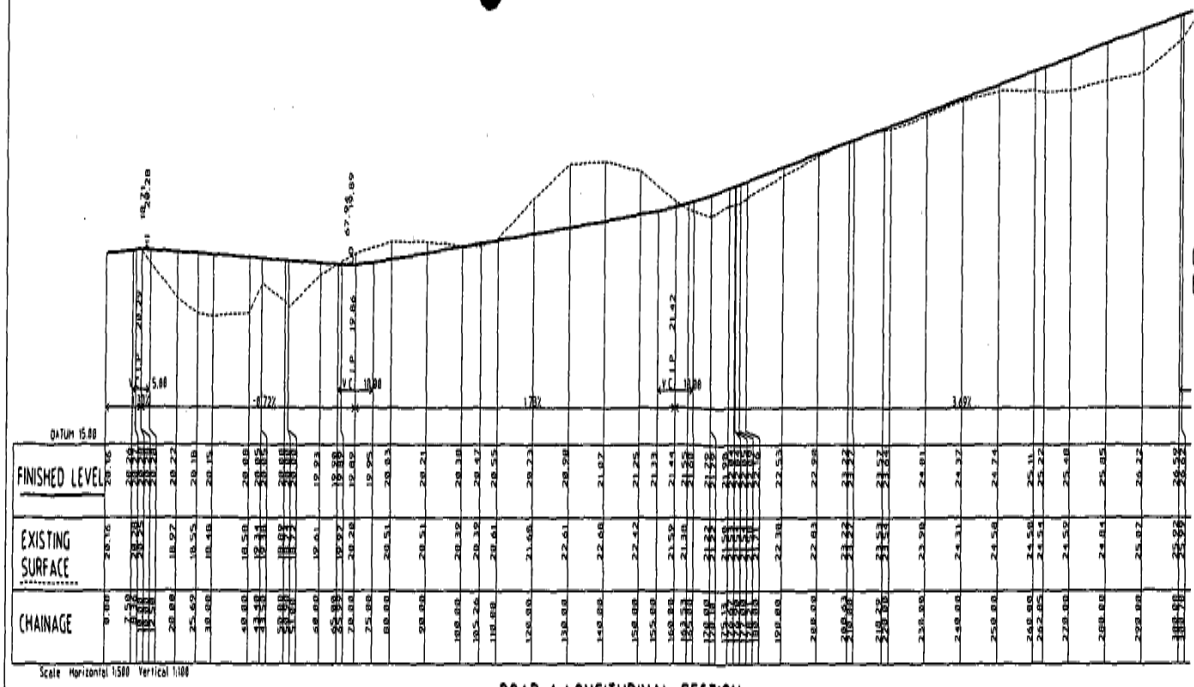
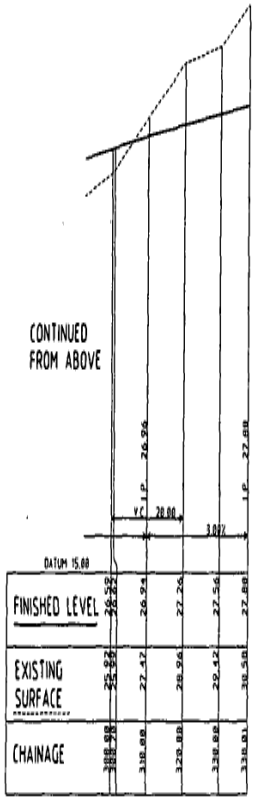
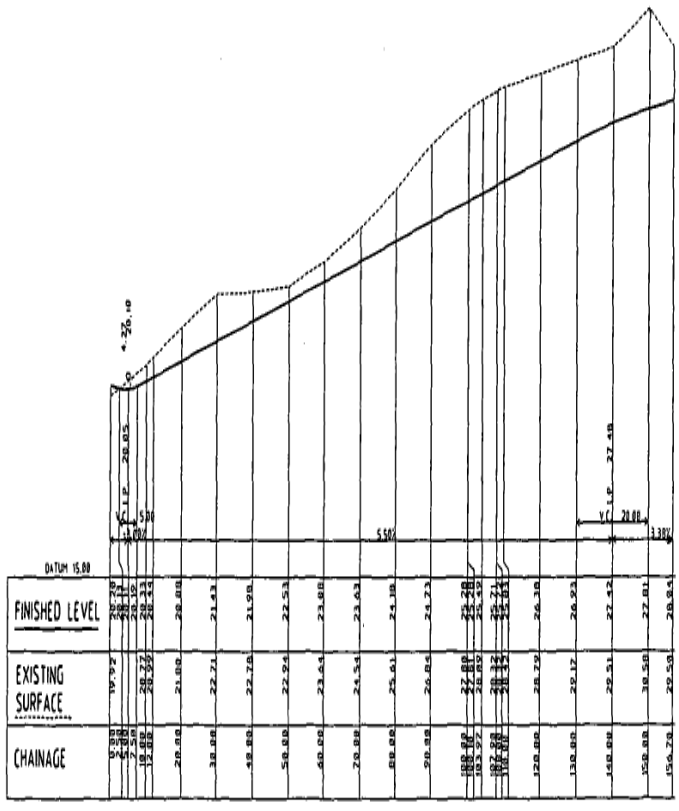
on : RMA
signed: date:
authorised officer



ROAD 1 LONGITUDINAL SECTION



ROAD 1 LONGITUDINAL SECTION CONTINUED



ROAD 2 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

ROAD LONGITUDINAL SECTIONS (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 06	FK
DRAWN	JUNE 06	GW
CHECKED		
APPROVED		

SCALE (A1)

HORT 1:500 VERT 1:100

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C22	-

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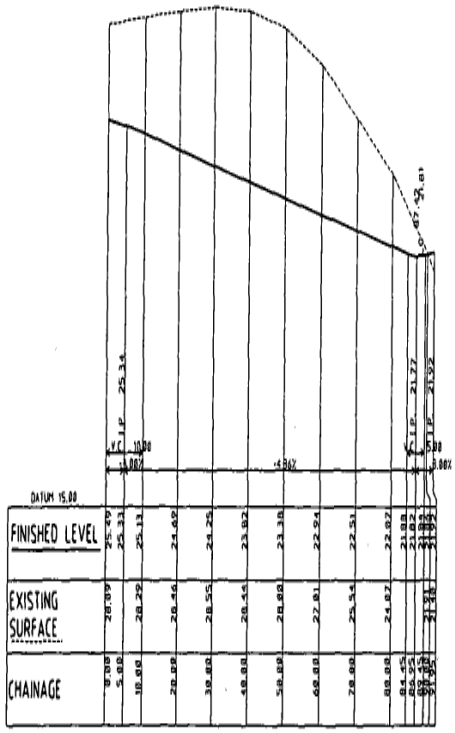
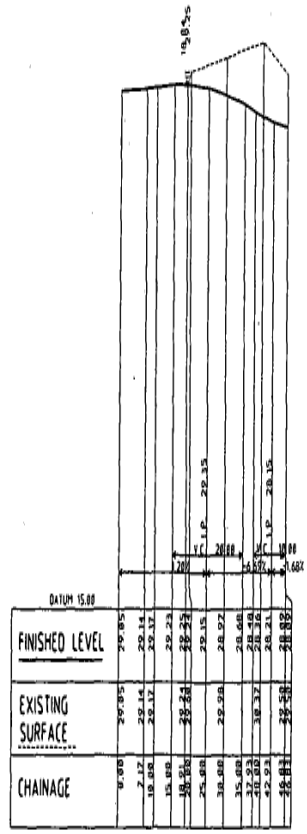
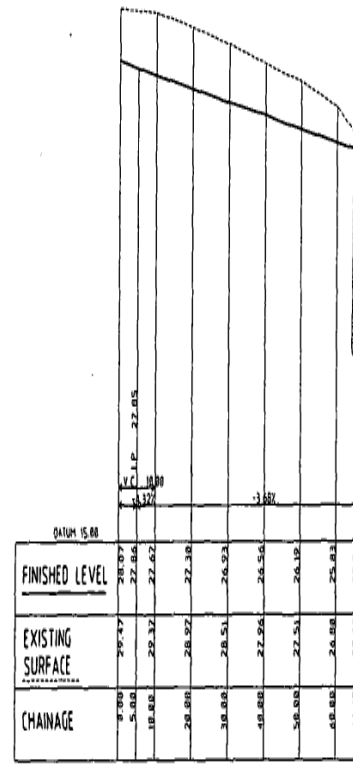
on : RMA2026 1077 1078
signed: [signature] date: 19/10
authorised officer



ROAD 3 LONGITUDINAL SECTION



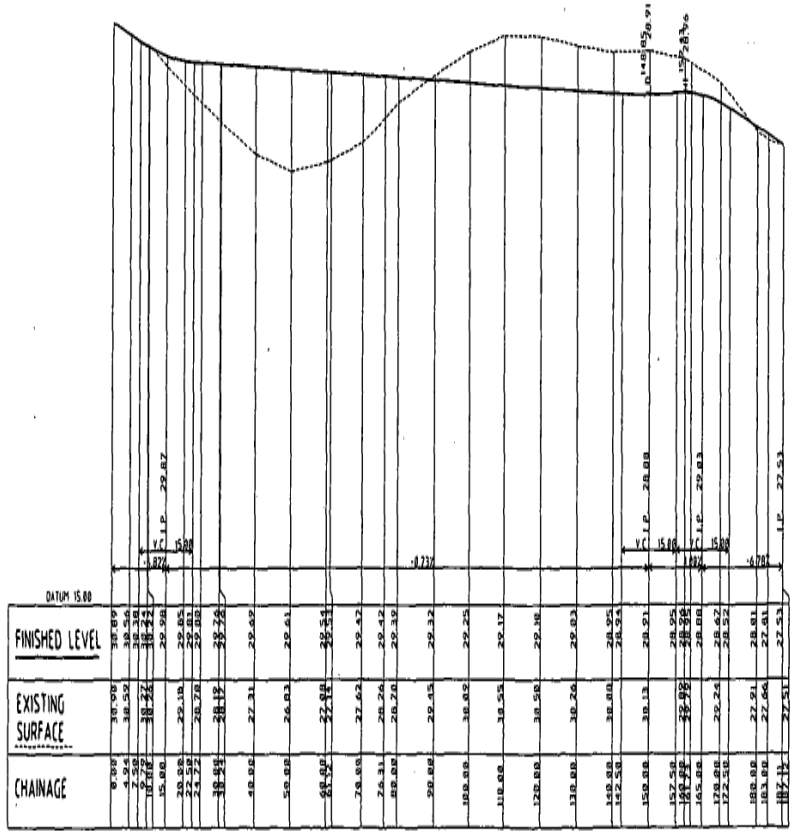
ROAD 4 LONGITUDINAL SECTION



ROAD 5 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS



ROAD 6 LONGITUDINAL SECTION

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109 FANSHAWE STREET
PO BOX 2027
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CLIENT / PROJECT
WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
ROAD LONGITUDINAL SECTIONS (SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 06	FK
DRAWN	JUNE 06	GW
CHECKED		
APPROVED		

29 SEP 2006

SCALE (A1)
HORT 1:500 VERT 1:100

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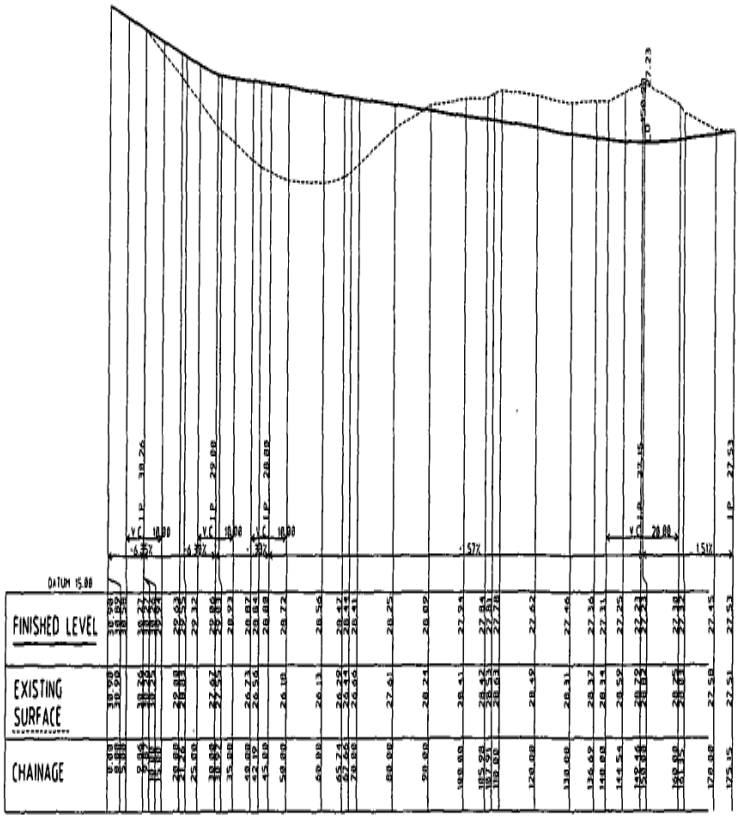
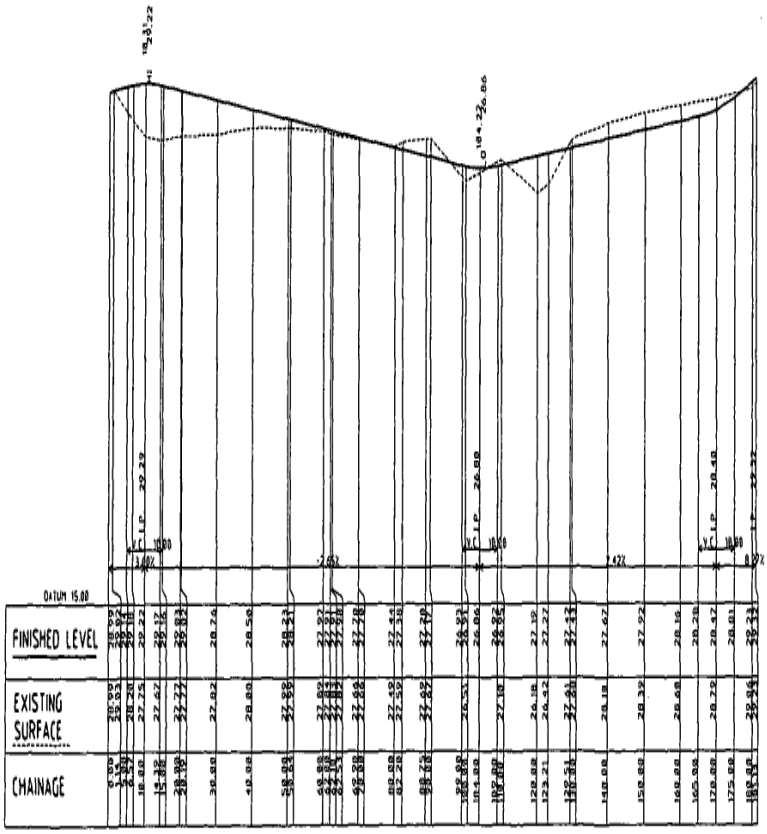


ROAD 7 LONGITUDINAL SECTION



ROAD 9 LONGITUDINAL SECTION

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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

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DRAWING NOTES

KEY

- RETAINING WALL
- 31 LOT NUMBER
- PROPOSED STORMWATER LINE
- PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE

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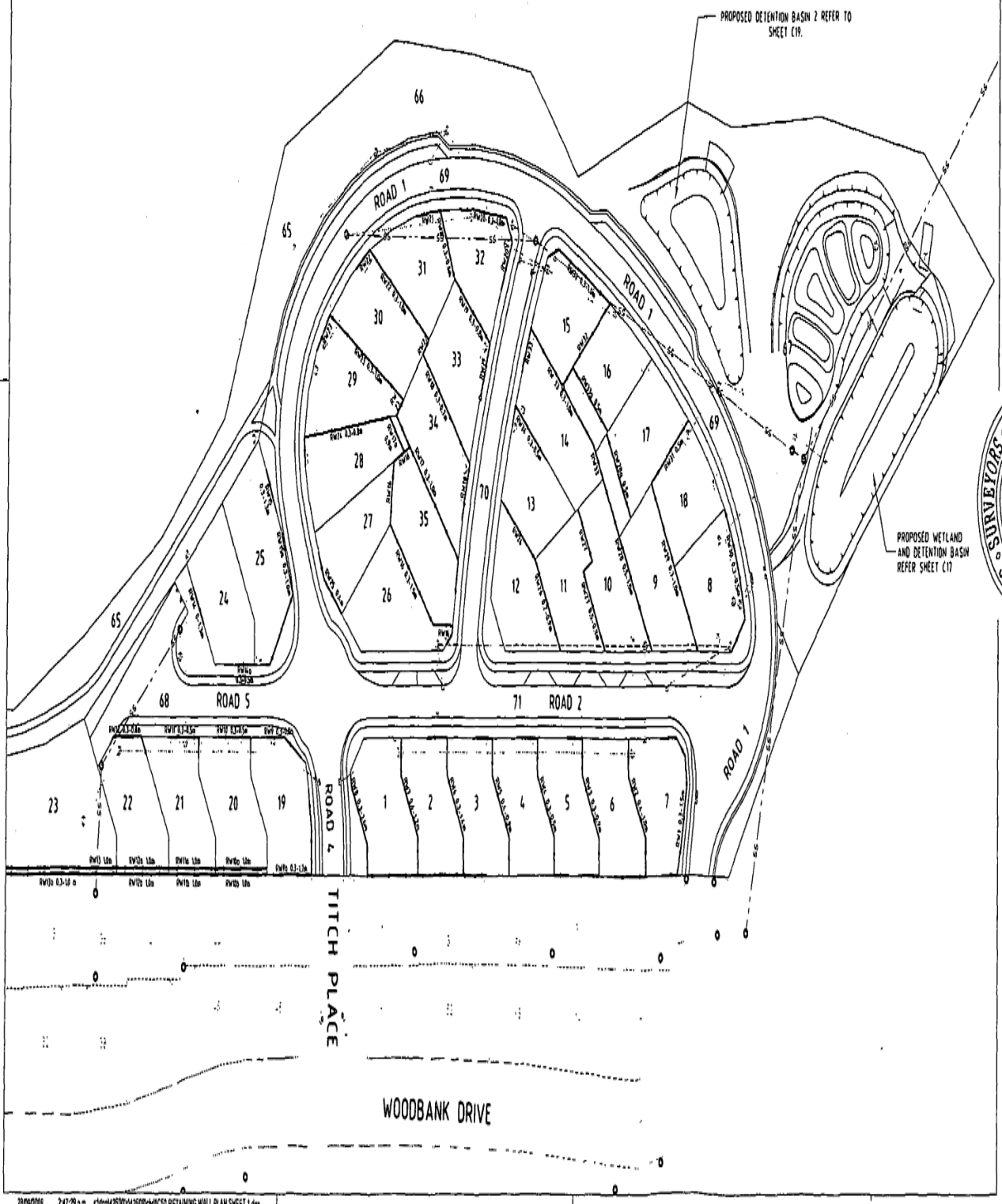

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WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

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RETAINING WALL PLAN (SHEET 1)

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DRAWING NOTES

KEY

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- 31 LOT NUMBER
- PROPOSED STORMWATER LINE
- PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE

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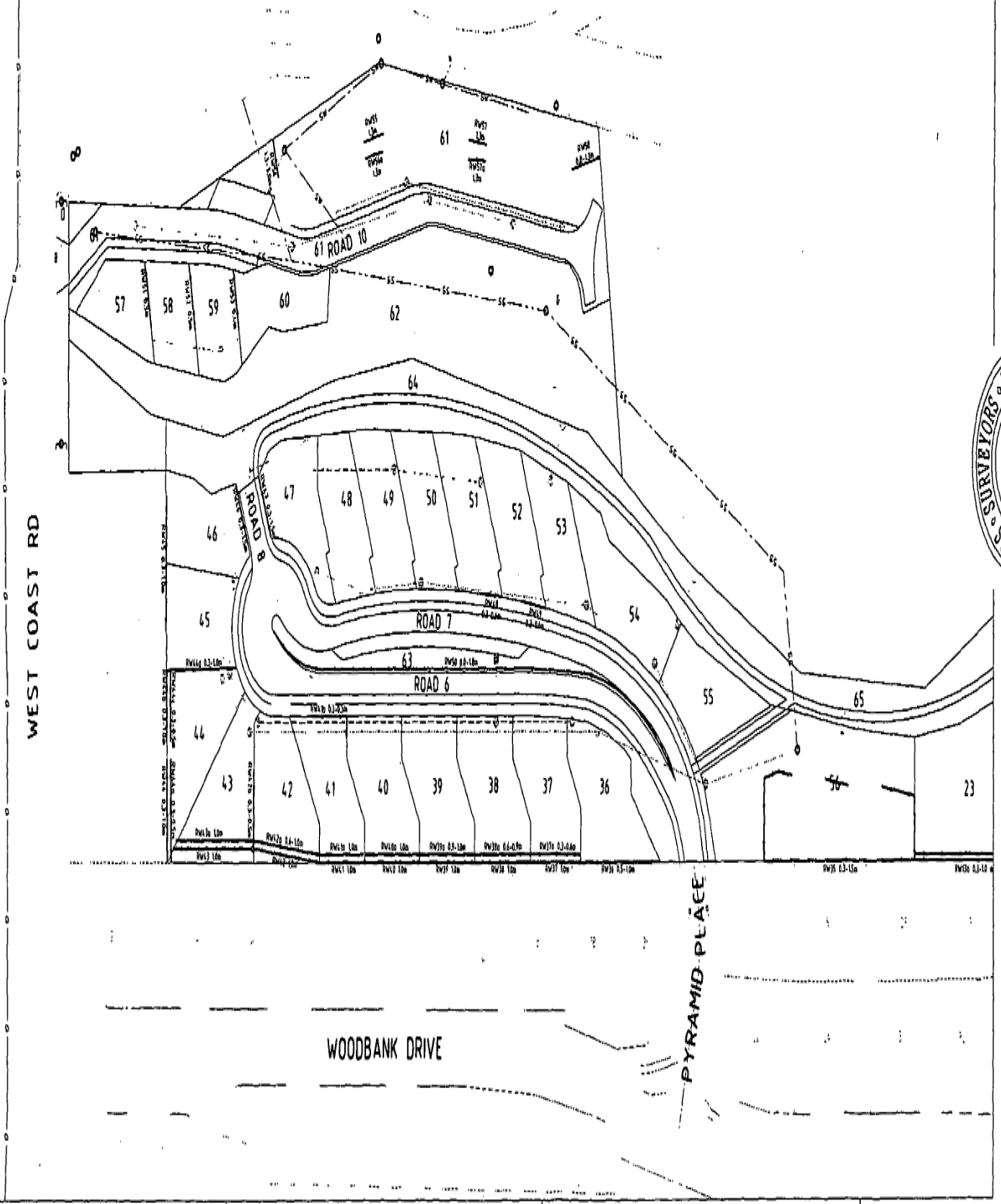

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

RETAINING WALL
PLAN
(SHEET 2)

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West Coast Road Medium Intensity Housing Development

for

Auckland Regional Council

Flocculation Management Plan

Ref: 42608/C
November 2006

Architects ▫ Consulting Engineers ▫ Surveyors ▫ Project Managers

G:\Letters\2006\BDOC03235565.DOC

CONTENTS

1.0 Introduction 1
2.0 The Poly Aluminium Chloride (PAC) Dosing System 1
3.0 Personnel & Contact Details 1
4.0 Management Plan 2
5.0 Programme 3
6.0 Summary 4

1.0 INTRODUCTION

This report is prepared as a condition of consent from the Auckland Regional Council for the requirement of a flocculation management plan for the West Coast Road sub-division development at 423-429 West Coast Road, Glen Eden.

It was agreed in correspondence with Auckland Regional Council that the developer would undertake flocculation of the erosion and sediment control facilities during earthworks operations on this site.

The proposed flocculation treatment system is to be a rainfall driven polyaluminium chloride (PAC) dosing system. Earthco Civil Ltd have been awarded the earthworks and civil contract works. Earthco Civil are experienced civil contractors and have had previous experience with PAC dosing systems and have experience in earthworks and sediment control on other subdivision developments adjacent to the subject site.

A site specific Flocculation Management Plan has been prepared by Michael Larcombe and is enclosed within Appendix A.

2.0 THE POLY ALUMINIUM CHLORIDE (PAC) DOSING SYSTEM

The proposed treatment system is a rainfall driven polyaluminium chloride (PAC) dosing system which has been developed specifically for earthworks sites. The system uses a rainfall catchment tray to capture rainfall with the size of the tray determined by the required PAC dose and the land catchment size. Because the treatability of suspended sediment from different soil types varies widely in the Auckland area, the required PAC dose has been determined by bench testing of soils from the site. A summary of the testing and resulting dosing requirements is contained in Appendix A.

Rainwater caught by the catchment tray is piped into a header tank, and then into a 400L displacement tank which floats in a larger 550L tank containing PAC filled to the level of an outlet pipe leading to the stormwater inlet channel immediately upstream of the detention pond. The greater the rate of rainwater flow into the displacement tank the greater the flow of PAC into the stormwater channel. The header tank is designed to provide for no dosing during initial rainfall under dry conditions, and for attenuation of the PAC flow during the initial stages of a storm and after rain has ceased at the end of a storm.

The dosing system is generally self operating once setup and calibrated. The only maintenance items are ensuring the correct water levels in the header and displacement tanks and sufficient chemical is available in the tank for the dosing of the stormwater runoff during rainfall events.

3.0 PERSONNEL & CONTACT DETAILS

The engineering consultants for the civil construction works are Babbage Consultants Ltd. The Engineer to the contract is Paddy Luxford and the Engineer's representative is Fiona Keir. Fiona shall assume overall responsibility for the PAC dosing of the ponds during the course of the construction season.

Michael Larcombe is an independent Environmental Scientist with previous experience in the implementation and operation of PAC dosing systems. Michael has been engaged by NZ Housing Foundation Trust to oversee the implementation and ongoing administration of the Flocculation Programme for the construction season.

Alistair Baker will be the project manager on behalf of Earthco Civil. Alistair has been nominated as the person responsible for ensuring the ongoing satisfactory day to day operation of the dosing system once initial setup and calibration has been completed.

Name:	Fiona Keir	Eng. Rep., Babbage Consultants
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	Fax.	377 1170
	Mob.	021 166 5238
Name:	Michael Larcombe	Environmental Scientist
Contact Details:	Ph.	480 8331
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	Mob.	025 280 8566
Name:	Alistair Baker	Project Manager, Earthco Civil
Contact Details:	Ph.	09 579 7100
	Fax.	09 579 7101
	Mob.	0274 244 483

4.0 MANAGEMENT PLAN

Fiona Keir's key responsibilities shall include:

- Ensure compliance with this management plan by all parties
- Liaison with Michael Larcombe and Earthco Civil to ensure the necessary fittings and materials are ordered and available for commissioning of the dosing system immediately after completion of the SRP/s.
- Take instruction from Michael Larcombe and become familiar with the operation of and understand the principals of the dosing system
- Undertake regular weekly independent checks of the dosing system to ensure satisfactory operation
- Advise Auckland Regional Council of key dates in relation to operation of system i.e. commissioning, deactivation etc

Michael Larcombe's initial key responsibilities shall include:

- Bench testing of stormwater runoff to determine the required PAC dose. Refer to the site specific management plan in Appendix A.
- Overseeing the placement of the dosing shed together with the sizing and installation of the catchment tray.
- Overseeing the location and construction of the entry channel into the SRP to ensure correct application and mixing of the PAC dose with the stormwater runoff from the earthwork site.

- Installation of the dosing hardware within the dosing shed and the commissioning of the installed equipment.

- Training of the nominated person(s) to ensure the satisfactory ongoing day to day operation of the system including monitoring and maintenance.

Michael Larcombe's ongoing responsibilities shall include:

- An overview of the entire system for the duration of the construction season to ensure satisfactory operation.

- Inspections to ensure satisfactory ongoing operation of the system by the Contractor. Inspection followed by a brief written report to the Consultant Engineer.

- Recommendations to Consultant Engineer regarding modifications to the system to take into account different soil types encountered during the course of the earthworks or earthwork catchment areas being worked.

Alistair Baker's initial key responsibilities shall include:

- Take instruction from Michael Larcombe and become familiar with the operation of and understand the principals of the dosing system.

- Undertake training from Michael Larcombe to ensure competence in the satisfactory ongoing day to day operation of the system relating to:
  1. Correct water levels in the header and displacement tanks.
  2. Correct storage and handling of dosing chemical.

Alistair Baker's ongoing responsibilities shall include:

- Checking water and chemical levels to ensure satisfactory day to day operation of dosing system.

- The system shall be checked at least twice a week and immediately prior to any predicted heavy rainfall event.

- Advise Consultant Engineer (prior to requirement) when more chemical is required to be ordered for the system so that it is available when needed.

5.0 PROGRAMME

Sediment Pond:
The dosing shed and catchment tray shall be installed upon completion of the earthworks required for the construction of the sediment pond. The balance of the system shall be installed and the system commissioned no later than one week after the installation of the shed.

Decanting Earth Bunds:
The batch dosing of the decanting earth bunds will be carried out as required, see Appendix A, Section 3 for batch dosing criteria.

6.0 SUMMARY

We trust this management plan and appendices provides the Auckland Regional Council the required information to approve the PAC dosing of the sediment retention ponds associated with the West Coast Road development for NZ Housing Foundation.

Yours faithfully

Fiona Keir
Babbage Consultants Ltd

APPENDIX A

WEST COAST ROAD
SITE SPECIFIC FLOCCULATION
MANAGEMENT PLAN

BABBAGE CONSULTANTS LIMITED.
WEST COAST ROAD SUBDIVISION.
EARTHWORKS STORMWATER CHEMICAL TREATMENT MANAGEMENT PLAN.

Prepared by: Michael Larcombe. 07.12.06

1. INTRODUCTION.

This Chemical Treatment Management Plan (CTMP) includes two methods of treatment. The automatic rainfall driven system is to be used on larger earthworks stormwater ponds, and a manual batch dosing method is to be used on smaller decanting earth bunds.

The management plan for the rainfall driven system is presented in section 2 followed by the management plant for the batch dosing method in section 3.

2. AUTOMATIC RAINFALL DRIVEN SYSTEM.

2.1 Introduction.

The proposed chemical treatment (CT) system is a standard rainfall driven polyaluminium chloride (PAC) dosing system which has been developed specifically for earthworks sites, and is compliant with the Auckland Regional Council's Technical Publication 90 'Flocculation Guidelines'.

The system uses a rainfall catchment tray to capture rainfall with the size of the tray determined by the required PAC dose and the land catchment size.

Rainwater caught by the catchment tray is piped into a header tank, and then into a 400L displacement tank which floats in a larger tank containing PAC filled to the level of an outlet pipe leading to the stormwater inlet channel about 10m upstream of the detention pond. The greater the rate of rainwater flow into the displacement tank the greater the flow of PAC into the stormwater channel. The header tank is designed to provide for no dosing during initial rainfall under dry conditions, and for attenuation of the PAC flow during the initial stages of a storm and after rain has ceased at the end of a storm.

2.2 Determination of dose required.

2.2.1 Introduction.

The PAC dose required to achieve satisfactory removal of suspended solids from earthworks stormwater depends on physical and chemical characteristics of the soil.

Soil samples were collected from the site on 05.12.06 and used to make up samples of artificial stormwater for testing to determine the optimum dose required for treatment at the site.

2.2.2 Results of bench tests.

1. Artificial stormwater made up with orange-yellow silty clay from 40cm depth central site in main cut area.

Aluminium Dose. (mg/L)	Coagulation + settlement after 10min	Final result Coag + settle after 30 min	Clarity (cm) after 30 min	Final pH after 30 min
0	nil	nil	<1	6.42
2	nil	slight	<1	6.35
4	good	v.good	8	6.20
6	v.good	excellent	21	5.90
8	v.good	excellent	22	5.68

2. Artificial stormwater made up with pale gray clay from 40cm depth on western side of main cut area.

Aluminium Dose. (mg/L)	Coagulation + settlement after 10min	Final result Coag + settle after 30 min	Clarity (cm) after 30 min	Final pH after 30 min
0	Nil	Nil	<1	6.25
2	slight	good	4	6.21
4	v.good	excellent	25	5.97
6	v.good	excellent	27	5.76
8	v.good	excellent	31	5.56

3. Artificial stormwater made up with orange-yellow clay from 40cm depth western side of main cut area.

Aluminium Dose. (mg/L)	Coagulation + settlement after 10min	Final result Coag + settle after 30 min	Clarity (cm) after 30 min	Final pH after 30 min
0	nil	nil	<1	6.33
2	good	good	3	6.30
4	v.good	excellent	16	6.15
6	v.good	excellent	19	5.89
8	v.good	excellent	22	5.63

Discussion:
The results for samples show that the PAC achieved effective removal of suspended solids for stormwater made up from all three soil samples.

The recommended dose for the site is 5 milligrams of aluminium per litre. This is the equivalent of 1 litre of PAC to 12.8 cubic metres of stormwater.

The pH reduction caused by the addition of the recommended PAC dose would be about 0.3 pH units.

The PAC dose shall be the same for the automatic rainfall driven system and for batch dosing of decanting earth bunds.

2.3 Area of rainwater catchment tray required.

The area of the rainwater catchment tray is determined by the PAC dose required, and the area of the earthworks catchment draining to the retention pond.

All water flowing into the pond needs to be treated, and the rainwater catchment tray size is determined by the total land catchment area draining to the pond including both the 'open' area and stable areas. If the catchment area draining to the pond is changed, then the catchment tray size should also be changed in proportion. Reduction of the tray size is easily achieved by placing a piece of plywood on top of the upstand over the lower end of the tray, thereby allowing the rain which falls on the plywood to run to waste.

The required tray size is 0.94 square metres per hectare of land catchment draining to the pond.

2.4 Stormwater channel and dosing point.

The PAC needs to be added to the stormwater channel to provide mixing with the stormwater before it reaches the area of ponded water in the forebay or the pond itself.

Every attempt should be made to direct all stormwater from the catchment into a single channel at least 6-8 metres before it reaches the ponded water so the PAC can be added to and mixed with the total stormwater flow.

The dosing point should be at a location where the chemical will fall into the stormwater flow during periods of low flow. The end of the dosing tube should be only a few centimeters above the stormwater channel to ensure that the chemical falls into the stormwater, and is not blown away during periods of strong wind.

2.5. Monitoring and maintenance requirements.

2.5.1 Routine management and maintenance.

Instructions for routine management and maintenance of the chemical treatment system are provided in Table 1. It is recommended that a copy of this table is placed in the chemical treatment system shed inside a ziplock bag.

All monitoring records and maintenance checks and actions should be recorded on the monthly record sheet provided. (Refer Table 2)

The clarity of the water in the retention pond is monitored using a black disc. This consists of a 50-80mm diameter disc attached to the bottom of a 1 metre long stick with a centimeter scale starting at the end to which the disc is attached. The disc is lowered vertically into the water near the pond outlet until it disappears, and is then moved slowly towards the surface until it just reappears. The depth of reappearance is recorded as the clarity of the water.

2.5.2 Contingency Management.

Contingencies could include poor performance of the treatment system, or effects of other influences on stormwater quality.

If the treated water in the pond is consistently very clear it could indicate overdosing, and the possibility of lowered pH which can present a risk to receiving waters as a result of elevated free aluminium concentration in the discharge. If the treated water is consistently clear the pH of the water in the pond should be tested.

Contingencies such as poor treatment performance or consistently very clear treated water should be dealt with by consultation with the Auckland Regional Council and M. Larcombe or some other person qualified to advise on appropriate action.

A treatment chemical spill contingency plan is provided in Section 2.9 below.

2.6 Record keeping and reporting to ARC.

A copy of the maintenance record for the rainfall driven CT system will be kept in the treatment system shed in a ziplock bag. (Sheet provided as Table 2).

The integrity of the treatment system should be checked weekly during both dry and wet weather. This check should include a quick check of the plumbing, a check that the header tank hoses are clear, and a check of the dosing point to ensure that the chemical would drop into the stormwater flow from the site.

After rain, draining of the header tank is required at least on the 3rd day and 6th day following rain, and possibly more frequently if the treated water in the pond is consistently clear.

After moderate or heavy rain the dosing point should be checked to ensure that the chemical is being delivered into the stormwater flow during low flow conditions.

The integrity of the catchment tray, particularly the seal between the tray and the upstand should be checked monthly.

A copy of the maintenance record for the CT system for each calendar month will be kept and supplied to the Auckland Regional Council on request.

2.7 Storage of PAC on site.

Bulk PAC which is supplied by the manufacturer in 200L polyethylene drums should be kept in secure storage, either in a locked shed or container, or in the chemical treatment system shed.

The standard chemical treatment system shed has space for two 200L drums inside, and should be kept locked.

PAC drums should always be stored on end with the screw caps uppermost.

Empty PAC drums should be washed out with water, and the washwater poured onto dry soil well away from any watercourse. Drums can be disposed of to a drum recycling company.

2.8 Procedure for transportation of PAC.

The PAC will normally be delivered to the site or to the contractors yard by a commercial carrier.

200 litre drums of PAC weigh about 250kg and are most easily moved within the site in a loader bucket.

2.9 Chemical spill contingency plan.

If there is a spill of PAC onto the ground it should be immediately contained using earth bunds to prevent it entering water. The spilt PAC should be recovered if possible and placed in polyethylene containers. If the spilt PAC cannot be recovered, it should be mixed with a volume of soil equal to at least ten times the volume of spilt PAC, and buried in dry soil.

If there is a spill of PAC into ponded water, discharge from the pond to natural water should be prevented. M. Larcombe should be contacted at 027 2808566 to advise on neutralisation.

If there is a spill of PAC into flowing water:

1. The Auckland Regional Council should be advised immediately.
2. The volume of the spill should be recorded.
3. If possible the water and spilt PAC should be pumped into a bund or pond until all the spilt PAC has been removed from the watercourse.
4. If the PAC cannot be removed from the watercourse any downstream users should be identified and advised. M. Larcombe should be contacted to advise on implications

2.10. Chain of responsibility for monitoring and maintaining the chemical treatment systems on site.

The earthworks contractor shall have primary responsibility for maintenance and monitoring the effectiveness of the chemical treatment system.

Michael Larcombe will have a supervisory role on any technical issues that might arise.

2.11 Training of person responsible for monitoring and maintenance of chemical treatment systems.

Michael Larcombe will train a person nominated by the contractor to carry out the routine monitoring and maintenance of the CT system, and to keep the required records.

3. CHEMICAL TREATMENT MANAGEMENT PLAN FOR BATCH DOSING OF STORMWATER COLLECTED TO DECANTING EARTH BUNDS.

3.1 Introduction.

Batch dosing using liquid polyaluminium chloride (PAC) is to be used to reduce the suspended solids concentration or turbidity of stormwater collected into decanting earth bunds before it is discharged to natural water.

Requirements for the storage and transport of PAC are provided in Sections 2.7 and 2.8 and the requirements for management of chemical spills are provided in Section 2.9.

3.2 Criteria for batch dosing.

The criterion to establish the need for batch dosing is the clarity of the stormwater.

Clarity is measured using a black disk lowered vertically into the water to be tested. A small black disc of 50-80mm diameter is attached to a 1m long stick with a centimetre scale starting at the disc. The disc is lowered into the water until it disappears, and then is raised until it just reappears. The depth of reappearance is recorded as the clarity of the water.

Water with a clarity of 100mm or greater is considered to be acceptable for discharge. Water with a clarity of less than 60mm should be batch dosed.

If stormwater has a clarity between 60-100mm after rainfall has ceased it should be left for 48 hours to settle. If the clarity has not reached 100mm after 48 hours, or if stormwater has to be discharged within 48 hours because the pond is full, the stormwater should be batch treated.

3.3 Operation of decanting earth bund in batch treatment mode.

To optimize batch dosing of decanting earth bunds, the bunds should be designed to retain dead storage of a minimum of 40cm depth, and floating decants should be used to discharge the treated water.

When the pond level is at or below the dead storage level discharge should be prevented by either raising the decant or closing the outlet pipe with a valve to provide storage of incoming stormwater.

Once the live storage volume has filled to 50% or more, the water should be tested to determine whether batch dosing is required.

Following batch treatment and the settlement of the coagulated solids the pond water can be discharged. Settlement generally requires 1-2 hours following batch dosing.

3.4 Batch dosing procedure.

3.4.1 Determination of volume of water to be treated.

The entire volume of water in the bund is to be treated.

If the bund is to be used for batch treatment for a long period, determination of the volume of water in the bund could be simplified by installing a water level gauge with clear level markings at 10cm intervals. A table should be prepared giving the relationship between total bund volume and water level.

3.4.2 Determination of batch treatment dose.

The PAC dose required to achieve satisfactory removal of suspended solids from earthworks stormwater depends on physical and chemical characteristics of the soil.

The dose will be the same as determined for the automatic rainfall driven treatment system, or 1 litre to each 12.8 cubic metres of stormwater.

3.4.3 Application of PAC.

The PAC dose should be applied evenly over the surface of the pond as quickly as practicable. It is best to apply the dose in one application, rather than going over the surface of the pond 2 or more times.

The total PAC dose may be applied in one of two ways.

(a) Spray.

The PAC can be applied to the surface of the pond using a sprayer that produces large drops.

(b) Bucket.

Place no more than 1 litre of PAC in a 10 litre bucket, and throw the PAC onto the pond surface so that the PAC divides into drops before hitting the surface. For a small pond use 0.25 litre or 0.5 litre of PAC in the bucket.

3.4.4 Timing of batch treatment.

As the water in stormwater ponds often develops marked temperature gradients during warm days which can inhibit mixing of PAC that is added to the surface of the ponds and the settlement of coagulated solids, batch treatment should be carried out in the early morning to optimise mixing of the PAC with the stormwater and the subsequent settlement of coagulated solids, unless the day is cold and the development of a temperature gradient is unlikely.

Batch treatment can be carried out while discharge is occurring, although it would be desirable to stop the discharge while batch dosing and for a period to allow the coagulated sediment to settle.

3.4.5 Instruction of contractors personnel.

Michael Larcombe will demonstrate the batch dosing procedure to the person nominated by the contractor to carry out routine batch dosing.

3.5 Record keeping

The following records should be kept for each batch dosing.

- Pond identification
- Date
- Volume of water treated
- PAC dose, and total volume of PAC used
- Time of discharge.
- Person who carried out batch dosing.

These records are to be kept on site and made available to the Auckland Regional Council on request.

3.6 Responsibility for batch dosing.

Michael Larcombe will check the dose for the first batch dosing and demonstrate the method to the contractor. The contractor will have responsibility for routine batch dosing.

Michael Larcombe will provide technical assistance if required.

3.7 Equipment required.

Safety goggles
Black disc (minimum 50mm diameter on the end of a metre stick with centimetre scale)
20L containers for transport of PAC
Knapsack sprayer or 10L bucket.

TABLE 1. INSTRUCTIONS FOR MAINTENANCE OF PAC CHEMICAL TREATMENT SYSTEMS FOR EARTHWORKS STORMWATER.

REDUCING THE HEADER TANK WATER VOLUME.

The header tank is used to avoid dosing during the initial stages of rainfall when site conditions are dry and no runoff is to be expected.

The volume in the header tank is lowered using the lowest of the three outlet tubes.

After 3 days without rain - reduce volume to 50%.

After 6 days without rain - reduce volume to empty (level at lowest outlet).

REFILLING THE PAC RESERVOIR.

The PAC reservoir tank should be refilled when the white displacement tank is half full, or sooner if heavy rain is predicted. This is done by first emptying the white tank (baling with a bucket is efficient), and then refilling the black reservoir tank until the PAC level is at the lower edge of the outlet.

OBSERVATION OF WATER QUALITY IN POND.

The pond water quality will be observed at least weekly, and the clarity determined using a black disk and recorded on the monitoring sheet. pH shall be recorded once the pond has filled up to ensure that PAC dosing does not have an unacceptable effect.

PERIODIC SYSTEM CHECKS.

Check that the rainfall catchment tray is not leaking – especially along the lower edge of the tray. This should be done after rainfall has ceased.

Check the lower hose with the small tube outlet, from the header tank to the displacement tank, is not blocked.

MONITORING RECORDS.

A separate sheet is provided for monitoring records for each month. The information to be recorded is as follows:

Visual check - check the tray for leaks, the plumbing, and the hoses from the header tank. Record 'ok' or if maintenance is required write 'M' and note requirement in Notes column.

% Header full. This is the volume between the lowest and middle outlets. - After rain this should be either 100% after 12mm or more rain, or between 0-100% after less than 12mm rain; In summer: 50% when lowered after 3 dry days; 0% when emptied after 6 dry days.

% depth in Displacement Tank: Measure depth of water in cm. Reduces to 0 when emptied.

PAC volume added: Record PAC volume added. 1 drum PAC = 200L, 9cm in PAC 200L drum = 20L. Can be calculated from change in water level in displacement tank where 1cm change = 4 litres of PAC.

Pond Clarity: Record using black disc near pond outlet. (Refer above)

TABLE 2.

STORMWATER PAC CHEMICAL TREATMENT SYSTEM
MONITORING AND MAINTENANCE RECORD.

Site:

Pond No. Month: Maintenance Person:

Date	Visual check	% Header Full	Water depth In Displacement Tank (cm)	PAC Volume Added to reservoir Tank (L)	Pond Clarity (cm)	Pond pH	Notes on maintenance required or additional information	Initial
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
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29								
30								
31								

Babbage®
CONSULTANTS

West Coast Road Medium Density Housing Development

for

NZ Housing Foundation Trust

ENVIRONMENTAL AND CONSTRUCTION PLAN

Ref: 42608/C
November 2006

Architects ▫ Consulting Engineers ▫ Surveyors ▫ Project Managers

BDOC0323257

WEST COAST ROAD
MEDIUM DENSITY HOUSING DEVELOPMENT
DRAFT ENVIRONMENTAL AND CONSTRUCTION PLAN

This is a Working Document. Copies of this document have been issued to the following organisations.

	Revision:	42608	A	B	C	D
	Date:	Dec 2006				
Organisation	**Contact**					
NZ Housing Foundation	Brian Donnelly					
Auckland Regional Council	Roger Bannister, Manager – Sediment Team, Consents and Compliance	08/12/06				
Waitakere City Council	Michael Campbell, WCC Manager, Resource Consents	08/12/06				
Reintjes Consultants	Frank Reintjes	08/12/06				
Earthco Civil Ltd	Dave Husband					

CONTENTS

1.0 INTRODUCTION 1

2.0 THE SITE 1

2.1 IDENTIFICATION AND LOCATION 1

2.2 BACKGROUND 1

3.0 PROPOSED DEVELOPMENT 1

3.1 PURPOSE 1

3.2 INVOLVED PARTIES 2

3.3 RESOURCE CONSENTS 3

3.4 OUTLINE PROGRAMME 3

3.4.1 Overall Project Programme 3

3.4.2 Sequence Of Operations 3

4.0 SITE MANAGEMENT 4

4.1 OPERATING HOURS 4

4.2 TRAFFIC MANAGEMENT 4

4.3 PROTECTION OF SERVICES 4

4.3.1 Sanitary Sewer Drains 4

4.3.2 Gas/Oil Pipeline 4

4.4 SIGNAGE 4

4.5 SCREENS AND FENCING 5

4.6 SITE PREPARATION 5

4.7 EROSION AND SEDIMENT CONTROL 5

4.8 SITE STABILISATION 5

4.9 CONTROL OF NUISANCES 5

4.9.1 Dust Control 5

4.9.2 Wheel washing and road cleaning 6

4.9.3 Noise management 6

4.9.4 Litter control 6

4.10 COMPLAINTS RESPONSE 6

4.11 SITE RECORDS 6

5.0 HEALTH AND SAFETY 7

5.1 SITE INDUCTION 7

5.2 WELFARE FACILITIES 8

5.3 RISK ASSESSMENTS AND METHOD STATEMENTS 8

5.4 PERSONAL PROTECTIVE EQUIPMENT (PPE) 8

5.5 TOOLBOX TALKS 8

APPENDICES

APPENDIX A - Land Use Consent (Application No. RMA20061077)

APPENDIX B - Subdivision Consent (Application No.)
(To be appended when received)

APPENDIX C - Earthworks Consent (Permit No. 32791)

APPENDIX D - Diversion of Surface Water (Permit No. 33187)

APPENDIX E - Approval of Environmental & Construction Plan from ARC and WCC

APPENDIX F - Drawings

42608/G01	Rev -	Site Location Plan
42608/C01	Rev A	Topographical Plan (Sheet 1)
42608/C02	Rev A	Topographical Plan (Sheet 2)
42608/C03	Rev B	Earthworks Plan (Sheet 1)
42608/C04	Rev B	Earthworks Plan (Sheet 2)
42608/C05	Rev C	E&S Control Plan (Sheet 1)
42608/C06	Rev B	E&S Control Plan (Sheet 2)
42608/C07	Rev A	Sediment Control Details
42608/C08	Rev A	Sediment Control Details (Sheet 2)

APPENDIX G - Contractor's Site Management Structure

APPENDIX H - Contractor's Health & Safety & Environmental Care Operations Guide

APPENDIX I - Contractor's Hazard Identification Form

1.0 INTRODUCTION

This Environmental and Construction Management Plan has been prepared on behalf of NZ Housing Foundation Trust to satisfy the following conditions of the resource consents issued for the site (see section 3.3):

- Condition 16 of Auckland Regional Council (ARC) Permit No. 32791

All contractors, their sub-contractors and staff working at the site must comply with the requirements of this Environmental and Construction Management Plan and the conditions of the resource consents included in Appendix A, B, C and D at all times.

2.0 THE SITE

2.1 IDENTIFICATION AND LOCATION

The development site comprises two properties, 423-429 West Coast Road and 4 Pyramid Place, Glen Eden. The site is in close proximity to the intersection of West Coast Road and Woodbank Drive. The site has legal frontage to four roads – West Coast Road, Pyramid Place, Titch Place and Woodbank Drive.

A site location plan is presented as Drawing No. 42608/G01 in Appendix F. A plan showing the various parcels of land is included as Drawing No. 42608/C01 Rev A and 42608/C02 Rev A.

2.2 BACKGROUND

The history of the site, with respect to its former use was assessed by examination of aerial photographs from 1940, 1959 and 2001. The photographs indicate the site has remained largely unchanged, with the exception of some minor residential development in the south eastern part of the site and the construction of the stormwater pond in approximately 2001. The residential development appears to have comprised a single dwelling in 1940 with additional outbuildings being evident in 1959. These buildings are not evident in 2001.

3.0 PROPOSED DEVELOPMENT

3.1 PURPOSE

It is proposed that the site be redeveloped as an Integrated Community Housing Development involving the construction of 77 units containing 2,3,4 and 5-bedroomed houses and 2-bedroomed apartments. This is in accordance with the Operative Waitakere City District Plan in which the site is zoned:

- Living Environment
- General Natural Area
- Restoration Natural Area
- Riparian Margin Natural Area
- Non-Riparian Stream.

Stage 1 of the development programme includes the northern part of the site, Stage 2 the south eastern and Stage 3 the south western part of the site. The majority of the proposed residential dwellings are understood to comprise two

storey structures, although Stage 3 is understood to comprise two and three storey structures with basement level parking.

3.2 INVOLVED PARTIES

Site Owner: NZ Housing Foundation Trust

Contact: Brian Donnelly

Address: PO Box 36 027
Northcote
Auckland 1310

Telephone: 09 366005

Fax: 09 3675464

Earthworks Contractor: Earthco Civil Limited

Contact: Bruce Whittaker

Address: PO Box 112 295
Penrose
Auckland

Telephone: 09 579 7100

Fax: 09 579 7101

Consultant: Rientjes Consultants (Project Manager)

Contact: Frank Rientjes

Address: 29 Axtens Road
RD Bombay
Auckland

Telephone: 09 236 0200

Fax:

Consultant: Babbage Consultants Ltd (Civil Engineer)

Contact: Paddy Luxford

Address: PO Box 2027
Auckland 1

Telephone: 09 379 9980

Fax: 09 377 1170

The Contractors site management structure is included in Appendix G.

3.3 RESOURCE CONSENTS

The following resource consents have been acquired for the site:

Reference	Type of Consent	Consent Authority	Location
32791	Earthwork	ARC	Appendix C
33187	Diversion of Surface Water	ARC	Appendix D
RMA20061077	Land Use	WCC	Appendix A

The following resource consent is being acquired for the site:

Reference	Type of Consent	Consent Authority	Location
	Sub-Division	WCC	Appendix B

3.4 OUTLINE PROGRAMME

3.4.1 Overall Project Programme

Development of the site will span over one earthworks season. However, this may be altered depending on the site use requirements, weather conditions, availability of suitable materials etc.

No earthworks will be undertaken between 30 April and 1 October in any year without the prior agreement of the Manager, ARC.

It may be desirable to stockpile material at the site during the winter period (30 April to 1 October). Any stockpiling works will only be undertaken once written agreement from the ARC has been received and any sediment control measures required constructed.

3.4.2 Sequence Of Operations

The sequence of events in any stage of works will typically be as follows:

1. Strip vegetation to allow construction of all required sediment control measures.
2. Construct sediment control measures as necessary.
3. Contaminated material to be removed from Stages 1D and 2A.
4. Commence vegetation strip in area of earthworks.
5. Commence earthworks in Stages 1A, 1B and 1C.
6. Construct drainage, roading and retaining walls in Stages 1A and 1B.
7. Commence earthworks in Stage 1D, 2A and 2B.
8. **Stage 3 works to begin.
9. Construct drainage, roading and retaining walls and other works to complete sub-division.

**Stage 3 works will be scheduled appropriately within this sequence of operations. We are aiming to execute these works in this earthworks season, if this can not be done they will be scheduled for the next earthworks season.

A detailed methodology for the removal of the existing stormwater pond in Stage 3 will be submitted to ARC before works begin in this area.

4.0 SITE MANAGEMENT

4.1 OPERATING HOURS

Site Hours will be:

Monday to Friday	7.30am to 7.00pm
Saturday	8.00am to 5.30pm

No works shall be undertaken on public holidays or at times outside those stated.

4.2 TRAFFIC MANAGEMENT

All vehicles will access the site from Titch Place. A maximum speed limit of 5 km per hour shall apply across the whole site. The ends of Woodbank Drive and Pyramid Place will be cordoned off with a chain fence.

4.3 PROTECTION OF SERVICES

4.3.1 Sanitary Sewer Drains

Several sanitary sewer drains, including a Watercare 460 diameter main trunk sewer in the north eastern corner of the site, cross the site from approximately south to north. Prior to works commencing these will be located and demarcated on site, using drums and wooden stakes, painted so as to be visible.

Haul roads shall cross these drains at designated crossing points which shall be protected/strengthened as necessary. No construction vehicles shall cross these drains at any other point.

4.3.2 Gas/Oil Pipeline

A gas transmission pipeline (Vector's) and an oil pipeline (NZ Refinery Company's) cross in the north eastern corner of the site. Any works within this area are to be notified to Vector and work permits obtained by Vector's Field Technician (Telephone No. 0800 734 567).

Vector have erected marker posts and depth indicators along the route within the site.

A proper construction vehicle crossing point will also be constructed using fabric and aggregate running coarse. This area will be flagged and a work permit obtained from Vector.

4.4 SIGNAGE

At the start of the works an information board shall be installed adjacent to the site entrance. The following details will be supplied as a minimum:

- Contract Name
- Contractors Name
- Contact Person

- Contact Details (address, telephone number, mobile number)

4.5 SCREENS AND FENCING

Prior to commencement of works access point to the site shall be fenced to prevent unauthorised access and to avoid unauthorised dumping of waste occurring at the site. Gates or a barrier shall be installed at the entrance to the site to ensure that the site can be completely secured at night.

4.6 SITE PREPARATION

The site will be stripped of vegetation progressively as the earthworks proceed. No area of the site will be stripped for earthworks purposed until the appropriate sediment control measures have been implemented.

4.7 EROSION AND SEDIMENT CONTROL

Stormwater runoff and sediment at the site will be managed by the use of temporary and/or earthworks bunds as required by the Earthworks Consent (Permit No. 32791). The control measures have been designed in accordance with ARC Technical Publication 90: Erosion and Sediment Control: Guidelines for Land Disturbing Activities; 1999 and are shown in Drawing No. 42608/C05 Rev B and 42608/C06 Rev B.

All sediment control measures will be checked weekly and after all heavy rainfall events. Any sediment that has collected shall be removed.

The sediment control bund is will be constructed progressively to match the earthworks. Vegetation stripping will not commence in any area (apart from for bund construction purposes) until the bund for that catchment area is complete.

4.8 SITE STABILISATION

The site will be stabilised against erosion by placement of a straw mulch layer in a progressive manner. The straw mulch layer will be placed as soon a sufficiently large area of earthworks is complete to final levels. By prior approval from ARC areas for stabilisation by mulching can be substituted with topsoil.

All earthworks areas will be stabilised prior to 30th April or any other date as agreed in writing with the Manager, ARC.

Any stockpiles of material at the site will be stabilised by 30 April or any other date as agreed in writing with the Manager, ARC, if these are to remain at the site during the winter period.

4.9 CONTROL OF NUISANCES

4.9.1 Dust Control

The site will be operated in accordance with recognised good site management practice. Measures specifically aimed at minimising dust include:

- use of covering or damping down of the surface of materials stockpiles;
- use of a water cart to damp down all unsealed access roads and earthworks areas during dry weather;

- The use of appropriate plant for each operation.

4.9.2 Wheel washing and road cleaning

The site entrance shall be stabilised using aggregate so as to minimise the deposition of material on Titch Place.

If any earthworks materials associated with the site is deposited on the road it should be immediately removed. In addition, Titch Place shall be visually inspected after the last transportation vehicle of the day has left site. If any earthworks materials associated with the site have been deposited on the road these will be removed by hand or using a road sweeper immediately.

4.9.3 Noise management

All plant and equipment will be well maintained and appropriately silenced. Records of plant operating each day including the nature and location of the operation will be maintained throughout the works, in order to ensure that, should any complaints be received regarding unacceptable noise levels, the source of this noise can be identified and appropriate measures taken. Such measures may include restricting the volume of plant operating in a particular location at any time, maintenance or replacement of particularly noisy plant etc.

4.9.4 Litter control

The contractor shall manage all litter generated at the site by ensuring adequate litter bins are available throughout the welfare and office areas. These shall be emptied on a weekly basis and the waste disposed of at a suitably licensed facility.

All wind-blown litter shall be collected and disposed of together with waste generated at the site.

4.10 COMPLAINTS RESPONSE

All complaints received from any source should be responded to within 48 hours. Any complaints received by BCL or the site owner, relating to the site management or operations shall be forwarded to the contractor for his response.

All telephone conversations shall be recorded in writing.

A complaints file shall be kept on site which shall contain all letters/ faxes/ emails sent and received and/or records of telephone conversations. A summary of all complaints received, actions taken to satisfy the complainant and response made shall be forwarded by the contractor to BCL each Friday.

4.11 SITE RECORDS

The following records are to be kept by the Contractor and forwarded to BCL for inclusion in the validation/earthworks completion reports to be prepared by BCL:

Site Operations

- Record of Site Inductions

- Accident Book
- Weather each day
- Plant operating each day and their approximate location.
- No. of workers on site and their area of work.

Exported Material

If any material is removed off site the following information shall be recorded for each load of material. This will typically be in the form of a 'Load Manifest'.

- Date and time dispatched
- Source of material
- Material description
- Haulage contractor details (name, address, contact person, contact telephone number)
- Truck and trailer registration number
- Weight of material carried
- Destination of material

A copy of the disposal docket issued by the destination landfill site for each load of material must be attached to the load manifest for that load.

Testing and Analysis

Copies of all results of geotechnical testing and chemical analysis undertaken in accordance with the Remedial Action Plan must be kept on site and a copy forwarded to BCL.

5.0 HEALTH AND SAFETY

Operations at the site must comply with the Health and Safety in Employment Act, 1992 at all times.

The nominated person responsible for health and safety at the site is:

Name: Alistair Baker

Contact Details:
Postal - PO Box 112 295, Penrose, Auckland
Delivery – 665F Great South Road, Penrose, Auckland
Phone – Mobile 0274 244 483/Office 579 7100
Fax – 579 7101

5.1 SITE INDUCTION

All site workers and visitors will be given a site induction upon arrival on site. At a minimum the induction will cover the following issues:

- A review of the Environmental and Construction Plan (this document) including all Resource Consent conditions, and actions to be taken if contamination is suspected;
- A review of the Contractors Site Rules (a copy of which is enclosed in Appendix H);
- The nominated person responsible for health and safety and site first aider;
- The location of the site first aid kit, fire extinguishers and the muster point;
- Site hazards (other site users, moving plant and equipment, areas of contamination etc);
- The location of welfare facilities; and
- The procedure for reporting of accidents.

5.2 WELFARE FACILITIES

Welfare facilities (toilets, washrooms and a 'lunchroom') must be provided within the site compound area for the use of all site workers and visitors.

5.3 RISK ASSESSMENTS AND METHOD STATEMENTS

The Contractors method statements and risk assessments for each of the operations to be undertaken at the site are included in Appendix H.

5.4 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Appropriate PPE should be used at all times. All site workers and visitors must use the following PPE:

- Hard hat
- Steel soled and toe capped boots
- High visibility vest/jacket

For some operations (to be defined by the earthworks contractor in their method statements) the following PPE may also be required:

- Gloves
- Disposable overalls

5.5 TOOLBOX TALKS

Toolbox talks shall be held on a regular basis (ideally weekly) to remind site workers of the site rules, hazards (including the contaminated material on the site) present at the site and the measures that should be taken to mitigate those hazards.

Appendix A
Land Use Consent
(Application No. RMA20061077)

Waitakere City Council
Te Tatao o Waitakere

City of Waitakere District Plan

REPORT FOR DISCRETIONARY ACTIVITY APPLICATION SECTIONS 93, 94, 94A – 94D, 104, 104A – 104D ASSESSMENT AND DETERMINATION IN ACCORDANCE WITH THE RESOURCE MANAGEMENT ACT 1991

1.0 SUMMARY OF PROPOSAL

To construct 77 residential units and subdivide into 61 lots (under RMA20061078) with net areas ranging from 263m² to 840m² requiring landuse consent for; medium density housing, shared driveway, earthworks, vegetation alteration, impermeable surfaces & building within the Riparian Margin, height, height in relation to boundary, and development on a flood sensitive site.

2.0 APPLICATION DETAILS

Planner:		Felicitas Dhliwayo
Site Address:		423-429 West Coast Road & 4 Pyramid Place, Glen Eden
Applicant:		New Zealand Housing Foundation
Date Received:		26 June 2006
Resource Consent No:		RMA20061077
Building Consent No:		Not yet lodged
Ward:		Waitakere
Legal Description:		Lot 2 DP 339810 (CT 163628) & Lot 3 DP339810 (CT 163629)
Address for Service:		Matthew Paetz Babbage Consultants P O Box 2027 Auckland
Site Area:		Lot 2- 4.9336 hectares Lot 3- 7948m²
Unit Site Area(s):		Net unit areas vary from 263m² to 840m² (see table One below).
District Plan:	Human Environment:	Living
	Natural Area(s):	General / Riparian/ Restoration
	Landscape Elements:	Riparian Margin - 7metres
	Hazards:	**Lot 3 DP 339810** Special Feature Nos: 7762 (Flooding); 11689 (drainage easement); 11690 (ROW easement); 12074 (natural flowpath); 12077(overland flowpath) **Lot 2 DP 339810** High Pressure Natural Gas Pipeline Special Feature Nos: 12071 (replanting of reserve); 12073 (natural flowpath); 12076 (overland flowpath); 12087 (flooding).
	Roading Hierarchy:	District
Further Information Required:		Tree Planting Plan, Ecowater requirements, Revised Landscaping

	Plan & Revegetation shrubs, tree mixes.
Date Requested:	24/07/06, 03/08/06, 25/08/06 & 21/09/06
Date Received:	3/08/06, 25/08/06, 21/09/06 & 16/10/06
Any Affected Persons:	No
Approval Given:	NA

TABLE ONE- LOT SIZES

Lot No	Area m²	Lot No	Area m²	Lot No	Area m²	Lot No	Area m²
1	415*	16	395*	31	371*	46	377*
2	380*	17	475**	32	349	47	372*
3	380*	18	353*	33	383*	48	361*
4	380*	19	405*	34	411*	49	369*
5	380*	20	434*	35	415*	50	363*
6	380*	21	397*	36	446*	51	366*
7	381*	22	405*	37	426*	52	364*
8	403*	23	840**	38	439*	53	354*
9	402*	24	404*	39	439*	54	469**
10	388*	25	506**	40	439*	55	370*
11	353*	26	451**	41	370*	56	1416*
12	374*	27	354*	42	431*	57	268
13	350*	28	413*	43	444*	58	263
14	433*	29	412*	44	459**	59	273
15	363*	30	438*	45	370*	60	318
						61	3743
62 (Drainage Reserve to vest)	3005	66	1511 (Drainage reserve to vest)				
63 (Road to vest)	3302	67	7012 (Drainage reserve to vest)			70 (road to vest)	997
64 (Drainage Reserve to vest)	2556	68	1289 (Road to vest)			71 (Road to vest)	3684
65 (Drainage reserve to vest)	1956	69	3177 (Road to vest)				

** Site areas > permitted activity density of 450m²
* Site areas > limited discretionary activity density of 350m²

Locality Diagrams:

Figure 1- View of the subject site(s) as shown on Colour Orthography Map (March 2000)

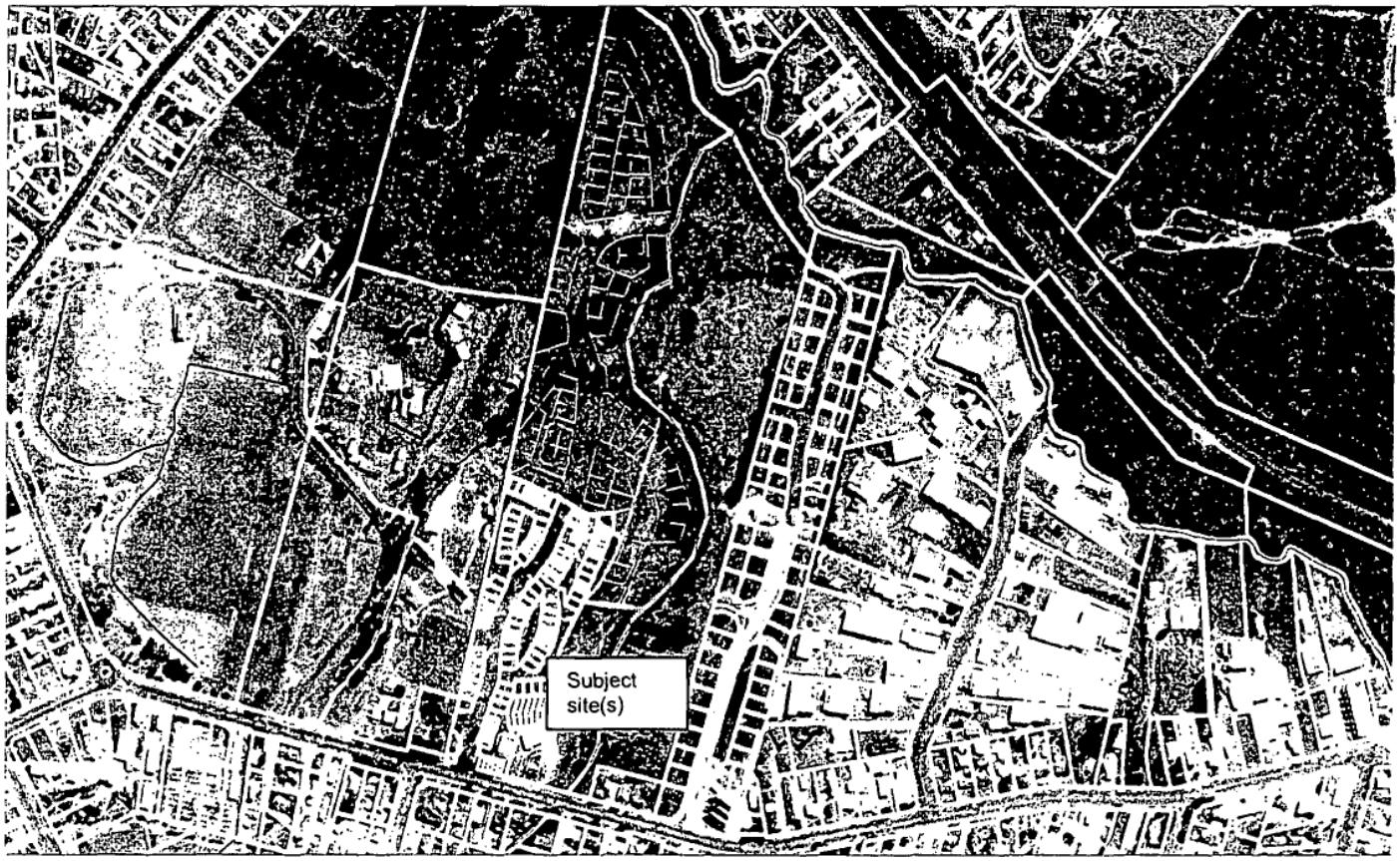


Figure 2- Location of subject site(s) as shown on Natural Environment Map.

2.1 Documents considered for this report include the application documentation and the site visit checklist completed on 10/07/2006. Specialists reports provided included;

- Landscape/Visual Assessment/ Arborist Report prepared by SOUL Environments.
- Traffic Assessment Report prepared by Traffic Design Group.
- Geotechnical Assessment Report prepared by Babbage Consultants.

2.2 BACKGROUND

The application was lodged as a combined landuse and subdivision consent (RMA20061078). Due to the complexity of the application it was considered necessary to separate the two consents to allow the applicants to start earthworks before the subdivision application is finalised. Therefore this consent only refers to the landuse aspect of the proposal.

3.0 REASON FOR APPLICATION- RELEVANT DISTRICT PLAN RULES
Extent Of Infringement And Type Of Activity Proposed

LIVING ENVIRONMENT

Rule 2.3 - Density

Discretionary activity consent is required for medium density housing or dwellings not meeting the performance standards specified in Rule 2.1 or 2.2. The proposal would result in net unit

areas ranging from 263m² to 469m² on a 4.9336 hectare and 7948m² site located outside the Glen Eden medium density housing 700m radius.

Rule 5.3 - Height in Relation to Boundary

Discretionary activity consent is required for buildings to project beyond the permitted recession planes set out in Rule 5.1. The proposed dwellings on proposed Lots 1-22 and 24-61 would project beyond the '2.5+ 45°, 2.5+35° and 2.5m+55°' recession plane along the internal boundaries by varying heights.

Rule 4.1 - Building Height

Discretionary activity consent is required for buildings to exceed the 8 metre maximum height permitted in Rule 4.1. The proposed dwellings on Lots 9, 30, 54, 55 and 61 will exceed the 8 metre maximum height by the following varying heights;

- 4 level apartment Type "2B" on Lot 61

Maximum extent of infringement = 3.960m (eastern façade)
Minimum extent of infringement = 1.095m (western façade)

- *Northern-most 3 level apartment Type "2A" on Lot 61*

Maximum extent of infringement = 115mm (eastern façade)

- *Southern-most 3 level apartment Type "2A"on Lot 61*

Maximum extent of infringement = 1.010m (eastern façade)

- *Proposed dwelling on Lot 9*

Maximum infringement = 250mm

- *Proposed dwelling on Lot 30*

Maximum infringement = 500mm

- *Proposed dwelling on Lot 54*

Maximum infringement = 2700mm

- *Proposed dwelling on Lot 55*

Maximum infringement = 3200mm

However, I note that the medium density housing criteria require that the maximum height of buildings should not exceed 11 metres.

Rule 12.3 – Carparking and Driveways

Limited Discretionary Activity for a shared driveway serving more than 10 dwellings (Living Environment Rule 12.3). The proposed right of way A will serve a total of 18 dwellings on proposed lots 57-61.

GENERAL NATURAL AREA

Rules 2.2 & 2.3 - Vegetation Alteration

Controlled Activity and Limited Discretionary consent is required for (a) the clearance of exotic and native vegetation less than 6 metres in height and/or 600mm in girth and vegetation listed within the Removable Vegetation Appendix and Environmentally Damaging Plants Appendix, to a total cleared area greater than 500m²; and (b) clearance of native and exotic vegetation higher than 6 metres and/or more than 600mm in girth. The proposed site works would require the removal of trees and exotic weed growth on the site.

Rule 3.4 - Earthworks

Discretionary Activity consent is required for earthworks not meeting the performance standards of Rule 3.1, 3.2 or 3.3 where the application is accompanied by a Management Plan. The proposal requires 40 000 cubic metres of earthworks.

RIPARIAN MARGIN NATURAL AREA

Rule 2.4 – Vegetation Alteration

Discretionary Activity consent is required for vegetation alteration/ clearance for the purpose of establishing driveways, roads or infrastructure or stream crossings associated with a Greenfields Subdivision.

Rule 3.2- Earthworks

Discretionary Activity consent is required for earthworks necessary to provide for infrastructure or stream crossings associated with a Greenfields Subdivision not otherwise meeting the performance standards of Rule 3.1. A pedestrian footbridge over the Waikumete Stream that traverses the site from north to south is required in order to provide access to the neighbouring Albionvale medium density development to the west.

Rule 4.1 – Impermeable Surfaces

Limited Discretionary Activity consent for the establishment of impermeable surfaces not exceeding 10% of the part of the site within the Riparian Margin. The 1.5 metre wide pedestrian walkway will be partially located within the Riparian Margin.

Rule 7- Buildings

Limited Discretionary Activity consent is required for the construction of the footbridge within the Riparian Margin.

CITY WIDE RULES

Rule 1.1 – Natural Hazards

Limited Discretionary Activity consent is required for buildings on land and subdivision of land known by Council to be subject to inundation. Consent is also sought for earthworks and vegetation alteration on land known to be subject to inundation.

Overall the application is considered to be a **Discretionary Activity**. The proposal complies with all other development control rules under the District Plan.

4.0 SITE AND PROPOSAL

4.1 Site Description

The subject site comprises two properties (being 423-429 West Coast Road and 4 Pyramid Place), each on separate certificates of title, with a combined site area of 5.7284 hectares. The site is described in the application as follows; "The development site is located on West Coast Road, Glen Eden, in close proximity to the intersection of that road with Woodbank Drive. The site has legal frontage to four roads – West Coast Road, Pyramid Place, Titch Place and Woodbank Drive."

The site is of an irregular shape, which is largely a result of the topographical characteristics of the locality, in particular the location and route of the watercourse (Parrs Stream) running through the site roughly in a meandering north-south direction. To the south of Pyramid Place there is a row of mature pine trees running from east to west.

In the southern portions of the site the land is gently sloping downwards from east to west, towards the stream channel and associated riparian margins, before sloping upwards from the stream channel to the western site boundary. The land to the north of Pyramid Place on the site becomes steeper as part of the site drops quite steeply into a gully towards the stream. The west side of the site is moderately steep.

The larger area at the north end of the site is relatively flat with a gentle slope down to the stream. The site is presently covered in overgrown grass, weeds, gorse and trees. There is a mixture of native and exotic trees, predominantly located around the edge of the stream and at the northern boundary.

The area has a new subdivision on its western boundary which has the roading network laid and the construction of some houses has commenced. A more mature subdivision borders the site on the eastern side. There are no structures currently on the site.

The neighbourhood character is varied containing a mix of land use activities within 400 metres of the site, including developed and undeveloped residential land, open space developed for active and passive recreation, undeveloped open space, Marae, school, dairy and fruit and vegetable shops.

The surrounding neighbourhood contains a mix of housing styles, including medium density terraced housing, free-standing town houses on sites generally ranging between 350m² and 450m² (i.e. Woodbank Drive development), and conventional house and garden development where the site areas are in excess of 600m² (i.e. West Coast Road)".

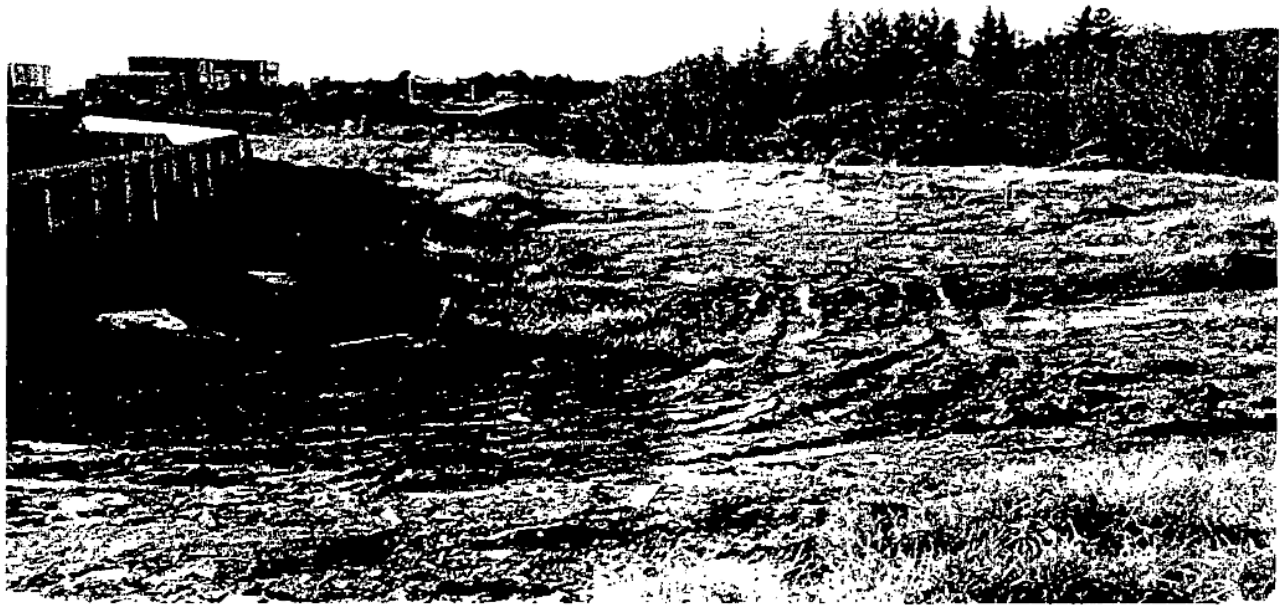


Figure 3- View of subject site looking North from West Coast Road.

Figure 4- Looking west from Pyramid Place- Note the existing neighbouring Albionvale development.

4.2 Proposal

The proposal is for a 3-stage medium density residential housing development that would involve the construction of 77 new units, and subdivision into 61 freehold lots (under RMA20061078) in conjunction with roads and drainage reserves to vest in Waitakere City Council. The proposal involves the construction of 14 apartment units on proposed Lot 61, 4 apartment units on proposed Lot 56 which will be unit titled, with the rest of the dwellings being on free hold titles.

The 3-staged development will be carried out as follows;

Stage 1

Lots 1-35, Drainage reserves to vest (Lots 65-67) and Roads to vest (Lots 68-71).

Stage 2

Lots 36-56, Road to vest (Lot 63), Drainage reserve to vest (Lot 64).

Stage 3

Lots 57-61, Drainage reserve to vest (Lot 62)

The proposed apartments on proposed Lot 61 and the dwellings on proposed Lots 9, 30, 54 and 55 will infringe the 8 metre maximum height requirement by varying heights. The proposed apartments and dwellings will also infringe the height in relation to boundary requirements along the internal boundaries. The material of the proposed houses will be mainly concrete slab foundations (where grade permits), timber weatherboard, masonry cladding, powder coated aluminium windows, and coloursteel roofs. Timber pole retaining walls are proposed on the property boundaries. The retaining walls will be generally positioned between individual residential lots or on the existing property boundary to create the necessary building platforms. Approximately 0.5 metre high key stone variety retaining walls are also proposed between the properties and the road frontage.

The proposal is for the removal of all existing trees with the exception of some native trees and shrubs to be found among the general growth in the reserve area. The weed infested areas will also be cleared. Trees to be retained include the mature totara and the mature kahikatea, both close to the stream, as well as groups of kanuka with their mainly native under storey. Planting is proposed along the stream, the reserves, road reserve and on individual lots.

A pedestrian footbridge is proposed to allow pedestrian access from the adjacent Albionvale Road subdivision to the West Coast Road Housing Development. The access point in the West Coast Road Housing Development will be to the stream edge pathway in the vicinity of the northern end of Road 3 crossing to the reserve on the other side of the stream. The bridge will be based upon a Waitakere City Council preferred design of appropriately treated glulam supporting beams with galvanised steel handrails. The bridge will span seven metres with no need for intermediate supports within the watercourse.

Approximately 40 000 cubic metres of earthworks are proposed. The applicants propose cut to fill over most of the site to provide for benched building platforms, a loop road around the northern end of the site to connect Titch Place with Woodbank Drive, a cul-de-sac street from the end of Pyramid Place and a shared driveway to service the development that will have direct access to West Coast Road.

5.0 SECTIONS 93 and 94 ASSESSMENT

5.1 Statutory Context

As a Discretionary Activity, the application for resource consent should be publicly notified in accordance with section 93 of the Resource Management Act, unless it can be demonstrated that the requirements of sections 93 and 94 of the Act can be satisfied. Applications must be notified (either publicly or in a limited manner) if the adverse effects of the activity on the environment are more than minor or all affected persons have not given their written approval.

Section 93 provides that applications for resource consent need not be notified where:

"(a) The application is for a controlled activity ; or
(b) *The consent authority is satisfied that the adverse effects of the activity on the environment will be minor.*

Section 94 provides for limited notification if not all adversely affected persons have given their written approval, whereby all affected persons will be notified (but not the public at large) and have the opportunity to make a submission and be heard. Section 94(2) also provides for an application to proceed on a non-notified basis without notice being served, *"if all persons who in the opinion of the consent authority, may be adversely affected by the activity have given their written approval to the activity."*

Recent case law has indicated that consent authorities should give careful consideration to the question of notification, and should publicly notify applications for resource consent unless it can be clearly demonstrated that the criteria of sections 93 and 94(2) are met. A comprehensive assessment of any potential adverse effects is required. This conservative approach is underscored by the relatively wide definitions of "environment" and "effects" that are set out respectively in sections 2 and 3 of the Act. In determining whether or not an adverse effect on the environment of any activity will be minor, Council may take no account of the adverse effect of an activity on the environment or any person if the Plan permits an activity with that effect (sections 94A and 94B).

In relation to adversely affected persons, case law has established that the Council is only able to disregard adverse effects that would be 'de minimis' (Bayley CA 115/98). This concept can be taken to describe effects that are negligible or whose occurrence would be remote. In the case of the current application, this threshold has been adopted as the correct basis for assessing whether any person may be adversely affected by the activity.

In terms of determining adverse effects on the environment and whether a person would be adversely affected by the proposed activity, Section 94A and 94B gives Council the discretion to make permitted baseline comparisons i.e. a comparison between the environment (which includes both the subject site and the neighbouring environment) as it exists at the time the application is considered and (the effects) of activities that are permitted by the Plan even if hypothetical, as compared with the effects of the proposed activity. Case law has established that any such hypothetical developments must be not be "fanciful" in terms of what could reasonably be expected to establish there.

When considering effects under Section 94A and 94B, regard may be had to any condition which, if imposed under any decision to grant consent would eliminate or reduce the adverse effect to one which would be minor for the purposes of section 94A or to a point where it would be de minimis or only a remote possibility for the purposes of section 94B.

5.2 ADVERSE EFFECTS ASSESSMENT

The following assessment of effects is undertaken on the basis that the level of effects arising is avoided, remedied or mitigated (as appropriate) by the proposed consent conditions contained in this report.

5.2.1 Water Quality and Quantity

There would be no more than de minimis adverse effects in relation to water quality/quantity arising from the proposed activity over the medium and long term as it would be located within the urban area of the City and any discharges would be severely restricted prior to entering the nearby Waikumete Stream and its tributaries.

Council's Subdivision Engineer, Ms Lucy Lunevich, has assessed the proposal (memorandum dated 6 October 2006) and has concurred that the proposed stormwater design initiatives would mitigate the potential impact of the increased stormwater runoff. Accordingly, it is concluded that subject to the implementation of these mitigation measures, as proposed by the applicant, the adverse effect on water quantity and quality would be no more than de minimis. Ms Lunevich has recommended the inclusion of conditions of consent to ensure that the stormwater flow and volume from the development is kept to predevelopment levels for various storm events. This is also necessary to ensure that the already severe downstream flooding is not increased as a result of this development. Recommended conditions of consent will also ensure that appropriate treatment devices are installed to mitigate any adverse effects of the proposed development on local waterways and receiving environments.

5.2.2 Native Vegetation, Vegetation and Fauna Habitat

There would be no more than de minimis adverse effects in relation to vegetation and fauna habitat as a result of the proposed activity as the site is within the urban area, is already modified and it is not proposed to remove any vegetation that is generally protected.

The proposed development will involve the clearance of most of the native and exotic vegetation on the site, including some environmentally damaging plants. Weed species scattered throughout the Riparian Margin to be removed include woolly nightshade, willow, privet, salix caprea, and climbing honeysuckle. Trees and vegetation to be retained are shown on the plan prepared by Willy Coenradi, titled, "Housing Foundation HZ, West Coast Road Development (Part of 423-429 West Coast Road), Vegetation and major features, Sheets 1 and 2" dated 12 June 2006, as follows;

- A mature totara and area of mature native vegetation highlighted as #4 and #5 on the above referenced plan.
- A large Kahikatea, on the western side of the stream towards the northern end reference #7.
- A group of naturally occurring native revegetation, referenced #6.
- A Cordyline australis, reference #13. The tree is located within the proposed drainage reserve at the northern end of the site.
- There are two existing Pear trees, located to the north of the proposed stormwater detention area at the northern end of the site. The landscape plan prepared by SOUL Environments, reference LSP-01, dated 16/06/06 shows that the northern most specimen is to be retained.
- The restoration area along the northern boundary which includes part of the explanade reserve contains kanuka, Corosma Robusta, Myrsine australis and Cyathea with an understorey of Arex and ferns.

Council's Parks Planner and Landscape Architect have reviewed the application and make the following comments;
"While it is preferable that appropriate existing vegetation be retained, once weed control and vegetation alteration commence on site, it may not be practicable or possible to retain vegetation referenced above. Therefore, it is recommended that a level of flexibility be afforded in this regard and that the applicant and/or their arborist assess the situation in conjunction with a Waitakere City Council arborist or a representative thereof."

Conditions of consent have been recommended which will mitigate adverse effects of vegetation alteration. These include the provision and implementation of a comprehensive weed management strategy, the use of protective fencing around the dripline of the trees to be retained, and the implementation of the proposed tree planting on the individual sites, the streets and the reserves. It is concluded that subject to the implementation of these measures, as agreed to by the applicant, any adverse effects resulting from the clearance of vegetation will be less than minor.

5.2.3 Land / Soil

There would be no more than de minimis adverse effects on soil/existing landform as a result of the proposed activity as the site is within the urban area, is not known to Council to be affected by stability hazards and is already modified.

The proposal is for approximately 40 000 cubic metres of earthworks over the whole site inorder to recontour the site and provide appropriate building platforms and access ways. Retaining walls are proposed to allow for usable building platforms and also along property boundaries. Earthworks embankments are proposed at the interface with the existing stream to accommodate both usable building platforms and necessary elevation separation for the 100 year flood level of the stream. Council's Consultant Engineer, Mr Evan Giles has reviewed the information provided with the application and undertaken a site visit. Mr Giles made the following comments regarding the proposal and the Babbage Consultants Geotechnical Assessment Report dated June 2006;

Challenging ground conditions for this project include soft to firm soils, highly plastic clays, organic soils, minor shallow instability along stream banks, and relatively shallow ground water conditions in places. However, geotechnical solutions to these issues are available and the geotechnical report includes a number of recommendations and recognises additional investigations will be needed.

Overall, the recommendations in the geotechnical report are appropriate for the site.

Mr Giles has therefore concluded that the site is suitable for the proposed development and with the inclusion of the recommended conditions of consent the adverse effects will be no more than minor. I concur with Mr Giles' assessment and have included the recommendations and conditions of consent if granted.

The applicants have provided an Erosion and Sediment Control Plan and compliance with this plan would be required to manage the short term adverse effects arising from the presence of earthworking machinery on the site and the traffic generated as a result. It is also noted that resource consents would be required from the Auckland Regional Council (ARC) for earthworks and for works within a watercourse and the site works would therefore be subject to monitoring from both the Waitakere Council and the ARC.

5.2.4 Air

As the site is within the urban area and the proposed activity does not include air emissions of any kind, there would be no adverse effects on air quality.

5.2.5 Ecosystem Stability

As the site is within the urban area and the existing environment is already modified there would be no more than de minimis adverse effects on the stability of ecosystems as a result of the proposal.

5.2.6 Outstanding Natural Features; Landforms, Geological Sites,

The subject site is not identified in the District Plan as being within an area identified as containing "outstanding natural features" within the City (refer Maps 3.5D & E). The site is within the urban area of the city and the environment is already extensively modified and therefore the proposed activity would not adversely affect any identified outstanding natural features.

5.2.7 Natural Character of Coast and Margins of Lakes, Rivers and Wetlands

There would be no adverse effects in relation to the natural character of the coast and margins of lakes, rivers and wetlands arising from the proposed activity as it would be located within the urban area of the City. Appropriate placement of silt and erosion control measures during earthworks would prevent silt runoff and the subsequent installation of stormwater devices would minimise downstream effects from increased stormwater discharges.

5.2.8 Outstanding Landscapes

The subject site is not identified in the District Plan as being within an area identified as "outstanding landscape" within the City (refer Map 3.6B). The site is within the urban area of the city and the environment is already extensively modified and therefore the proposed activity would not adversely affect any identified outstanding landscapes.

5.2.9 Amenity Values - Health and Safety, Landscapes, Local Areas and Neighbourhood Character

- *overshadowing, loss of daylight and sunlight, scale, form, height, bulk, physical dominance, privacy*

The proposal would involve subdividing into 61 lots and the construction of 59 stand alone houses, 14 apartments on Lot 61 and 4 apartments on Lot 56. A range of building typologies are proposed with bigger houses on larger sites as follows;
- Four detached 2 bedroom units with single carports
- Eighteen 2-bedroom apartment units
- Thirteen detached 3-bedroom houses with single garages
- Twenty-eight detached 4-bedroom houses with double garages
- Six 4-bedroom houses with single garages
- Eight 5-bedroom houses with double garages

The materials of the houses will be mainly concrete slab foundations (where grade permits), timber weatherboard, masonry cladding, powder coated aluminium windows, and colour steel roofs.

All dwellings will comply with the relevant bulk and location requirements of the Living 1 Environment Rules except the proposed apartment units on Lot 61 that will exceed the permitted 8 metre maximum height requirement by a maximum 3.96 metre height. It is noted that the 4 level apartment type "2B" units will have a 3.96 metre maximum height infringement on the eastern façade and a 1.095 metre maximum height infringement on the western façade (external boundary). The northern-most 3 level apartment type "2A" units will infringe by a maximum of 115mm along the eastern façade (internal boundary). On the other hand, the southern-most 3 level apartment Type "2A' will infringe the maximum height requirement by 1.010 metres along the eastern façade. The proposed dwellings on Lots 9, 30, 54 and 55 will also have the following maximum height infringements respectively; 250mm, 500mm, 2700mm and 3200mm. The following comments are made regarding the height infringements;

Lot 61- It is noted that the height infringement noticeable from the adjoining Albionvale property will be a maximum 1.095 metre height infringement. The subject site slopes down from the western boundary and the apartment buildings are sited on the steeper gradients, where they are set into the hillside with carparking underneath and usable outdoor living space on the upper ground level. However, as the ground level parking in these buildings is cut into the slope, these buildings will present as 2 and 3 storied structures to the neighbouring properties to the west. In addition, the proposed apartments are strategically located next to the existing apartments on the adjoining property and there is a separation distance of approximately 10 metres between the existing and the proposed development. Given the above factors, it is considered that the height infringement will not be clearly evident when viewed form the neighbouring sites. It is further noted that the buildings will not infringe the recession plane to the western boundary thus complying with the performance standards with respect to shading and light accessibility to the adjoining site.

Lots 9 and 30- The height infringements on these sites are considered to be minor and hence adverse effects will be minimal. Any adverse effects will be limited to the subject site and no neighbouring properties will be affected.

Lots 54 and 55- The proposed dwellings on Lots 54 and 55 will be setback approximately 45-50m from the nearest external boundary of the neighbouring Albionvale development to the west and approximately 40 metres from the nearest external boundary of the neighbouring Woodbank development to the east. The application notes that the height infringement is a result of the topography which slopes down relatively steeply at this point and requires that the dwellings be on poles. It is therefore considered that the bulk of the buildings, when viewed from the west will appear like a complying two storey dwelling as the poles will not present as a solid face. The visual impacts are also minimised by the change in topography, as the land slopes up again after the stream towards the external boundary. Therefore the houses on neighbouring properties to the west will be located on a higher contour and hence the height infringement will not be clearly distinguished from that western side. The proposed houses will also be lower than the existing houses on the neighbouring property to the east and hence any adverse effects will be minimal. Given the topography of the land and the separation distances, it is considered that any adverse effects will be no more than minor.

The proposed units on Lots 1-22 and 24-61 would project beyond the '2.5+ 45°, 2.5+35° and 2.5m+55°' recession plane along the internal boundaries by varying heights. It is noted that in the majority of the cases, the infringements are limited to the one corner of the building or roof ridgeline such that there would be no significant loss of daylight or sunlight to habitable rooms or to the sites in general. The application also states that relationships between proposed buildings in the development have been carefully considered to ensure critical issues such as daylight admission, outlook and privacy are addressed. This has been achieved through placement of units within allotments, orientation of buildings, and placement of windows. I concur with the applicant's assessment and consider that given that the infringements are along internal boundaries and the intensity of the development, it is considered that any dominance or privacy effects will be minimal as they are expected in this type of development. In addition, the proposal complies with height in relation to boundary requirements on the external boundaries and given the setback of the proposed houses from the existing houses on adjoining properties, any adverse privacy and dominance effects on adjoining properties will be negligible.

- *visual amenity, streetscape, sense of place, neighbourhood character, amenity values, views, on site amenity, adequate open space*

The majority of the proposed development is single or double storied, of typical suburban scale. The exception is the apartment buildings in stage 3, which comprise 3 and 4 level buildings. However, as the ground level parking in these buildings is cut into the slope, these buildings will present as 2 and 3 storied structures to the neighbouring properties to the west. The application also notes that the lower density development is generally located towards the eastern boundary of the site, which adjoins existing low density suburban development, whilst the higher density apartment development is located towards the western boundary of the site which adjoins a higher density residential subdivision. I concur with the applicants' assessment and consider that the proposed development will be in keeping with the existing neighbourhood character and is a type of development that is expected in this area.

The applicants propose to plant the streets, reserves and front gardens of individual lots. In addition the reserve areas, particularly along the margins of the stream will be planted with native vegetation. Council's Parks Department provided guidelines for their requirements in relation to the development during the pre-application meeting and meetings held during the processing of this consent. A revised landscaping plan was submitted following the request by Council's Parks Department. The application and the further information including the revised landscaping plan was reviewed by Council's Consultant Parks Planner, Ms Jodie Mitchell and Council's Landscape Planner, Mr Gordon Griffin who have recommended the inclusion of conditions of consent (in the event that consent is granted). The inclusion of the recommended conditions of consent will ensure that the proposed development will result in a residential development characterised by well landscaped reserves and streets to ensure that the amenity of the area is enhanced. It is acknowledged that the subject site will lose its 'pastoral feel', however, the proposed development is one that is anticipated by the District Plan zoning and will be consistent with neighbourhood character and amenity.

It is therefore concluded that there would be no more than de minimis adverse effects on visual amenity and neighbourhood character as the proposed development is similar in character to the surrounding environment, and adequate open space would be provided.

- *infrastructural capacity & availability*

The proposal has been assessed by Council's Subdivision Engineer, Lucy Lunevich with regard to infrastructural issues, such as stormwater, water supply and wastewater (refer to memorandum dated 6 October 2006). Ms Lunevich has made a number of recommendations with respect to the proposed subdivision. It is concluded that subject to the implementation of her recommendations any adverse effect of the development on the existing sanitary sewer system would be no more than de minimis.

- *Traffic generation, on-street parking, driver safety, pedestrian safety, roading capacity and roading network, traffic noise, vehicle movements, access and driveway manoeuvring, driveway width & gradient*

Council's Transport Assets Department were involved in the preapplication meeting and provided guidance on WCC's requirements. The application was reviewed by Council's Transport Assets Engineer, Mr John Carroll who provided the following comments.

Transport Assessment Report:

This application is supported by a transport assessment report prepared by Martin Magyar, Senior Traffic Engineer and reviewed by Gary Vlieg, Associate of Traffic Design Group; dated 21 June 2006. This report includes existing transport network, proposed development, traffic effects, parking, road layout, servicing, construction traffic, district plan requirements and conclusions; stating "It is found there is no traffic planning reason to preclude acceptance of the development proposal as presented." Transport Assets generally agree with this report.

Location:

The subject two adjoining sites are generally located between West Coast Road, Pyramid Place, Titch Place and Woodbank Drive. The project adjoins recent, similar land development projects off Albionvale Road, but is mostly separated by the Parrs Stream from them.

All these named roads are designated as Local Road in Council's roading hierarchy, with increasing traffic volumes as each new development is completed and dwellings become occupied.

Stages & Road Access:

- Stage 1A: Lot 71 Road to Vest (Road Pt1, 2 & 4) – services Lots 1 to 7 and 67 Local Purpose (Drainage) Reserve to Vest, accessed from existing Titch Place and Woodbank Drive.
- Stage 1B: Lot 70 Road to Vest (Road Pt1 & 3) – services Lots 8 to 18, accessed from Stage 1A.
- Stage 1C: Lot 69 Road to Vest (Road Pt1) – services Lots 26 to 35 and 67 Local Purpose (Drainage) Reserve to Vest, accessed from Stage 1A.
- Stage 1D: Lot 68 Road to Vest (Road 5) – services Lots 19 to 25 and 65 Local Purpose (Drainage) Reserve to Vest, accessed from Stage 1A.
- Stage 2A: Lot 63 Road to Vest (Road 6, 7 & 8) – services Lots 36 to 46 and 64 Local Purpose (Drainage) Reserve to Vest, accessed from Pyramid Place.
- Stage 2B: Lot 63 Road to Vest – services Lots 47 to 55 and 64 Local Purpose (Drainage) Reserve to Vest, accessed from Stage 2A.
- Stage 3: Shared Driveway (ROW), lettered A & B – services Lots 57 to 61 and 62 Local Purpose (Drainage) Reserve to Vest, accessed from West Coast Road.

Road to Vest in Council:

- Road 1 – about 337m long from existing Woodbank Road to Road 2, with a varied width road reserve (adjacent to Local Purpose (Drainage) Reserve) with a 5.50m wide carriageway and indented parking bays.
- Road 2 – about 158m long from Road 1 (Woodbank Drive extension) to Road 2 (Titch Place extension), with road reserve to be 15.00m wide with 5.50m wide carriageway and indented parking bays.
- Road 3 – about 215m long running northwest from Road 2 to Road 1 with road reserve to be 12.5m wide with 5.50m wide carriageway.
- Road 4 – about 48m long from existing Titch Place to Road 2 with road reserve to be 14.9m wide with 7.50m wide carriageway - an extension of the existing road.
- Road 5 – about 67m long from Road 4 to end with road reserve to be 12.5m wide with 5.50m wide carriageway.

- Road 6 & 7 and 8 – about 192m long total from existing Pyramid Place to end and varied width, split horizontal and vertical road reserve with 3.50m wide carriageways with a cul-de-sac head and indented parking.

Shared Driveway:

- ROW lettered A & B – A servicing Lots 57 to 60 (4 lots – 2.7m wide minimum carriageway with passing bays and 1.3m services strip). B servicing Lots 61 & 62 Local Purpose (Drainage) Reserve (2 lots – 2.5m wide minimum carriageway with 0.7m services strip) [see Road 10 typical section with footpath].

Road Gradients:

The gradient design on the provided longitudinal sections complies with Council's Code of Practice for City Infrastructure and Land Development.

Driveway Gradients:

On completion of earthworks, all future driveway gradients should not exceed Council's 20% or 1 in 5 maximum desirable with change in gradient transitioning applied – subject to building consent processing.

Parking:

On-street:

- Road 1 will provide a total of 16 on-street indented visitor parks against the Local Purpose (Drainage) Reserve.
- Road 2 will provide a total of 5 on-street indented visitor parks on the west side only.
- Road 6 & 7 and 8 combined will provide a total of 6 on-street indented visitor parks along the garden island only and 2 at the end.
- Total on-street car parks = 29
- Shared Driveway will provide a total of 6 indented visitor parks on the west side near the entry.

Onsite with dwellings:

- Type 1 House (2-bdrm Senior/carport): Lots 57 to 59 (4) 2 car parks, carport & stack on driveway with reversing less than 20m to shared driveway – complies. [8 total]
- Type 2A House (2-bdrm apartments/basement double garage – 2-floors): Lot 61 (8) 2 car parks in 2x double garage with reversing less than 20m to shared driveway – complies. [16 total]
- Type 2B House (2-bdrm apartments/basement double garage- 3 floors): Lot 61 (6) 2 car parks in 4x double garage with reversing less than 20m to shared driveway – complies. [8 total].
- Type 2C House (2-bdrm apartments/basement triple Undercroft carport – 2-floors): Lot 56 (4) 3 car parks in 2x triple "Undercroft" garage with reversing less than 20m to road – complies. [16 total]
- Type 3 House (3-bdrm/single garage): Lots 2 to 4, 9 to 11, 13 & 14, 27 & 28, 43 & 44, and 46 (14) 2 car parks, integral garage & stack on driveway with reversing less than 20m to road – complies. [28 total]
- Type 4A House (4-bdrm/double garage): Lots 7, 8, 16 to 18, 33, 19 & 20, 24 & 25, 36 to 40, 45, 47, (17) 2 car parks in double garage with reversing less than 20m to shared driveway – complies. [34 total]
- Type 4B House (4-bdrm/double garage): Lots 29 & 30, 34, 48 to 54, (10) 2 car parks in double garage with reversing less than 20m to road – complies. [20 total]
- Type 4C House (4-bdrm/single garage): Lots 5 & 6, 21 & 22, 41, 55 (6) 2 car parks in single garage & stack on driveway with reversing less than 20m to the road – complies. [12 total]
- Type 5A House (5-bdrm/double garage): Lots 1, 12, 15, 26, 31 & 32 (6) 2 car parks in double garage with reversing less than 20m to road – complies. [12 total]
- Type 5B House (5-bdrm/double garage): Lots 42 (1) 2 car parks in double garage with reversing less than 20m to the road – complies. [2 total]
- Type 5C House (5-bdrm/double garage): Lots 23 (1) 2 car parks in double garage with reversing less than 20m to the road – complies. [2 total]
- Total onsite car parks = 158

The total number of car parks to be provided for the project is 193. There will be additional about 35 visitor parks in the driveways of dwellings with double garages (about 228 total) - the traffic consultant estimates about 220 car parks available. With the reasonable spread of on-street indented visitor car parks on the proposed roads and shared driveway the total parking provision should be adequate for this project.

Parking compliance will be checked as part of the building consent application processing for each lot/dwelling. It is noted that double garages are proposed for the apartments on Lot 61. It is recommended that a condition of consent be included requiring that the carparks for type 2B houses be allocated and clearly marked prior to occupation to ensure that each unit has at least one allocated carpark.

The proposal is for a shared driveway (ROW A) serving a total of 18 dwellings on proposed Lots 57-61. Council's Transport Assets Engineer is satisfied that the proposed shared driveway will provide for safe and efficient vehicular access from the road to buildings. Recommended conditions of consent will ensure that the proposed shared driveway is constructed in accordance with Council standards.

Therefore Transport Assets supports the proposal and has recommended the inclusion of conditions of consent (in the event that consent is granted) to ensure that the proposal complies with Council's Code of Practice, payment of bonds, road signs and the vesting of the roads in Council.

5.2.10 Heritage

There would be no adverse effects in respect of heritage items as the proposed activity would not be located near, or impact on any identified heritage item. However, given the scale and extent of the proposed earthworks, it is considered appropriate to include a condition in relation to the uncovering of archaeological features such as shell middens, hāngī, pit depressions, artefactual material or human bones that would require work to cease in the vicinity of the discovery and the relevant authorities to be contacted.

5.2 Conclusion in relation to Sections 93(1)(b) and 94 A:

Overall the adverse effect on the environment of the activity for which consent is sought would be no more than minor for the reasons stated above.

5.3 Sections 94 and 94B - Adversely Affected Persons

There are no persons considered to be adversely affected by the proposed activity because:

- It is noted that the adverse effects from bulk earthworks and vegetation alteration will be short term as they will be limited to the construction period. It is considered that the adverse effects would be managed through conditions of consent and mitigated in the medium to long term by restoration and landscape planting and the sealing of roads and re-grassing of sites.
- The proposed house designs and site layout would result in a residential development that has been anticipated by the District Plan zoning and associated rules and could be reasonably expected to occur on this site.
- Although the proposal does not comply with height in relation to boundary, the infringements are on the internal boundaries and hence the written approval of the current owners and occupiers is considered implicit. The 8 metre maximum height infringement is not defined as the infringing apartments are located adjacent to similar apartments on the neighbouring sites. In addition, the subject site slopes down away from the adjoining sites to the west and hence the height infringement cannot be clearly visualised.

5.4 Special Circumstances

Having regard to the matters discussed in this report it is considered that in accordance with S94C(2) of the Resource Management Act 1991 there are no special circumstances that warrant notification of the proposal for the following reasons:

- The subject site is located between and within close proximity to two Medium Density Housing nodes, associated with Glen Eden town centre and Sunnyvale railway station;
- The District Plan makes specific provisions for Medium Density Housing that include exemptions from the rules for building height (Rule 4), height in relation to boundaries (Rule 5), front yards (Rule 6), building coverage (Rule 7), building location (Rule 8), outdoor space (Rule 9) and car parking and driveways (Rule 12) that would otherwise be applied to residential development/activity in the Living Environment;
- The proposal is in accordance with the relevant criteria associated with the design elements for Medium Density Housing as discussed in the following Section 10.2 and also complies with the Living Environment bulk and location performance standards with minor exceptions for height and height in relation to boundary;
- The proposal is one which could reasonably be expected on such a site close to a town centre and which has been anticipated by the provisions of the District Plan.

6.0 SECTIONS 93, 94 AND 94A – 94D RECOMMENDATION

Pursuant to Sections 93 and 94 of the Resource Management Act 1991, it is recommended that this application be processed without being publicly notified for the following reasons:

- The adverse effect on the environment of the activity for which consent is sought will be no more than minor because of the following;
  - It is noted that the adverse effects from bulk earthworks and vegetation alteration will be short term as they will be limited to the construction period. It is considered that the adverse effects would be managed through conditions of consent and mitigated in the medium to long term by restoration and landscape planting and the sealing of roads and re-grassing of sites. In addition, the earthworks will be carried out in stages, therefore any adverse effects per given stage will be limited.
  - The proposed house designs and site layout would result in a residential development that has been anticipated by the District Plan zoning and associated rules and could be reasonably expected to occur on this site.
  - Although the proposal does not comply with height in relation to boundary, the infringements are on the internal boundaries and hence the written approval of the current owners and occupiers is considered implicit. The 8 metre maximum height infringement is not defined as the infringing apartments are located adjacent to similar apartments on the neighbouring sites. In addition, the subject site slopes down away from the adjoining sites to the west and hence the height infringement cannot be clearly visualised.

- No parties are considered affected as the proposal is in keeping with existing neighbourhood character and amenity.

- There are no special circumstances to warrant notification of this application.

Reporting Planner:..... **Date**: 30/10/2006
Felicitas Dhliwayo

7.0 SECTIONS 93, 94 AND 94A – 94D DETERMINATION

Acting under delegated authority and for the reasons set out in the above assessment this application for resource consent shall be non-notified, as recommended.

..... **Date**: 30 Oct 2006

Jeannette Ibrahim
Team Leader Consents

8.0 STATUTORY ASSESSMENT

8.1 As noted, the proposal requires consideration as a discretionary activity under the provisions of the Resource Management Act 1991. In considering the application, the consent authority shall have regard to the matters specified in Section 104. The relevant matters include a consideration of actual and potential effects on the environment, together with an assessment of the extent to which the proposal is consistent with the objectives, policies and rules of the District Plan.

9.0 ENVIRONMENTAL ASSESSMENT

In order to make a decision in terms of Section 104B of the Act it is necessary to undertake an analysis and assessment to determine whether the purpose and principles of the Act are being met (Part II) having regard to the matters set out in Section 104, the Fourth Schedule and any other statutory considerations.

Section 104(1) of the Act requires that Council have regard to any actual or potential effects on the environment, any relevant objectives, policies, rules or other provisions of a plan or proposed plan and any relevant regional policy statement and regional plan or proposed plan, and any other matters the consent authority considers relevant and reasonably necessary to determine the application.

When considering an application Council must not have regard to any effect on a person who has given their written approval to the application (section 104 (3)(a)).

10.0 SECTION 104 ASSESSMENT

10.1 Actual and Potential Effects on the Environment

As a Discretionary activity a variety of issues are relevant when determining the nature and scale of adverse effects on the environment including effects on visual amenity, privacy, aural amenity, traffic generation, infrastructural capacity and construction effects. These aspects have been discussed previously in Section 5.2 of the accompanying Sections 93 and 94 Assessment and Determination Report. The assessment of effects concluded that there would be adverse effects from bulk earthworks and vegetation alteration but these would be short term, largely confined to the subject site and managed through proposed conditions of consent and that medium to long term effects would be mitigated or remedied through the sealing or re-grassing of exposed surfaces and through landscaping and restoration planting. The proposed medium density housing development is of a scale, intensity and design that has been anticipated by the District Plan and is a development that could reasonably be expected to occur on this site given its Living Environment zoning.

In addition the Plan has been prepared with a clear "effects-based" emphasis. Consideration of the proposed development in relation to each of the Plan's assessment criteria would ensure that all the relevant matters contained in Section 104 of the Act have been addressed. The relevant assessment criteria from the Operative District Plan, together with comments as to whether each criterion can be satisfied are as follows:

10.2 MEDIUM DENSITY HOUSING

The following assessment considers the proposed development in relation to each of the medium density housing design elements. Details of the criteria that apply to each of the design elements are included in the Medium Density Housing Criteria. This proposal incorporates housing designs that are quite conservative and typical of 'normal' housing development but part of the site layout includes housing at a more intense density so it is appropriate to use these criteria.

They provide appropriate performance standards against which to measure more intensive development than that experienced with 'standard' residential allotments. It is noted that the District Plan specifically exempts Medium Density Housing from consideration against the rules for building height (Rule 4), height

in relation to boundaries (Rule 5), front yards (Rule 6), building coverage (Rule 7), building location (Rule 8), outdoor space (Rule 9) and car parking and driveways (Rule 12) that would otherwise be applied to residential development/activity in the Living Environment.

10.2.1 Design and Location of Structures (Design Element A- Assessment Criteria A1-A8)

The proposal involves the construction of 14 apartment units on proposed Lot 61, 4 apartment units on proposed Lot 56 which will be unit titled, with the rest of the dwellings being on free hold titles. All the proposed dwellings will have direct frontage onto the road.

The density of the proposed development is generally consistent with that of the surrounding neighbourhood. The apartment blocks on Lot 61 which are the higher density element of the proposal are located to the western boundary, where they adjoin a recent medium density development which utilises terrace housing as a predominant built form. The location of these buildings helps ensure a smooth transition between the higher density development to the west and the subject site.

All of the proposed units have street frontage, with front doors visible from the street. The application states that, "The rear yards and gardens will be fully fenced to 1.8 metres for 'stand up" privacy. Side boundary fences will be 1.35metres tall for "sit down" privacy and the front boundaries will be defined either by retaining walls and planting, or by 0.8metre fencing and low planting. These fences will be a sturdy "trellis type" combined with vines to give privacy for outdoor living areas".

The surrounding area is highly developed, and the subject site does not contain a lot of significant vegetation. The most significant trees on the site will be retained. Substantial new planting to streets, reserves and front gardens is being proposed. Exotic ornamentals and deciduous trees are proposed in the streets and on individual properties which will be in keeping with the suburban character. The reserve areas will be planted with native vegetation. It is considered that the proposed planting will enhance the amenity of the subject site and will complement the existing neighbourhood character.

All sites have been provided with outdoor space of a useable shape, size and orientation so that good access to daylight and sunlight is available to most sites for at least half of the day.

TABLE 2 – SUMMARY OF HOUSING TYPES AND LOCATION

UNIT DESIGN TYPE	OCCURS ON LOT NUMBER:	GFAm^2 (Dwelling Only	NUMBER OF LEVELS	NUMBER OF BEDROOMS
1	57, 58, 59, 60	62.91	Single	2
2A	61 **	81.25	Three	2
2B	61 ***	81.25	Four	2
2C	56 **	63.94	Three	2
3	2, 3, 4, 9, 10, 11, 13, 14, 27, 28, 43, 44, 46	118.35 (59.55/58.8)*	Two	3
4A	7, 8, 16, 17, 18, 19 20, 24, 25, 30, 33, 36, 37, 38, 39, 40, 45, 47	126.26 (58.85/67.4)*	Two	4
4B	29, 34, 35, 48, 49, 50, 51, 52, 53, 54	128.4 (59.92/68.48)*	Two	4
4C	5, 6, 21, 22, 41, 55	126.26 (58.85/67.41)*	Two	4
5A	1, 12, 15, 26, 31, 32	143.4 (58.9/84.5)*	Two	5
5B	42	127.4 (58.9/68.5)*	Two	5
5C	23	150	Single	5

* numbers in brackets indicate ground floor and upper floor GFA's respectively
** Constructed as a 3-level apartment building (Number of units/floor)
*** Constructed as a 4-level apartment building (Number of units /floor).

10.2.2 Site Layout (Design Element B Assessment Criteria B1 – B12)

The proposed development will be well connected into the neighbourhood as the proposed roads will connect from four existing roads, being West Coast Road to the south, Pyramid Place, Titch Place and Woodbank Drive to the east. Cul-de-sacs are proposed off West Coast Road and Pyramid Place, whilst the accessways coming off Titch Place and Woodbank Drive are connected allowing for circulation around the northern portions of the development. The proposed roads are of varying widths with

associated services berms and footpaths. A footbridge is also proposed to allow pedestrian access from the adjacent Albionvale development to the west to the subject site. It is therefore considered that the proposed road and associated footpath network will be linked to the existing road network, offering good connectivity both within the proposed development and with the existing neighbouring development.

As mentioned before all of the proposed dwellings will have direct road frontage. All streets are well overlooked from kitchens or living areas with direct access to front doors. Large amounts of secure, private open space are provided to the rear of the proposed lots.

The application states that the design of the development has been undertaken comprehensively, to ensure integration in design between the various building stages. Such a comprehensive approach also ensures consistency and unity in architectural design, style and still allows for variety. The dwellings have been oriented, as much as practical, to face towards the north, maximising daylight/sunlight admission. At the same time, this also allows for maximisation of views and outlook towards the stream area of the site. I concur with the applicants' assessment and consider that the proposal meets the above assessment criteria.

10.2. 3 Building Location (Design Element C – Assessment Criteria C1 – C8)

The proposed development has been designed in such a way that the lower density development is generally located towards the eastern boundary of the site, which adjoins existing low density suburban development along Woodbank Road. On the other hand, the higher density development on proposed Lot 61 is located towards the western boundary of the site which adjoins a higher density residential development (Albionvale development).

All dwellings would comply with the bulk and location performance standards for the Living Environment with the exception of the proposed units on Lots 9, 30, 54, 55 and 61 where the maximum height will be infringed by varying heights. It is however noted that the maximum height is still below the 11 metre maximum height permitted in the Medium Density Rules. Although the proposed units exceed the permitted maximum height, they comply with the height in relation to boundary requirement along the external boundaries. It is also noted that the 3 and 4 level buildings on Lot 61 have ground level parking which is cut into the slope, therefore these buildings will present as 2 and 3 level structures which are similar to the buildings on the adjoining property to the west. In addition, the setback of the proposed buildings from the external boundaries will mitigate any adverse visual effects.

The proposed units have internal height in relation to boundary infringements. In all cases the buildings are set well back from the boundaries or affect only one corner of a building so that there would be no significant loss of daylight or sunlight to habitable rooms or to the sites in general or to adjoining sites from these infringements.

Each of the building designs ensures that there is adequate open space of a useable size and shape and site layout ensures that there would be de minimis adverse effects between sites or within sites in terms of the specific amenity values of access to light, overshadowing, form and scale of buildings, building height and privacy. Building design would therefore satisfy the assessment criteria for this design element.

10.2. 4 Visual and Acoustic Privacy (Design Element D – Assessment Criteria D1 – D6)

The application states that, "Zero-lot boundaries are generally provided on the southern boundaries, where the southern elevations of the dwellings present a largely "windowless" façade. This protects the privacy of the north facing outdoor yards of the adjoining properties to the south. Such design techniques also help provide for acoustic privacy, by physically separating the internal and outdoor living areas of adjoining units." I concur with the applicants' assessment and note that the proposed dwellings to the south and east are single and double storey only and are well setback from the adjoining property boundaries. Many of the outdoor spaces on these dwellings are located to the rear and adjoining the neighbouring properties to the south and east. Approximately 1.8 metre high fences are also proposed which will effectively screen the outdoor spaces from the adjoining properties. Given the above, it is considered that outdoor space and living rooms of adjacent houses will be protected from direct overlooking by the proposed development.

It is noted that very few of the proposed dwellings have shared walls. A number of the dwellings have garages sharing walls or a dwelling sharing a wall with a neighbouring garage. Proposed dwellings on Lots 56, 57, 58, 59, 60 & 61 have shared walls but it is recommended that all dwellings are built to an appropriate standard to minimise noise nuisance and ensure acoustic privacy within and between

dwellings. Many of these apartments have been clustered towards the western end of the development and adjoining a similar development to the west of the subject site. Despite their proximity to each other, these sites as well as all others in the development have been positioned within their sites to ensure normal residential levels of acoustic and visual privacy. There is adequate separation between buildings, car parking is located towards the front of the dwellings and street noise and movements would be those typical of a local road.

10.2.5 Carparking and Vehicle Access (Design Element E)

The proposed development will be connected into the neighbourhood via the proposed roads which will connect from four existing roads, being West Coast Road to the south, Pyramid place, Titch Place and Woodbank Drive to the east. Cul-de-sacs are proposed off West Coast Road and Pyramid Place. The proposed roading network has been reviewed by Council's Transport Assets engineers, as part of the applicants Traffic Impact assessment and as part of the previous pre application meeting held on 28 November 2005. Transport Assets supports the application subject to compliance with recommended conditions of consent.

A total of 193 carparks are proposed for this development. Two carparks per dwelling are proposed for the majority of the dwellings except for the apartments on proposed Lot 61 which will have 1 allocated carpark per dwelling. In addition 35 visitor carparks will be provided in the driveways of dwellings with double garages. Council's Transport Assets Engineer, Mr John Carroll is satisfied that with the reasonable spread of on-street indented visitor car parks on the proposed roads and shared driveway the total parking provision should be adequate for this project.

All of the proposed dwellings will have road frontage and hence vehicles will be reversing less than 20 metres to the road. It is therefore considered that the design of the proposal will allow safe and efficient vehicle movements on the road network. Many of the dwellings will have road frontage and hence vehicles will be able to reverse directly onto the road. The application states that to enhance urban design outcomes, driveways from dwellings to the road have been 'tapered' to reduce width of vehicle crossings at the street frontage. In addition, low level screening is proposed along the front boundaries. Therefore, the driveways and car parking areas will not dominate the view of the development from the road.

10.2.6 Open Space (Design Element F – Assessment Criteria F1 – F8)

As discussed in Section 10.2.1 above, the majority of the sites have outdoor spaces located on the northern sides of the dwellings to ensure adequate admission of sunlight. This also allows for maximisation of views and outlook towards the stream area of the site. The outdoor areas will also be landscaped to create a pleasant outlook from the living spaces. Retaining walls are proposed along the property boundaries with a maximum height of 2 metres. It is considered that the proposed retaining walls will not result in permanent shading and will still allow access to daylight for most of the day. A condition has been recommended to limit retaining to a maximum of 2 metres to ensure that retaining remains in scale with lot size and housing style.

Each proposed residential unit will have a minimum of 25m² outdoor space per bedroom with all of the units having private garden areas. Some of the 3 and 4 bedroom units have outdoor spaces of more than 150m² in area. The apartments on Lot 61 will have deck/patio areas adjacent to the houses. Furthermore, the outdoor space has been established on site to also provide gardens and recreational areas. This would add to onsite amenity and would be utilised by residents of the development for largely passive recreation. The higher density apartments will also overlook the stream and the drainage reserves which will be well planted in native trees. The fencing adjacent to the reserve and stormwater ponds will be standard metal "pool type" fencing combined with planting for visual amelioration. This type of fencing will allow visual surveillance of the adjacent reserve areas from houses and gardens and will also be used by the residents as active and passive recreation.

No community space is proposed within the site because an esplanade reserve along the stream and drainage reserves located to the north and west of the development will be used by residents as open space. In addition, the Parrs Park is located further to the north west of the site. The proposed pedestrian bridge will provide access from the subject site to the west and Parrs Park.

10.2.7 Dwelling Entry (Design Element G Assessment Criteria G1 – G5)

The proposed lots have road frontage and the front doors have been designed and located to ensure that they are clearly visible from the road or shared driveways. The provision of low (0.8 metre) fencing and

landscaping of the front boundary will ensure that the house entries will be well visible from the road. In addition, the layout and design of the units will provide a sense of address.

10.2.8 Site Facilities (Design Element H – Assessment Criteria H1 – H9)

The provision of individual street entries would allow normal street collections of refuse by public contractors. All of the units will be provided with some storage space either within the garages or by the stairwells.
Rubbish will be collected from individual properties rather than from a shared facility. Individual sites will be required to be separately reticulated for all required utilities and road design would be required to meet the necessary standards to allow easy access for emergency vehicles (fire, ambulance, police).

10.2.9 Landscape Treatment (Design Element I – Assessment Criteria I1 – I11)

The proposal includes the removal of all existing trees with the exception of the groups of native trees along the stream. The trees to be removed include a group of Cordyline australis and pinus radiata trees located to the south of the subject site. Native trees including mature totara, kanuka and kahikatea located along the stream will be retained. Although vegetation clearance of almost the entire site is proposed, the majority of the vegetation to be removed is of low quality including weed species. In addition, extensive tree planting is proposed as follows;

- Native tree planting to the reserves
- Ornamental street tree planting
- Landscape treatment of individual sites comprising lawns, garden beds, hedges and specimen trees
- Ornamental planting on individual sites.

Permeable fencing is proposed throughout the development to ensure that all sites have views to the street and/or to the reserves whilst also providing passive surveillance. The proposed retaining walls will have a maximum height of no more than 2 metres.

Water collecting surfaces have been kept to a minimum by proposing relatively small footprints with additional living space provided as second storeys where appropriate and restricting paved areas to the entrance, service areas and outdoor patios. The proposed development will comply with the permitted 60% maximum impermeable surfaces. Therefore the proposed development will create additional impermeable surfaces that are expected of this type of development. In addition, Medium density housing criteria allow up to 65% impermeable surfaces and therefore this development produces impermeable surfaces that are well below the maximum permitted.

Overall, it is considered that the development meets the design element assessment criteria set out for Medium Density Housing.

10.3 VEGETATION ALTERATION/ GENERAL NATURAL AREA & RIPARIAN MARGIN

General Natural Area

2(a) The extent to which vegetation alteration adversely affects amenity values and neighbourhood character
2(c) The extent to which vegetation alteration creates, contributes to, or exacerbates stability problems.
2(d) The extent to which development is located or can be designed in a way that avoids the need to remove vegetation, and in particular the removal of any trees which are notable examples of their species.
2(e) The extent to which the proposed vegetation alteration is necessary:

- *to accommodate development otherwise permitted by the Plan*
- *to ensure the safety or integrity of existing development on the site*
- *for pruning to provide light*
- *for pruning to preserve public views.*

2(h) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and/or through payment or provision of a financial contribution.
2(i) The extent to which vegetation alteration reduces the ability to create linkages between native vegetation, fauna habitats, or natural features or landforms.

2(j) The extent to which vegetation alteration can be offset by restoration or enhancement around and within the area subject to the application.
2(k)The extent to which vegetation alteration adversely affects the significance, natural character or landscape value of any natural features.

Riparian Margin

2(a) The extent to which vegetation alteration adversely affects the overall resilience, biodiversityand integrity of the Green Network and, where possible, utilises areas of the site not within the Riparian Margins Natural area.
2(b) The extent to which vegetation alteration reduces the extent, range and linkages between vegetation, fauna habitat and natural features.
2(c) The extent to which vegetation alteration adversely affects the mauri (life-force) of native vegetation.
2(d) The extent to which clearance adversely affects the water quality of taiapure or mahinga mātaitai.
2(e) The extent to which vegetation alteration adversely affects the historical, cultural or spiritual significance of any site or waahi tapu of significance to iwi.
2(f) The extent to which vegetation alteration adversely affects the significance of or landscape or natural character or heritage value of any cultural features.
2(g) The extent to which trees which are notable examples of their species are retained.
2(h) The extent to which vegetation alteration creates edge effects from wind or light on remaining native vegetation.
2(i) The extent to which vegetation alteration adversely affects heritage or amenity values.
2(j) The extent to which vegetation alteration can be offset by restoration or enhancement around and within the area subject to the application.
2(k) The extent to which vegetation alteration creates, contributes to, or exacerbates stability problems.
2(l) The extent to which existing cleared areas area utilised for proposed development.
2(m) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and/or through payment or provision of a financial contribution.
2(n) The extent to which the proposed vegetation alteration is necessary:

- *to accommodate development otherwise permitted by the Plan.*
- *To ensure the safety or integrity of existing development on the site.*
- *For pruning to provide light.*
- *For vegetation alteration (other than clearance) for cultural purposes in accordance with established protocols.*
- *For pruning to preserve public views.*

2(o) The extent to which vegetation alteration adversely affects the natural, cultural and amenity values of surface water in rivers and lakes.
2(p) The extent to which vegetation alteration affects or may affect the water quality and acquatic ecosystem health of any part of the waterway, adjacent to, upstream of or downstream of, the vegetation alteration
2(q) The extent to which any vegetation alteration associated with a subdivision can be avoided by carrying out works on parts of the site which are not in a green network Natural Area.
2(r) The extent to which vegetation alteration associated with a subdivision is necessary to construct a stream crossing.
2(s) The extent to which vegetation alteration associated with a subdivision is minimised.

It is noted that loss of vegetation would result in short term changes to neighbourhood character but would be offset by the proposed restoration planting of the reserves and landscape treatment throughout the residential development. Compliance with the proposed conditions of consent and implementation of the re-vegetation and street planting plans would ensure that the amenity of the currently weed infested and degraded site will be enhanced. The view of the site from the adjoining roads and the residential neighbourhood would also be enhanced. Although the development would result in a change from the present pastoral 'feel' of the site, residential transformation of the site has been anticipated by the District Plan zoning and this would be achieved in this proposal with no overall adverse effects on visual amenity, streetscape, neighbourhood character, sense of place or on- and between- site amenity.

The application has been reviewed by Council's Consultant Parks Planner, Ms Jodie Mitchell, who comments that, "In the medium to long term, the removal of weeds will improve the biodiversity of the Green Network. Over time water quality will be enhanced providing a more hospitable environment for in-stream native wildlife and the facilitation of an ecological corridor within the Riparian Margin will improve the integrity of the Green Network". Particularly, it is noted that the proposed vegetation clearance in the Riparian Margin is not to provide for building platforms but a public walkway adjacent to Parrs stream and clearance of weed species and planting of vegetation incompatible with the development and proposed

enhancement of the Riparian area. In addition, no retaining walls are proposed within the Riparian Margin as battering is proposed instead. It is also noted that the introduction of native seedlings, saplings and specimens through re-vegetation will enhance the natural ecosystem of the reserve and surrounding area. Council's Landscape Architect, Mr Gordon Griffin has also reviewed the proposed landscaping and is also satisfied that the proposed planting on individual sites will be sustainable and will enhance the amenity of the individual sites and the surrounding area. Therefore, the removal of vegetation as proposed would therefore result in no more than minor adverse effects in the long term.

10.4 EARTHWORKS

3(a)The extent to which the scale of earthworks is consistent with the scale of development being undertaken.
3(b)The extent to which earthworks adversely affect the potential for restoration or enhancement around the area of earthworks.
3(c)The extent to which earthworks reduce the amount, range and linkages between representative vegetation, fauna habitat and natural features.
3(d)The extent to which earthworks adversely affect the significance or landscape value or natural character of natural landscape elements or other natural features.
3(h)The extent to which earthworks adversely affect the visual amenity of the site or adjoining sites.
3(i) The extent to which cut and fill activities involving earthworks are confined to the site rather than being transported off the site.
3(j)The extent to which earthworks may harm the health and safety of residents.
3(k)The extent to which heavy vehicle traffic generated to the site by earthworks activities creates:
physical damage to a road
a situation hazardous or unsafe to road users.
3(l)The extent to which earthworks are necessary to accommodate development otherwise permitted by the Plan.
3(m)The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through the provision of works and services on or off the site and/or through payment or provision of a financial contribution.
3(n) The extent to which a driveway requiring earthworks is designed to minimise earthworks, particularly by limiting the distance of the driveway on the site.
3(o)The extent to which earthworks are avoided.
3(p)The extent to which unavoidable earthworks are minimised.
3(q)The extent to which the duration of earthworks is minimised.

The proposal is for 40 000 cubic metres of earthworks to be carried out in three stages. The earthworks are required to provide building platforms and to raise parts of the site to ensure that all construction will be above the 100 year flood level of the adjacent stream. It is noted that there will be minor earthworks within the Riparian Margin but the natural contour of the slope will not be altered. There would be no more than minor adverse effects in relation to water quality or quantity as a result of the proposed earthworks activity on the site as it would be located within a modified urban area and stream protection would be an essential requirement of any consent, if granted. Silt and erosion control measures would be required to be installed to ensure that there would be no off-site effects from silt-laden runoff during the construction period.

The site is known to be affected by flooding hazards and is already modified. The geotechnical report provided by the applicant was reviewed by Council's consultant geotechnical engineer who noted some shallow instability along the stream banks. Conditions of consent have been recommended to address any instability issues.

As noted above, bulk site works would be required to prepare the building platforms and for the formation of roads, driveways and parking areas. These works are considered to be appropriate for the scale of the development. Conditions of consent would be recommended to ensure any adverse effects are no more than minor and contained within the site. Such conditions would include silt and erosion controls, cleaning up and/or repairing damage to roadways and footpaths, transport of excess spoil to an approved disposal site and re-use of topsoil on the site. Medium to long term effects resulting from this re-contouring of the site would be off set and enhanced by the proposed restoration planting of the riparian margins and the landscape treatment proposed through out the site. Relatively high perimeter retaining walls will be required particularly along the eastern boundary, but they will have a maximum height of no more than 2 metres. Therefore over time the present unkempt and degraded appearance of the site will evolve into a pleasant urban landscape of gardens and trees and views at varying elevations overlooking the reserves to the north and west.

10.5 IMPERMEABLE SURFACES & RIPARIAN MARGINS

4(a)The extent to which impermeable surfaces degrade or lead to the degradation of existing water quality in the adjoining stream, river, lake, wetland, harbour or sea.
4(b)The extent to which impermeable surfaces adversely affect the overall resilience, biodiversity and integrity of the Green Network.
4(c) The extent to which impermeable surfaces adversely affect potential for restoration or enhancement around and within the area subject to the application, and adjoining sites.
4(d) The extent to which impermeable surfaces reduce the extent, range and linkages between vegetation, fauna habitat and natural features.
4(e) The extent to which impermeable surfaces adversely affect the significance and the landscape value of natural features.
4(f) The extent to which impermeable surfaces contribute to the creation, or exacerbate stormwater flooding problems on-site or in any other part of the stream catchment, with particular regard to impacts in known flood-prone areas and any impacts on an existing stormwater system.
4(g) The extent to which runoff from impermeable surfaces adversely affects the quality of receiving natural water, including the life-supporting quality of natural water.
4(h) The extent to which impermeable surfaces destroy or harm surrounding native vegetation.
4(i) The extent to which impermeable surfaces result in adverse effects on the mauri (life force) of water.

4(j) The extent to which impermeable surfaces result in adverse effects arising from soil loss from the site.
4(k) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through the provision of works and services on or off the site and/or through payment or provision of a financial contribution.
4(l) The extent to which proposed impermeable surfaces are necessary to accommodate development otherwise permitted by the Plan.
4(m) The extent to which impermeable surfaces adversely affect the natural, cultural and maneity values of surface water in rivers and lakes.
4(n) The extent to which the impermeable surfaces affects or may affect the water quality and aquatic ecosystem health of any part of the waterway, adjacent to, upstream of or downstream of, the impermeable surfaces.

It has been previously noted that the performance standard for impermeable surfaces for reticulated sites in the General Natural Area allows up to 60% net site area and this can be increased to 65% of net area for Medium Density Housing. All proposed sites comply with the 60% maximum impermeable surfaces. Given that a reasonable area of the site will be drainage reserves, it is considered that total impermeable surfaces including roads and ROW would not be greater than 60%. The development is therefore unlikely to generate adverse effects from increased impermeable surfaces as restoration planting, landscape treatment and stormwater detention and treatment would mitigate discharge effects and enhance water quality and quantity entering the waterways, would improve ecological linkages and add positively to the mauri of the riparian environment. Financial contributions have been required to further offset future costs of maintenance and mitigation of subsequent impacts.

The proposed walkway within the Riparian Margin will result in impermeable surfaces not exceeding 10% of that part of the site within the Riparian Margin. It is noted that the proposed walkway will be 1.5 metres in width, will be of concrete or asphalt and will not be within the Riparian Margin for the entire length. Therefore, it is considered that the impermeable surface meets the assessment criteria as it does not result in inappropriate or excessive modification to the edges of a stream or a Riparian Margin. As noted earlier, minor earthworks are proposed within the Riparian Margin and erosion and sediment control measures as proposed by the applicant will ensure that any adverse effects on the stream will be no more than minor. The proposed tree planting within the reserves will ensure that the proposed impermeable surfaces within the Riparian Margin will not result in adverse effects on the stream. Therefore the impact on the riparian margins would be no more than minor with restoration treatment enhancing the riparian ecosystem post-development.

10.6 BUILDINGS WITHIN THE RIPARIAN MARGIN

7(a) The extent to which the building will adversely affect the overall resilience, biodiversity and integrity of the Green network.

7(b) The extent to which the building will reduce the extent, range and linkages between vegetation, fauna habita, and natural features.

7(c) The extent to which the building will adversely affect the mauri (lifeforce) of native vegetation.

7(d) The extent to which the building will adversely affects the water quality of taiapure or mahinga mātaitai.

7(e) The extent to which the building will adversely affect the historical, cultural or spiritual significance of any site or waahi tapu of significance to iwi.

7(f) The extent to which the building will adversely affect the significance or landscape value or natural character of any natural features.

7(g) The extent to which the building will adversely affect amenity.

7(h) The extent to which the building can be offset by restoration or enhancement around and within the area subject to the proposed development.

7(i) The extent to which the building creates, contributes to, or exacerbates flooding, erosion stability problems or the potential for flooding, erosion or stability problems.

7(j) The extent to which the building will exacerbate or contribute to degradation of natural watercourses in a way that destroys or reduces their ability to support instream vegetation and fauna; their ability to be used as a healthy food source; their clarity; water quality and flow and their sustainability for swimmers.

7(k) The extent to which the building is necessary to provide access to a site that will avoid the need to pipe or culvert a stream or natural watercourse or water body.

7(l) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and/or through payment or provision of a financial contribution.

7(m) The extent to which the building affects or may affect the water quality and aquatic ecosystem health of any part of the waterway, adjacent to, upstream of or downstream of, the bulding.

The proposed footbridge will be constructed within the Riparian Margin to link the subject site with the existing Albionvale development to the west. The footbridge will be constructed in accordance with the WCC Code of Practice Standard Detail for footbridges or a suitable design agreed by the Parks Consent Planner. Council's Consultant Parks Planner, Ms Jodie Mitchell has reviewed the application and is satisfied that the above assessment criteria can be met due to the following reasons;

1. The Green Network will not be adversely affected as the footbridge will not interrupt the flow of the watercourse, or result in discharge.
2. The footbridge is not of a physical size so as to reduce the extent, range or linkages between vegetation, fauna habitat, or natural features.
3. Amenity will not be affected by the footbridge, it will be constructed in accordance with design principles adopted by WCC through the Code of Practice.
4. Given the minor nature of the building work, it will not exacerbate flooding, erosion or stability problems.
5. The footbridge provides a valuable pedestrian link from the subdivision on the western side of Parrs Stream to the walkway along the eastern side of the Stream and also the proposed housing development.

I concur with Ms Mitchell's assessment and consider that the adverse effects of the bridge on the Riparian Margin will be no more than minor.

10.7 BUILDING HEIGHT

4(a) The extent to which the height of buildings will create adverse effects on neighbourhood character.
4(b) The extent to which the height of buildings will intrude into the privacy of adjoining sites.
4(c) The extent to which the height of buildings will intrude into the privacy of adjoining sites.

4(d) The extent to which the height of buildings will interupt views from the sites vicinity.

The proposed dwellings being building types '2B' and 2'A' on proposed Lot 61 will exceed the 8 metre maximum height by the following varying heights;

- *4 level apartment Type "2B"*
  Maximum extent of infringement = 3.960m (eastern façade)
  Minimum extent of infringement = 1.095m (western façade)

- *Northern-most 3 level apartment Type "2A"*
  Maximum extent of infringement = 115mm (eastern façade)

- *Southern-most 3 level apartment Type "2A"*
  Maximum extent of infringement = 1.010m (eastern façade)

As discussed before, the height infringement noticeable from the adjoining Albionvale property will be a maximum 1.095 metre height infringement. The subject site slopes down from the western boundary and the apartment buildings are sited on the steeper gradients, where they are set into the hillside with car parking underneath and usable outdoor living space on the upper ground level. As the ground level parking in these buildings is cut into the slope, these buildings will present as 2 and 3 storied structures to the neighbouring properties to the west. In addition, the proposed apartments are strategically located next to the existing apartments on the adjoining property and there is a separation distance of approximately 10 metres between the existing and the proposed development. Therefore the infringing buildings will not physically dominate adjoining sites as they adjoin buildings of a similar height.

The proposed dwellings on Lots 9, 30, 54 and 55 will also have the following maximum height infringements respectively; 250mm, 500mm, 2700mm and 3200mm. As discussed in Section 5.2.9 of this report, the proposed dwellings on Lots 54 and 55 will be setback approximately 45-50m from the nearest external boundary of the neighbouring Albionvale development to the west and approximately 40 metres from the nearest external boundary of the neighbouring Woodbank development to the east. The proposed houses will also be lower than the existing houses on the neighbouring properties and hence any adverse effects will be minimal. Given the setback of these buildings from adjoining property boundaries and the proposed landscaping, it is considered that the privacy of adjoining properties will not be adversely affected. I however note that the Medium Density Housing Criteria allow a maximum height of 11 metres, therefore the infringing portion of the development fits well with these criteria.

10.8 HEIGHT IN RELATION TO BOUNDARY

5(a) The extent to which the height, location and design of buildings will allow for reasonable sunlight and daylight access to adjoining sites.
5(b) The extent to which the height, location and design of buildings will allow for reasonable sunlight and daylight access to the proposed building.
5(c)The extent to which each habitable room in a building is located to allow for reasonable daylight access.
5(d)The extent to which privacy is safeguarded by the provision of planting or screening

The proposed dwellings on proposed Lots 1-22 and 24-61 would project beyond the '2.5+ 45°, 2.5+35° and 2.5m+55°' recession plane along the internal boundaries by varying heights. In the majority of the cases, the infringements are limited to the one corner of the building or roof ridgeline such that there would be no significant loss of daylight or sunlight to habitable rooms or to the sites in general. The development has been designed in such a way that buildings and outdoor areas receive maximum amounts of daylight. Given that the infringements are along internal boundaries and the intensity of the development, it is considered that any dominance or privacy effects will be minimal as they are expected in this type of development. In addition, the proposal complies with height in relation to boundary requirements on the external boundaries and given the setback of the proposed houses from the existing houses on adjoining properties, any adverse privacy and dominance effects on adjoining properties will be negligible. Proposed planting and screening along the property boundaries will also ensure that the privacy of adjoining properties is not adversely affected.

10.9 CARPARKING & DRIVEWAYS

12(a) the extent to which driveways provide safe, maintenance-free, adequately drained, efficient, effective and visually attractive vehicular access from the road to buildings.
12(b) The extent to which car parking accommodates expected peak demand of an activity, having regard to the position of the site in relation to public transport routes and the parking capacity of adjacent roads, and the road's function in the Roading Hierarchy.
12(c) The extent to which driveways and carparking create adverse visual or aural effects on adjoining sites.
12(d) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and /or through payment or provision of a financial contribution.

As noted in Section 5.2.9 above, the proposal is for a shared driveway to serve 18 units on lots 57-61. Council's Transport Assets Engineer, Mr John Carroll has reviewed the application and has recommended conditions of consent to ensure that the driveway is constructed in accordance with Council's standards. It is considered that the proposed driveway will be located and designed to ensure that it provides for safe and efficient vehicular traffic. In addition, the proposed driveway will be screened from view of adjoining properties by an existing fence and proposed planting.

10.10 CITY WIDE RULES- NATURAL HAZARDS

1(a) The extent to which subdivisions are designed to avoid natural hazards or at least provide for reasonable development, on areas of the proposed site not subject to natural hazards.
1(b) The extent to which buildings can be located on areas of site not subject to natural hazards.
1(c) The extent to which any subdivision or building:

- *Will or may result in damage to property or harm to people.*
- *Will or may result in more than minor adverse effects on existing landforms or coastlines.*
- *Will or may result in more than minor adverse effects on water quality.*

1(d) The extent to which in relation to areas subject to inundation, any subdivision or building:

- *Will or may result in damage to property or harm to people.*
- *Will or may result in more than minor adverse effects on existing landforms*
- *Will have more than minor adverse effects on the natural qualities of the water system.*
- *Will have more than minor adverse effects on the ability of the catchement to dispose of water in an efficient manner.*
- *Will result in the floor level of any habitable building being less than 0.5 metres above the 1 in 100 (1% AEP) flood level*

1(e) The extent to which the proposal has given regard to any comprehensive catchment stormwater discharge consent issued by the Auckland Regional Council.
1(f) The extent to which more than minor adverse effects can be adequately avoided, remedied, mitigated or offset through provision of works and services on or off the site and/or through payment or provision of a financial contribution.
1(g) The extent to which, in relation to areas subject to the potential for damage by wildfire, provision is made for appropriate disposal of dead vegetative material.

The application notes that limited earthworks within the 100 year flood plain are required for the construction of the wetland stormwater treatment facilities to the northern portion of the site. A comprehensive sediment and erosion control plan will be implemented and will be monitored by both the Waitakere City Council and Auckland Regional Council. Although most of the vegetation will be removed, a comprehensive landscaping plan is proposed on the entire site and particularly along the riparian margins. The application has been reviewed by Council's Subdivision Engineer, Ms Lucy Lunevich who has recommended the inclusion of conditions of consent to ensure that habitable buildings within the flood plain have floor levels above the flood level. It is considered that the proposal will have no more than minor adverse effects on water quality and on the safety of people and property.

10.11 Other Matters (Section 104(1)(c))

(a) The proposal also requires the following resource consent from the Auckland Regional Council:
- Land Use Consent: Sediment Control for land disturbing activities over more than 1.0 hectare of land;
- Land Use Consent : Section 13 (RMA) for works within a watercourse for the construction of a road crossing and culvert.

(b) A high pressure gas pipeline cuts across the proposed drainage reserve to the northern end of the subject site. The Scheme Plan shows an existing easement through the site to accommodate this. The proposed road and residential lots will be outside of this easement.

(c) Potential contamination: The site is large and has had a pastoral use in the past. It has **not** been identified on the Auckland Regional Council contamination maps and there is no indication of any contamination sources. Soil testing has therefore not been required.

10.12 Long Term Council Community Plan

It is noted that the creation of a 59 new additional Lots and 77 new residential units including medium density development attracts a development contribution in accordance with the Waitakere City Council LTCCP.

A Development Contribution of $613, 657.09 (incl. GST) was estimated at lodgement for this application. This development contribution has already been paid.

10.13 Auckland Regional Policy Statement

The proposal fits with the ARPS of intensifying housing opportunities close to transport hubs and commercial facilities.

11.0 POLICIES AND OBJECTIVES

It is considered that the proposed development would be consistent with the objectives and policies of the District Plan. The District Plan is "effects-based" in its approach to natural and physical resources and it has been demonstrated in the previous environmental assessment of effects that subject to conditions any adverse effects arising from the proposal would be no more than minor.

The District Plan Assessment Criteria, developed to address the issues covered in the objectives and policies, have already been discussed in section 10.2.

The proposed development is considered to be consistent with these assessment criteria. For this reason the proposed development is also considered to be consistent with the relevant Objectives and Policies.

The relevant objectives and policies in relation to this proposal are:

1.1 - Settlement should be of a type and density that avoids, remedies or mitigates adverse impacts on water quality. Consolidation of population within the urban area should be within the capacity of stormwater and waste management infrastructure.

1.2 - Centralisation of activities to support passenger transport, reduce vehicle numbers and therefore reduce contamination of stormwater from motor vehicles. Particular regard should be had for the location of medium density housing within and adjacent to central locations.

1.5 - Activities should be managed to avoid further clearance and damage to native vegetation within the margins of the rivers. Need to have a programme to restore native vegetation to the riparian margins.

1.7 - Activities should be managed in a way that encourages absorption of rainfall and surface water runoff on-site.

1.8 - Carry out activities in such a way so as to avoid, remedy or mitigate, so minimising the movement of soils and sediment and other contaminants into receiving waters.

1.15 - Where possible, minimise demand for water and energy.

3.1 - Medium Density Housing should be encouraged around main town centres, railway stations and major roads to help provide for the efficient use of land within the urban area.

3.2 - Earthworks should be carried out in a way that avoids, or where unavoidable, remedies or mitigates any adverse effects on the surrounding topsoil and soil structure.

10.4 - Buildings should be located on residential sites in a way that provides for sufficient and usable outdoor space for recreation and leisure.

10.5 - structures should be placed to ensure that adequate levels of daylight reach any habitable rooms on-site and adjoining properties throughout the year.

10.6 - Buildings, storage and parking areas to be designed and placed on-site or screened to maintain privacy and on site amenity of adjacent residential properties.

10.17 - Settlement in all parts of the city should be at a density that is within the capacity of water supply, stormwater, wastewater and solid waste infrastructure to safely absorb the effects of that settlement, and to provide for the health of all residents, visitors and workers.

11.1 - Settlement should be of a type and a density that protects amenity values, including neighbourhood character by providing for more intensive settlement in other parts of the Living environment in a way that protects the wellbeing of residents and enhances the amenity of these areas.

11.3 - Buildings and structures should be located so that they maintain the neighbourhood character, visual amenity of the surrounding area and the characteristic streetscape of the area.

The subject site is located outside but in close proximity to the Medium Density Housing Radius located around the Glen Eden town centre to the east and the Sunnyvale railway station to the north as identified within the District plan maps. The proposed freehold development comprises sites varying from 350m² to 840m² while the more intensive development proposed to adjoin the completed Albionvale subdivision provides densities between 267m² to 318m². The lower density development will be located adjacent to the existing lower density development along Woodbank Drive to the east.

Each proposed residential unit will have a minimum of 25m² outdoor space per bedroom with all of the units having private garden areas. Some of the 3 and 4 bedroom units have outdoor spaces of more than 150m² in area. The apartments on Lot 61 will have deck/patio areas adjacent to the houses. Furthermore, the outdoor space has been established on site to also provide gardens and recreational areas. This would add to onsite amenity and would generally improve the existing neighbourhood amenity.
The proposal is for the removal of all existing trees with the exception of some native trees and shrubs in the reserve area. The weed infested areas will also be cleared. Trees to be retained include the mature totara and the mature kahikatea, both close to the stream, as well as groups of kanuka with their mainly native under storey. Planting is proposed along the stream, the reserves, road reserve and on individual lots which will greatly improve the present degraded site.

Infrastructure has been assessed by Council's EcoWater subdivision engineer and suitable conditions have been recommended to ensure proper servicing of the units. The units will be connected to reticulated services. In addition, a contribution to the upgrade of stormwater reticulation will be required through a condition of consent. Development contributions have been paid to offset the cost of upgrading or renewing infrastructure

Conditions of consent will ensure that sediment control measures will be installed to Council's satisfaction prior to the commencement of earthworks. Landscape treatment will ensure that the short term adverse effects from site works (including earthworks and vegetation removal) are mitigated.

Overall the proposal is consistent with the type of development anticipated by the District Plan, is compatible with Council's strategic objectives for Medium Density Housing and would be sympathetic to existing and proposed development within the wider locality associated with this rapidly growing residential area.

12.0 PART II OF THE ACT- PURPOSE AND PRINCIPLES

Section 5 in Part II of the Act identifies the purpose of the Act as being the sustainable management of natural and physical resources. This means managing the use of natural and physical resources in a way that enables people and communities to provide for their social, cultural and economic well-being while sustaining those resources for future generations, protecting the life supporting capacity of ecosystems, and avoiding, remedying or mitigating adverse effects on the environment.

It is considered that the proposal is consistent with sustainable resource management. In particular this proposal is concerned with the sustainable management of the Living Environment, General Natural area and Riparian Margins in such a way that the communities' social and cultural well being are enhanced through maintaining the existing neighbourhood character and amenity. The proposal would allow for the establishment of Medium Density Housing with unit areas ranging from 263m² - 840m² that would be appropriate within the environment and would be able to establish and operate in such a way that the amenities of the neighbourhood would not be adversely affected.

The proposal is not considered to adversely affect any matters of national importance nor affect Council's obligations under the Treaty of Waitangi. It is considered that the adverse effects arising from the proposal and the proposed mitigation are limited in significance to the surrounding urban neighbourhood.

Council's iwi partners, Ngati Whatua and Te Kawerau a Maki have been given the opportunity to discuss this proposal and no issues have arisen in regard to the Treaty of Waitangi.

Section 7 identifies a number of "other matters" to be given particular regard by Council in the consideration of any assessment for resource consent, and includes the efficient use of natural and physical resources, and the maintenance and enhancement of amenity values.

The potential effects of the proposal on the amenity and character of the area have been discussed in detail in the effects assessment contained in Section 8 of this report. Subject to conditions such as

compliance with sediment and erosion control measures, implementation of the restoration planting plan and landscape treatment, and compliance with Council's Code of Practice for infrastructure (drainage and roading), it is concluded that the proposed development would be compatible with the surrounding built and natural environment and the existing amenity of the area would not be reduced.

13.0 TIME PERIOD IN WHICH TO IMPLEMENT THE CONSENT

Under section 125 of the Resource Management Act 1991, a consent lapses either on the date that is specified in the consent or if no date is specified, 5 years after the date of commencement of the consent. This Landuse consent has been given a 5 year lapse date.

14.0 MONITORING

The proposal will need to be monitored in accordance with the conditions specified in this report, and the requirements contained in the District Plan.

15.0 RECOMMENDED DECISION

Pursuant to Sections 104, 104B and 108 of the Resource Management Act 1991, being satisfied that no body or person is adversely affected, it is recommended that **consent be granted** to the application by New Zealand Housing Foundation to undertake a medium density residential housing development, that under the Rules of the District Plan (as more accurately defined in Sections 3 and 4 of this report) requires resource consent for;

- Earthworks
- Vegetation Alteration
- Height in relation to Boundary
- Building Height
- Medium Density Housing
- Shared driveway
- Building, earthworks & vegetation alteration on land known by Council to be subject to inundation.

At 4 Pyramid Place & 423-429 West Coast Road, Glen Eden, being Lots 2 & 3 DP 339810 for the following reasons pursuant to Section 113:

(i) It is considered that the proposal would have no more than a de minimis adverse effect on the environment as the proposed development is in keeping with the existing neighbourhood character and amenity (as described in more detail in Section 10 above). Although the proposed development exceeds the maximum height, the level of infringement is minor and due to the topography of the site and the design of the buildings, the infringement will not be clearly distinguished when viewed from neighbouring sites. The Height in Relation to boundary infringements is considered minor and is on the internal boundaries. The amount of earthworks proposed is considered to be consistent with the scale of the development and will be adequately managed through sediment and erosion control measures, in conjunction with the site Management Plan. The proposed landscape treatment will improve the overall amenity of the site.

(ii) The proposal is considered to be consistent with the relevant assessment criteria for Discretionary Activities for earthworks, vegetation clearance and medium density housing as demonstrated in Sections 5.2 and 10.2 above.

(iii) The proposal is generally consistent with the objectives and policies of the District Plan and Part II of the Resource Management Act 1991.

Conditions imposed on the consent are as follows:

General Conditions

1. The development shall proceed in accordance with the plans titled;
   - Site Plan- West Coast Road Housing Development- Bulk and Location Study, prepared by Babbage Consultants, dated 23 June 2006 (being 1 sheet).
   - Site Plan- West Coast Road Housing Development (Bulk & Location Study)- Stage 1A & 1B- Rev A002, Stage 1C & 1D- Rev A003, Stage 2A & 2B- Rev A004, Stage 3- Rev A005, all dated June 2006.
   - Floor Plans- Type 1 House- (Sheet A101), Type 2A House- 2 Bedroom Apartment (Sheets A102-1 & A102-2), Type 2B House (Sheets A103-1 & A103-2), Type 2C House (Sheets A104-1 & A104-2), Type 3 House (Sheet A105), Type 4A House (Sheet 106), Type 4B House (Sheet A107), Type 4C (Sheet A108), Type 5A House (Sheet A109), Type 5B House (Sheet A110), Type 5C House (Sheet A111).
   - Elevation Plans- Type 1 House- (Sheet A201), Type 2A House- (Sheets A202-1 & A202-2), Type 2B House (Sheets A203-1, A203-2 & A203-3), Type 2C House (Sheets A204-1 & A204-2), Type 3 House (Sheet A205), Type 4A House (Sheet 206), Type 4B House (Sheet A207), Type 4C (Sheet A208), Type 5A House (Sheet A209), Type 5B House (Sheet A210-1 & A210-2), Type 5C House (Sheet A211-1).
   - Elevation Plans showing HIRB- Sections 1A (Rev A304), Sections 1B (Rev A305 & A306), Sections 1C (Rev A307 & A308), Sections Stage 1D (Rev A309), Sections Stage 2A (Rev A 310), Sections Stage 2A & 2B (Rev A311 & Rev A 312), Section stage 3 (Rev A313)
   - Area Summary, Rev A401, being 1 Sheet, dated 30 May 2006

   Prepared by Babbage consultants dated June 2006.

   - Roading Plan for NZ Housing Foundation, Sheet 1 (C20- Rev A) & Sheet 2 (C21- Rev A).
   - Road Longitudinal Sections, sheet 1 (C22), Sheet 2 (C23), Sheet 3 (C24).
   - Road Cross Sections, Sheet 1 (C25-A), Sheet 2 (C26-A).
   - Topographical Plan, Sheet 1 (C01- Rev A), Sheet 2 (C02- Rev A).
   - Earthworks Plan, Sheet 1 (C03- Rev B), Sheet 2 (C04- Rev B).
   - Erosion and Sediment Control Plan, Sheet 1 (C05- Rev B), Sheet 2 (C06- Rev B).
   - Sediment Control Details, (C07- Rev A)
   - Drainage Plan, Sheet 1 (C10- Rev C), Sheet 2 (C11- Rev A)
   - Stage 2 Swale Layout (C15), Stage 3 Swale Layout (C16- Rev A)
   - Wetland & detention Basin 1 Layout (C17- Rev A)
   - Pond Details Plan (C18- Rev B)
   - Detention Basin 2 Layout (C19)
   - Services Plan, Sheet 1 (C35- Rev A), Sheet 2 (C36- Rev A)
   - Stormwater Catchment Plan, Sheet 1 (C45), Sheet 2 (C46)
   - Retaining Wall Plan, Sheet 1 (C50), Sheet 2 (C51).

   prepared by Babbage Consultants and dated June 2006.

   - Typical Planting Plan House Type 4A, reference LSP-07, dated 07/08/06
   - Typical Garden Layout House type 4A, reference LSP-08 dated 15/08/06
   - Landscape Master Plan and Typical Garden Layout reference LSP-01 Rev C, dated 16/06/06
   - Landscape Master Plan, reference LSP-02 Rev C, dated 16/06/06
   - Street Tree Planting Plan 1 of 2, reference LSP-05 Rev B, dated 15/08/06
   - Street tree Planting Plan 2 of 2, reference LSP-06 Rev B, dated 15/08/06

   prepared by Soul Environments

and all of the information submitted with the application (including further information), all referenced by Council as **RMA20061077** .

2. Pursuant to Section 125 of the Resource Management Act 1991, if not given effect to earlier, this consent shall lapse five (5) years after the grant date of the consent.

3. A consent compliance monitoring fee of $1, 035 has been paid to the Council. This fee is to recover the actual and reasonable costs incurred ensuring compliance with the conditions of this consent. If, on inspection all conditions have not been satisfactorily met, a reinspection shall be required at the relevant hourly rate applicable at the time the re-inspection is carried out. The resource consent holder shall be advised of any further monitoring fees if they are required.

4. All reticulated services, including power and telephone, shall be provided underground.

5. A copy of this Resource Consent and the approved Site Management Plan to which the consent relates shall be held on site at all times that the works are being carried out. All personnel working on the site shall be made aware of, and have access to this consent and accompanying documentation.

6. The carparks for the apartments on Lot 61 shall be clearly marked prior to occupation. At least one carpark shall be allocated for each unit.

Surveyors Certificates

7. A Licensed Cadastral Surveyor shall certify to Council in writing prior to work progressing beyond the pre-lining stage that the buildings are located exactly as proposed in the application and will not exceed the degree of infringement applied for in relation to the overall height and height in relation to boundary controls of the District Plan and elsewhere complies with the height in relation to boundary and overall height rules of the District Plan. No work shall proceed beyond this stage until receipt of such certification, to the satisfaction of the Manager Resource Consents.

Earthworks Conditions

8. **Before commencement of any works and until completion of exposed earth siteworks**, adequate sediment and erosion control measures shall be constructed and maintained by the consent holder. The control measures must be maintained until the site has been adequately stabilised against erosion. The construction and maintenance shall be in accordance with Appendix 3, Erosion and Sediment Control Measures Appendix to the Natural Area Rules of the Waitakere City Council District Plan (attached as appendix A to this consent). **NO WORK MAY COMMENCE UNTIL APPROVAL HAS BEEN OBTAINED FROM WATERCARE (due to presence of Watercare Infrastructures)**

   Please **advise Council's Environmental Monitoring Officer when the controls are in place and await the approval of the monitoring officer** before commencing work. **The applicant should book an inspection at least 48 hours prior to the required inspection.**

9. In the event of archaeological evidence being uncovered (e.g shell, middens, hängï or ovens, pit depressions, defensive ditches, artifactual material or human bones) work shall cease in the vicinity of the discovery, the area secured, and the Council (Planning Help Desk , 839 0400) contacted. Activity on the site will remain halted until the Manager Resource Consents gives approval for operation to recommence.

10. All sediment laden runoff from the site shall be treated in accordance with the approved silt and sediment control management plan attached as appendix A to this consent. These measures are to be operational before earthworks commence, and shall be maintained until the site has been secured against erosion (whether by vegetative means, paving or otherwise). The consent holder shall notify Council's Monitoring Officer when silt and sediment control measures are in place. Work shall not commence until approval has been gained in writing from the Manager Resource Consents.

11. If the bulk earthworks are not completed within the earthworks season (1 November till April 30th) then the necessary measures shall be implemented to ensure that the erosion and sediment controls are appropriate for the winter. A written report on the progress of the earthworks and the above erosion and sediment controls from the registered engineer supervising the work shall be submitted for the approval of the Manager: Resource Consents within one month of the cessation of work.

12. All areas of exposed earth shall be top-soiled and grassed or otherwise stabilised against erosion as soon as practicable and in a progressive manner as works are complete but no later than one week following the completion of works.

13. All topsoil excavated during the course of works shall be retained on site and re-spread following the completion of earthworks.

14. All earthworks, stockpiles of earth and the storage of other construction materials/ works shall be excluded from the drip-line of all vegetation to be retained on site and from the riparian margins of streams / the coast. A protective fence shall be erected around the affected area prior to the commencement of any work on the site and shall remain in place until the completion of all works on site.

15. Stockpiles of earth shall be located as far as practicable from the stream and existing residences, to the satisfaction of the Manager Resource Consents. Approval to the landfill to be used shall be obtained from the Manager, Resource Consents prior to any work commencing.

16. All excess or unsuitable excavated material shall be removed from the site before or immediately following the completion of earthworks, to an approved disposal location and disposed of to the satisfaction of the Manager Resource Consents. Written evidence demonstrating that the excavated fill has been deposited in the approved location, should be submitted to the Manager Resource Consents in the form of producer statement, certification or similar.

17. All dirt tracked onto the surrounding roads as a result of the development covered by this consent shall be cleaned by sweeping on a daily basis at the expense of the applicant. In case of repeated non-compliance with this condition, Council may engage the road cleaning contractor nominated by the applicant to carry out the road cleaning. Council's Environmental Monitoring Officer (EMO) may engage the road sweeping contractor to carry out road cleaning if it is the EMO' opinion that the dirt on roads and/or footpath is creating an adverse effect on the environment. The road cleaning contractor shall be engaged at the cost of the applicant.

18. A full copy of the Resource Consent Conditions, Approved Plans, including site management and Erosion and Sediment Control Plans shall be kept on the site at all times. All personnel working on the site shall be made aware of and have access to the contents of this consent document and the associated Site Management and Erosion and Sediment Control Plans.

19. All necessary action shall be taken to prevent a dust nuisance to neighbouring properties; including, but not limited to, the staging of areas of works, the retention of existing shelter belts and hedgerows, the installation and maintenance of wind fences and vegetated strips, watering of all haul roads and manoeuvring areas during dry periods, spraying of load dumping operations, and suspension of all operations if necessitated by the prevailing conditions to the satisfaction of the Manager Resource Consents. The site, or parts thereof as appropriate, shall be re-grassed or otherwise protected from wind erosion immediately on the completion of bulk earthworks whether or not other works are completed.

20. A stabilised entranceway to the site shall be provided prior to the commencement of works and maintained for the duration of works. Additional measures such as wheel wash facilities shall be implemented (as) if deemed necessary by Council's Environmental Monitoring Officer to prevent the deposition of earth or other debris on the surrounding street network by vehicles entering and exiting the site. Roads, footpaths, berms and kerbs including entry and exit points to the site shall be kept free from damage and clear of mud and debris at all times Any material deposited on the street shall be immediately removed by sweeping and any damage caused shall be immediately repaired at the expense of the consent holder. The consent holder shall notify Council's Monitoring Officer when entranceway controls are in place. Work shall not commence until approval has been gained in writing from the Manager Resource Consents.

21. The development works associated with the subdivision are to be carried out in accordance with NZS 6803P:1984 "The Measurement and Assessment of Noise from construction, Maintenance and Demolition Work" with the exception of the hours of work, which are to be limited as follows:

Monday to Friday:	7.30 am to 7.00 pm
Saturday	8.00 am to 5:30 pm
Sunday and Public Holidays:	No work

Vegetation Conditions

22. Landscape development on private lots including framework planting shall be in general accordance with the Landscape Master Plan and Typical Garden Layout, Drawing LSP-01 Rev C and LSP-02 Rev C, both dated 16.06.06 and in accordance with the Street Tree Planting Plan 1 of 2 Drawing LSP-05 Rev B, and Street Tree Planting Plan 2 of 2 Drawing LSP-06 Rev B both dated 15.08.06 by SOUL Environments and the 'Additional information on proposed planting' Rev C, received at Council 16 October 2006, and shall be established to the satisfaction of Council's Environmental Monitoring Officer, Resource consents.

23. On site planting for each private lot shall have the framework tree planting and fencing as per the afore-cited plans and shall have lawn areas, gardens, paving and other site features, in general accordance with the 'Typical Planting Plan House Type 4A, dated 7.08.06 and 'Typical Garden Layout House Type 4B' dated 16.08.06 plans and associated planting schedule by Soul submitted with the application, and shall be to the satisfaction of Council's Environmental Monitoring Officer, Resource Consents.

24. Grassed areas shall be manually graded to be flush with adjacent paved or retained areas and, in association with garden areas, shall be prepared prior to occupation of units and establishment of any proposed fencing. Fences and gates shall be set in place following final forming of ground levels including grassed areas. Garden areas and grassed areas shall be good quality topsoil or garden mix (50:50 topsoil and compost), weed and debris free with garden areas to 300mm minimum depth and grassed areas to 200mm minimum depth and shall be to the satisfaction of Council's Environmental Monitoring Officer Resource Consents.

25. Planting shall be set in place in the first planting season (May till 7th September) following use of each dwelling unit to the satisfaction of Council's Environmental Monitoring Officer, Resource Consents. If the development is staged then the landscape development including planting shall be staged accordingly.

26. Any tree planted within a grass area shall be within a 600mm diameter weed and debris-free garden area with a woodchip mulch to 60mm depth, and with two marker stakes 50mm x 50mm x 1.2m per tree (ties not required).

27. Lawn areas and gardens shall be watered as necessary to facilitate establishment, and with gardens kept weed free on an ongoing basis for the first two years following initial planting, to the satisfaction of the Environmental Monitoring Officer, Resource Consents. Any tree or plant that dies, is removed or otherwise fails to establish shall be replaced the following planting season and shall be maintained for a further two years to the satisfaction of the Environmental Monitoring Officer, Resource Consents.

28. All vegetation works shall be undertaken in accordance with Subdivision Conditions (PK 1) – (PK 10).

Transport Assets

29. All transport assets conditions shall be completed to the satisfaction of the Manager, Transport Assets and shall be in accordance with the conditions outlined in the subdivision consent (See the subdivision consent RMA 20061078 for exact requirements and detail).

Geotechnical Conditions

30. A geotechnical investigation shall be completed by an experienced geotechnical engineer for the detailed design of earthworks at the site. This shall include recommendations for the batter slopes and an assessment of overall stability off site slopes (supported by limit equilibrium analysis), consolidation characteristics of the soils, fill quality and compaction requirements. All the requirements for constructing and controlling engineered fill shall be detailed. The report on this work shall accompany the earthworks construction management report.

31. Groundwater drainage measures for the development shall be designed by an experienced geotechnical engineer, taking into account existing information on shallow groundwater levels,

anticipated maximum winter high and summer low groundwater levels, and potential effects on adjacent developed properties or roadways.

32. Building consents shall be required for the retaining walls which shall be no higher that 2.0 metres on all boundaries.

33. Pavement designs shall be confirmed by an experienced geotechnical engineer following the completion of earthworks.

34. A producer statement must be provided on completion of earthworks together with an earthworks completion report stating what requirements if any are necessary for the individual lots.

35. Unless there is clear evidence in the earthworks completion report to be provided by an engineer that NZS 3604 requirements have been fully met, all foundations shall require specific design.

36. Foundations of all lots shall be verified by an experienced geotechnical engineer familiar with the geotechnical report and shall take into account the potential for shrink/swell behaviour.

37. Stormwater pond construction shall be supervised by an experienced engineer familiar with the geotechnical report.

38. The proposed stormwater management systems to be used during construction shall be reviewed by an experienced engineer familiar with the geotechnical report.

39. The proposed stormwater management systems to be used during construction shall be reviewed by an experienced engineer familiar with the geotechnical report.

PARKS CONDITIONS

Please contact the Parks Assets Planning Co-ordinator on 836-8000 (extension 8768) to book an inspection.

(PK 1) Carry out the removal of environmentally damaging plants from all lots including the proposed esplanade reserve, as listed in the Waitakere City Council Proposed District Plan. Submit a Weed Control Programme to the satisfaction of the Manager, Resource Consents within 2 months of the issue of this consent. This Weed Control Programme shall be implemented on the site within 6 months of the date of issue of this resource consent to the satisfaction of the Manager, Resource Consents. The programme needs to include:

a) an inventory of the weed species to be removed;
b) removal techniques to be utilised; weed disposal methods;
c) time frames for work and whether the weed removal needs to be staged (particularly relevant for sensitive areas such as coastal edges or riparian margins);
d) any re-vegetation programme required to prevent re infestation of weeds;
e) an assessment of any ecological issues around the removal of vegetation;
f) methods for addressing stability and erosion and sediment control methods.

(PK 2) Enter into a registerable fencing agreement with Council in regards to Lots 23, 24, 25, and 46 – 60 to the effect that the Council will not be liable to contribute towards the cost of creating or maintaining any dividing fence between any reserve or other land vested in or administered by the Council. Also, that any fences facing the reserve shall be of visually permeable construction such as swimming pool fencing and 1.2metres maximum height in order to ensure good surveillance of the reserve, and to reduce the likelihood of graffiti.

(PK 3) Prior to work commencing on the site, protective fencing shall be placed around the dripline of the Totara (#4), Kahikatea (#7), Cabbage (#13), Pear (#10) and groups of native revegetation (references #4 and #6) as shown on the plan titled "Housing Foundation HZ, West Coast Road Development (Part of 423-429 West Coast Road) vegetation and major features, Sheets 1 & 2", dated 12 June 2006 prepared by Willy Coenradi. The fencing shall remain in place throughout the vegetation alteration, earthworks and construction stages.

(PK 4) Monitoring of the health of the vegetation referenced in (2) above shall be undertaken prior to the commencement of, and during the vegetation alteration, earthworks and construction stages. This monitoring shall be undertaken by an appropriately qualified arborist engaged by the applicant in

conjunction with a WCC arborist to provide progressive on-site assessment of the effects of the work on the health of the Riparian vegetation.

(PK 5) That a silt fence and dirty water diversion run-off bund as depicted on the Erosion and Sediment Control Plan prepared by Babbage Consultants dated 23/06/06 contained in Appendix 10 of the application shall be implemented along the full length of the western side of the stream to the satisfaction of prior to Parks Consent Planner prior to earthworks or vegetation alteration commencing on the site.

(PK 6) Landscaping and street tree planting is to be established within the development to the satisfaction of the Parks Consent Planner. The landscaping and street tree plans prepared by SOUL Environments specifically:

- Landscape Master Plan dated 16/06/06 Revision C Reference LSP-01
- Street Tree Planting Plan, Plan 1 of 2 and 2 of 2, dated 15/08/06 Revision B
- Accompanying information titled "NZ Housing Foundation Babbage Consultants 423 -429 West Coast Road, Henderson. Additional information on proposed planting 13-October-06, Revision C".

are to be implemented in accordance with WCC parks guidelines and subject to the following:

(i) That the bollards along the road frontage of the drainage reserve at the northern end shall be implemented in accordance with the WCC Code of Practice Standard Detail 7.17 and 7.71. That a 3 metre chain entry for maintenance access to the stormwater pond and wetland area shall be located in an appropriate location to the satisfaction of the Parks Consents Planner.

(ii) Street Lighting shall be implemented in accordance with the WCC Code of Practice Section 3.3.14 and Standard Detail 7.91 attached and located so as to not conflict with street tree planting.

(iii) In accordance with Section 7.3.7.3 of the WCC Code of Practice all footpath concrete paving in the reserve shall be 1.5 metres wide and exposed aggregate.

(iv) That the plants along the footpath adjacent to the Stream shall be low level and set back a suitable distance so as to not restrict access or visibility along the pathway.

(v) That the parking areas provided on the streets adjacent to footpaths shall be curbed or wheel stops implemented to the satisfaction of the Parks Consent Planner.

(vi) All plants shall be best nursery stock, healthy vigorous and eco-sourced.

(PK 7) The street tree planting shall be implemented to the satisfaction of the Parks Consent Planner. All plantings are to be in accordance with the WCC parks guidelines, Code of Practice and the landscape specification submitted with the Landscape Plan. An option exists for the applicant to pay Council the cost of supplying, planting and staking of street trees per plan, to carry out the planting of street trees following the completion of the building works. The cost for this would be $153 plus GST per tree (the current contract price for supply, planting, and staking of a PB95 tree as at April 2003).

(PK 8) The details of the pedestrian footpath, footbridge and boardwalk shall be finalised at the Engineering Plan stage to the satisfaction of the Parks Consent Planner. Engineering plans for the footpath, footbridge and boardwalk shall be submitted within 3 months of the issue of this consent. All works shall comply with the Waitakere City Council Code of Practice for City Infrastructure and Land Development. The developer must advise the Parks Consent Planner of when work will commence and prior to any works being carried out. Engineering plan details shall be provided at Engineering Plan stages for the following:

(i) The exposed aggregate footpath alignment details shall be to a width of 1.5m and constructed in accordance with the Waitakere City Council Code of Practice for City Infrastructure and Land Development Standard Detail 7.102 for Parks Walkway Types attached.

(ii) That the footbridge shall be constructed in accordance with the Waitakere City Council Code of Practice City Infrastructure and Land Development Standard Detail 7.106 for Typical Foot Bridge attached.

(iii) The boardwalk along the stream shall be constructed in accordance with the WCC Code of Practice Standard detail 7.105 for Typical Boardwalk attached.

(PK 9) Ensure that the reserves are left in a condition suitable for maintenance and mowing in accordance with section 7.3 of the WCC Code of Practice and to the satisfaction of the Parks Asset Planner.

Ecowater Conditions

(Eco 1) All infrastructure relating to stormwater treatment and disposal, wastewater disposal, and water supply shall be designed and completed to the satisfaction of Councils Drainage Engineer. (Compliance with the Waitakere City Council Code of Practice for City Infrastructure and Land Development is deemed to be in accordance with the above condition). (See the subdivision consent RMA 20061078 for exact requirements and detail).

Advice Notes:

1. Where indicated in the conditions it is the consent holders' responsibility to inform the Environmental Monitoring Officer when inspection is required. Inspections can be requested through the Call Centre on 839 0400.

2. Prior to the commencement of works the resource consent holder shall obtain all consents, permits and authorisations for the work as may be required by the Auckland Regional Council.

3. A condition of consent relating to the payment of a maintenance bond for landscaping has not been included under this landuse consent but will be a condition of subdivision. It is the applicant's responsibility to ensure that this condition is complied with before issue of 224c under the subdivision consent (RMA20061078).

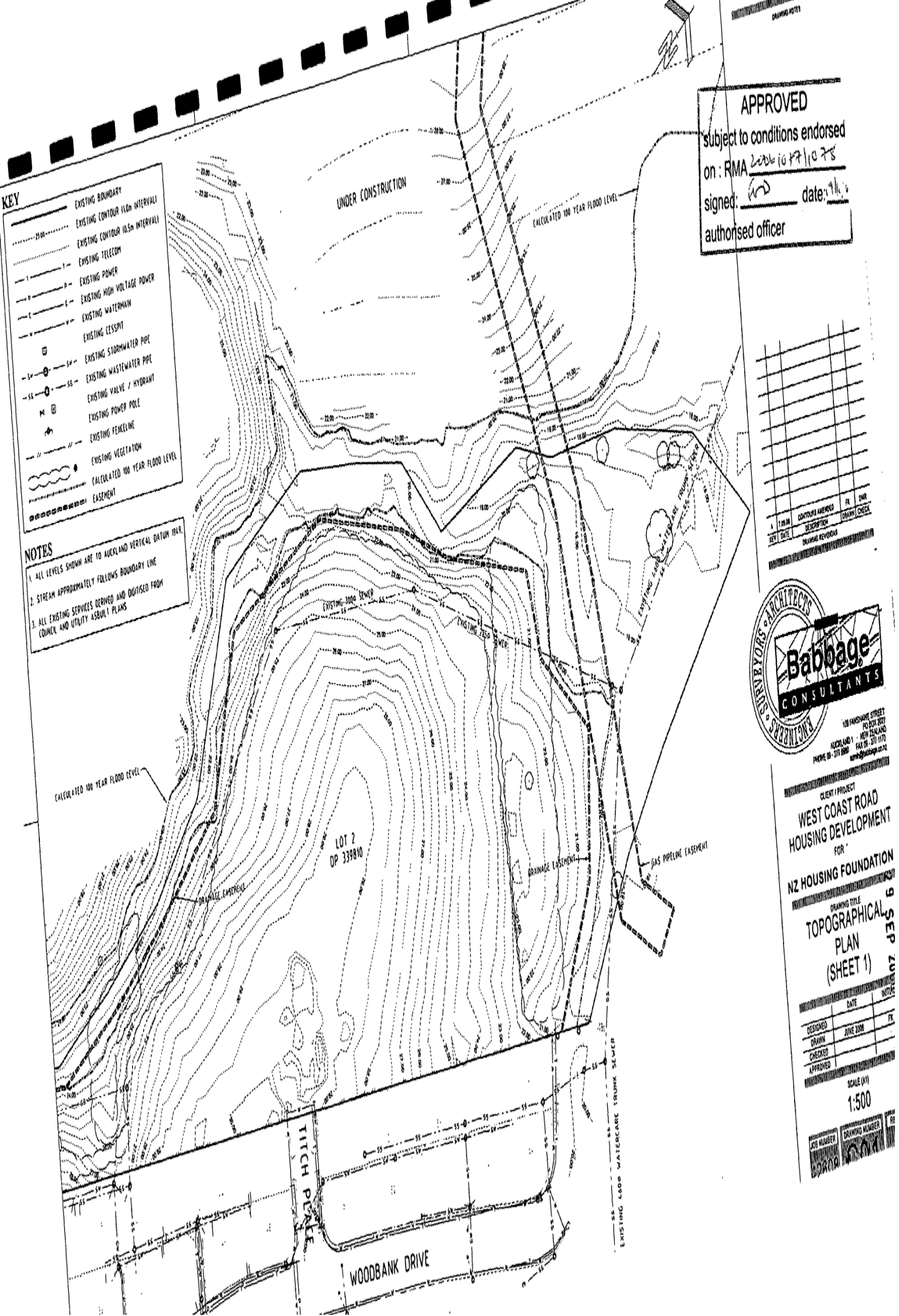
Reporting Planner:..... **Date**: 30/10/2006
Felicitas Dhliwayo

16.0 CONSENT GRANTED AS RECOMMENDED

Acting under delegated authority and for the reasons set out in the above recommendation this application **RMA20061077** shall be granted subject to the conditions set out in Section 14.0 above.

..... **Date**: 30 Oct 2006
Jeannette Ibrahim
Team Leader Consents

Please contact Felicitas Dhliwayo (Ph 836 8000 ext. 8352) if you have any queries about this resource consent and associated report.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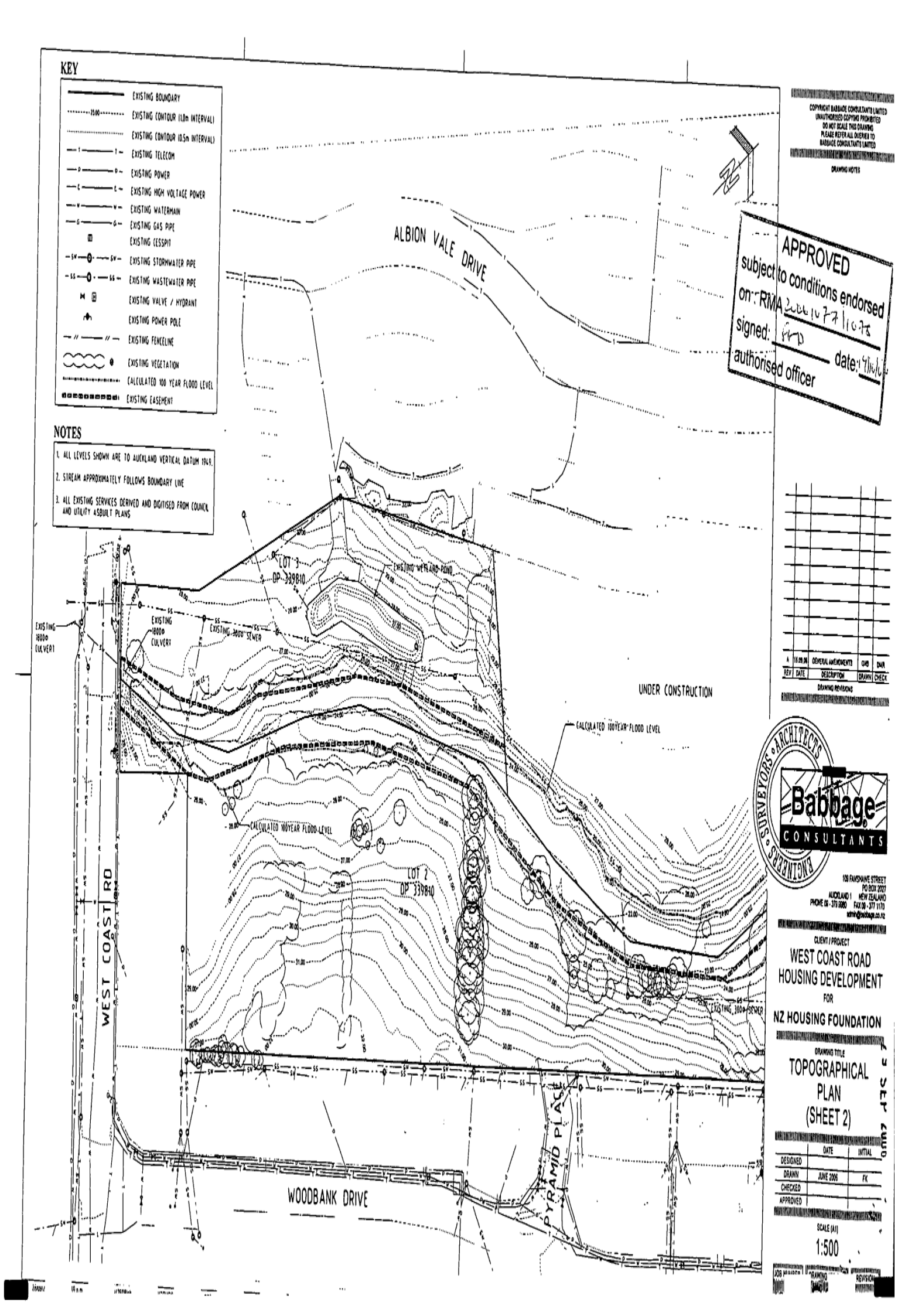
EXISTING CONTOUR (0.5m INTERVAL)
EXISTING TELECOM
EXISTING POWER
EXISTING HIGH VOLTAGE POWER
EXISTING WATERMAIN
EXISTING CESSPIT
EXISTING STORMWATER PIPE
EXISTING WASTEWATER PIPE
EXISTING VALVE / HYDRANT
EXISTING POWER POLE
EXISTING FENCELINE
EXISTING VEGETATION
CALCULATED 100 YEAR FLOOD LEVEL
EASEMENT
NOTES
1. ALL LEVELS SHOWN ARE TO AUCKLAND VERTICAL DATUM 1949.
2. STREAM APPROXIMATELY FOLLOWS BOUNDARY LINE
3. ALL EXISTING SERVICES DERIVED AND DIGITISED FROM COUNCIL AND UTILITY ASBUILT PLANS
APPROVED
subject to conditions endorsed
on : RMA 2006/10771/0 75
signed: date:
authorised officer
UNDER CONSTRUCTION
CALCULATED 100 YEAR FLOOD LEVEL
EXISTING 1050 SEWER
EXISTING 750 SEWER
EXISTING 1500 TRUNK SEWER
CALCULATED 100 YEAR FLOOD LEVEL
LOT 2
DP 339810
DRAINAGE EASEMENT
GAS PIPELINE EASEMENT
DRAINAGE EASEMENT
EXISTING 1600 WATERCARE TRUNK SEWER
TITCH PLACE
WOODBANK DRIVE
CONTOURS AMENDED
DESCRIPTION
DRAWING REVISIONS
SURVEYORS • ARCHITECTS • ENGINEERS
Babbage
CONSULTANTS
103 FANSHAWE STREET
PO BOX 2027
AUCKLAND 1 - NEW ZEALAND
PHONE 09 - 373 8981
FAX 09 - 377 1170
CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION
DRAWING TITLE
TOPOGRAPHICAL PLAN
(SHEET 1)
DESIGNED
DRAWN
CHECKED
APPROVED
DATE
JUNE 2006
SCALE (A1)
1:500
JOB NUMBER
DRAWING NUMBER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EXISTING WASTEWATER PIPE
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EXISTING POWER POLE
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EXISTING VEGETATION
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LOT 2 DP 339810
EXISTING 300Ø SEWER
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PYRAMID PLACE
WOODBANK DRIVE
APPROVED
subject to conditions endorsed
on: RMA 20061077116 75
signed:
date: 7/11/06
authorised officer
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REV DATE DESCRIPTION DRAWN CHECK
A 15.09.06 GENERAL AMENDMENTS CHRIS DAVE
DRAWING REVISIONS
SURVEYORS • ARCHITECTS • ENGINEERS
Babbage CONSULTANTS
109 FANSHAWE STREET
PO BOX 2027
AUCKLAND 1 NEW ZEALAND
PHONE 09 - 379 1880 FAX 09 - 377 1170
admin@babbage.co.nz
CLIENT / PROJECT
WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION
DRAWING TITLE
TOPOGRAPHICAL PLAN (SHEET 2)
DATE INITIAL
DESIGNED
DRAWN JUNE 2006 FK
CHECKED
APPROVED
SCALE (A1)
1:500
JOB NUMBER DRAWING NUMBER REVISION
SEP 2006

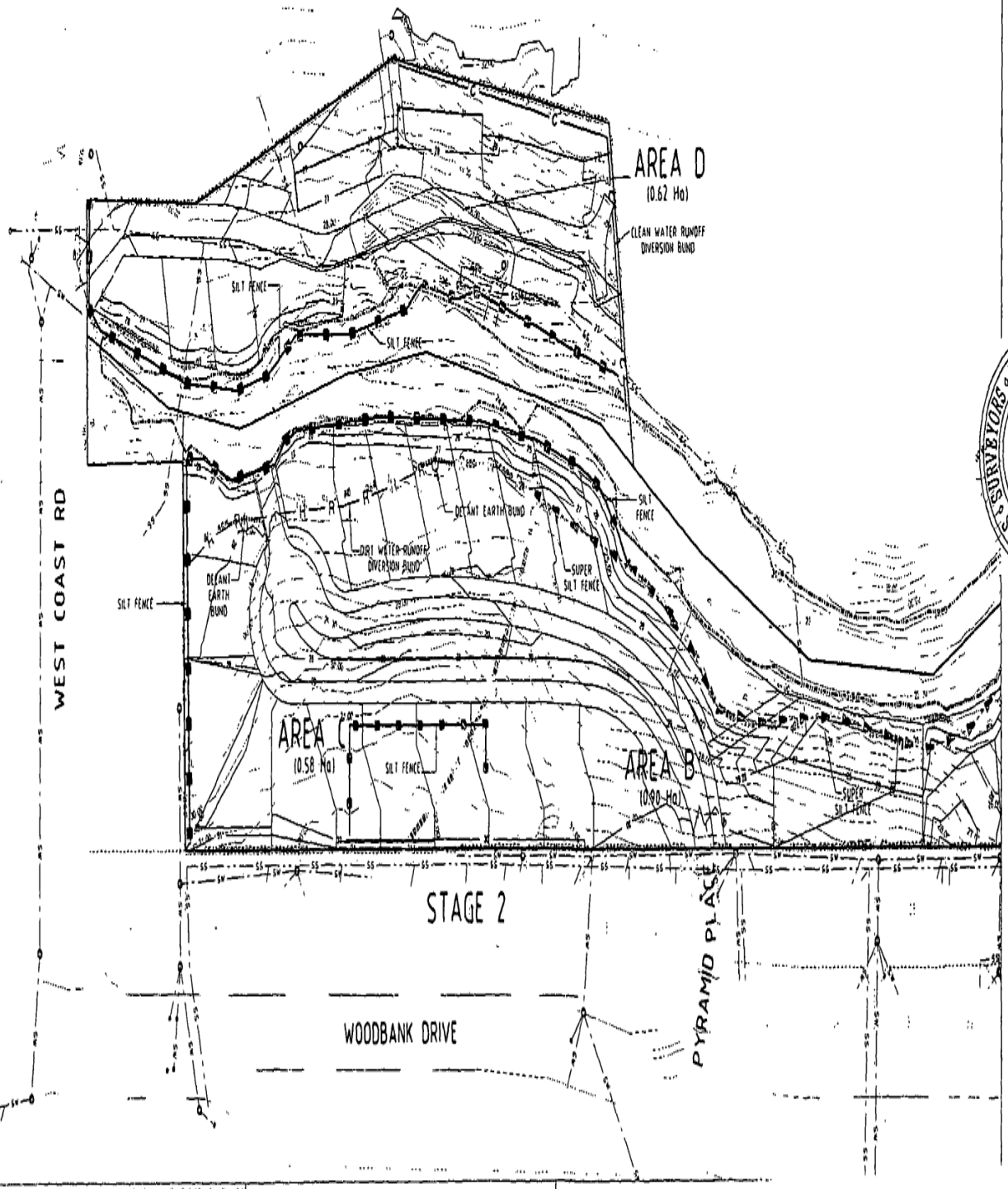
KEY

- EXISTING BOUNDARY
- 12.00 EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- 72.00 EARTHWORK CONTOUR (1.0m INTERVAL)
- R — R — DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT
- SUPER SILT FENCE
- C — CLEAN WATER RUNOFF DIVERSION BUND
- DECANT EARTH BUND

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION, TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EROSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.

APPROVED
subject to conditions endorsed
on : RMA 20061027 [illegible]
signed: [illegible] date: 9/10/08
authorised officer



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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	07.09.08	LEVELS AMENDED	FK	DR
A	15/08/08	VARIOUS AMENDMENTS	FK	DR

DRAWING REVISIONS

SURVEYORS · ENGINEERS · ARCHITECTS
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AUCKLAND 1 NEW ZEALAND
PHONE 09 - 379 8950 · FAX 09 - 377 1170
admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2008	GW
CHECKED	JUNE 2008	GW
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
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28/09/2008 2:46:52 p.m. r:\aqp\42000\42808\cad\CC08 EROSION & SEDIMENT CONTROL SHEET 2.dgn

APPROVED
subject to conditions endorsed
on : RMA 2006 1077 / 10 / 06
signed: [signature] date: 19/10/06
authorised officer

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DRAWING NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE OPERATIONAL PRIOR TO ANY OTHER WORKS COMMENCING ON SITE. THE CONTRACTOR SHALL ARRANGE AND ATTEND A PRELIMINARY SEDIMENT CONTROL MEETING WITH THE ENGINEER AND COUNCIL.

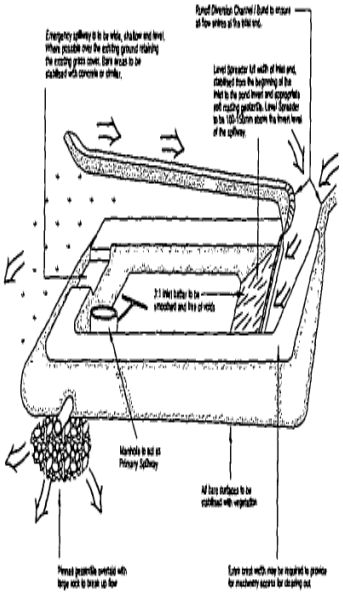
2. A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE ON SITE DURING WORK HOURS AND ALL PERSONNEL INVOLVED IN THE EARTHWORKS ACTIVITIES ON SITE INCLUSIVE OF SUB-CONTRACTORS SHALL BE FAMILIAR WITH THE CONSENT AND PLAN REQUIREMENTS AS THE RELATE TO EROSION AND SEDIMENT CONTROL.

3. ALL "CLEAN WATER" RUNOFF FROM THE STABILISED SURFACES, INCLUDING CATCHMENT AREAS ABOVE THE SITE SHALL BE DIVERTED AWAY FROM THE EARTHWORKS AREAS VIA A STABILISED SYSTEM SO AS TO PREVENT EROSION.

4. ALL EROSION AND SEDIMENT CONTROL SHALL COMPLY WITH "EROSION AND SEDIMENT GUIDELINES FOR LAND DISTURBING ACTIVITIES, AUC TECHNICAL PUBLICATION No.90, UPDATED MARCH 1999 AND ANY AMENDMENTS TO THIS DOCUMENT.

5. DIVERSION OF "CLEAN WATER" FROM THE UPSTREAM CATCHMENTS AROUND THE EARTHWORKS AREA SHALL BE BY MEANS OF DIVERSION DRAINS AND / OR OTHER APPROVED METHODS.

6. FURTHER SEDIMENT CONTROL WORKS MAY BE REQUIRED BY THE ENGINEER AS THE PROJECT ADVANCES. THESE WILL BE INSTALLED AS AND WHERE REQUIRED BY THE ENGINEER. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT THE SITE HAS EFFECTIVE SILT DETENTION FACILITIES OPERATING AT ALL TIMES.



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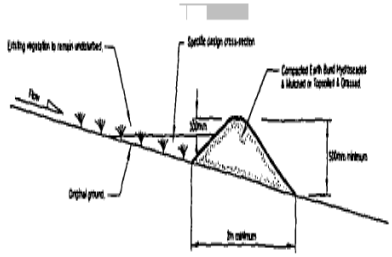
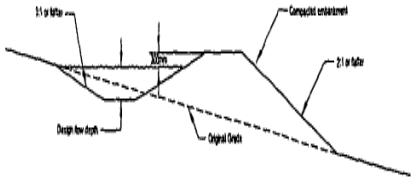
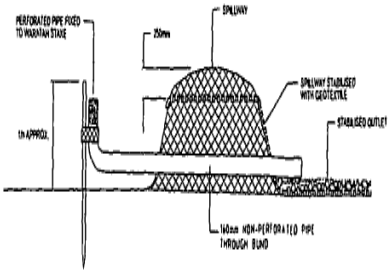


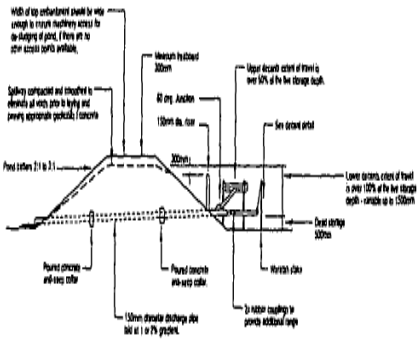
CLEANWATER RUNOFF DIVERSION BUND CROSS-SECTION



DIRTY WATER DIVERSION BUND CROSS-SECTION



CROSS SECTION OF DECANT EARTH BUND



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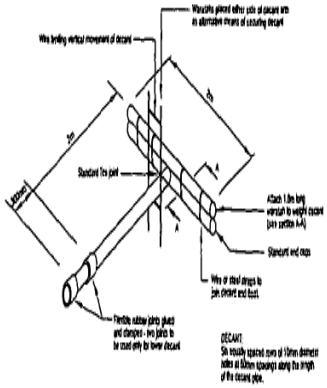

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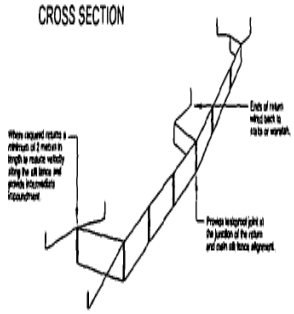

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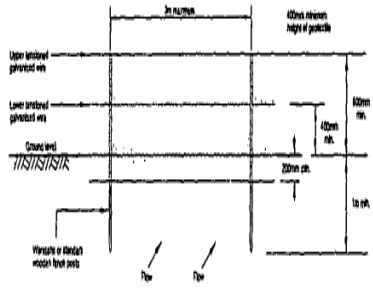

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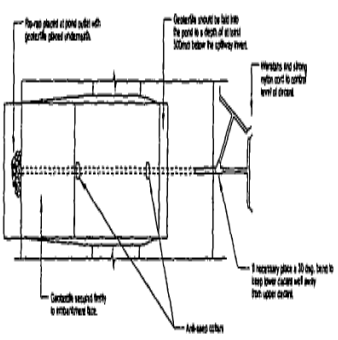
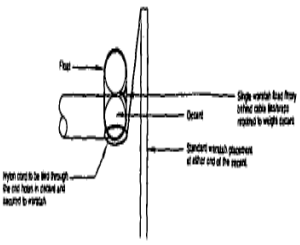


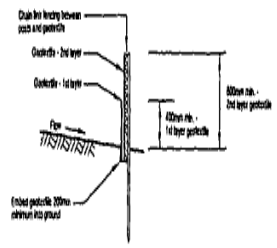
PLAN

SEDIMENT RETENTION POND



SECTION A - A

DECANT DETAIL



CROSS SECTION

SUPER SILT FENCE DETAIL

CROSS SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	150906	SUPER SILT FENCE DETAIL ADDED	GB	FK

DRAWING REVISIONS

ARCHITECTS · SURVEYORS · ENGINEERS
Babbage CONSULTANTS
109 FANSHAWE STREET
PO BOX 2027
AUCKLAND 1 NEW ZEALAND
PHONE 09 - 379 8880 FAX 09 - 377 1170
admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

SEDIMENT CONTROL DETAILS

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

29 SEP 2006

SCALE (A1)

NTS

JOB NUMBER | DRAWING NUMBER | REVISION

28/09/06 5 p.m. z 2600cnt sf cont1 cgn

KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- DRAINAGE EASEMENT
- SWMH C7 — PROPOSED STORMWATER LINE
- SSMH 4C — PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED CATCHPIT/DOUBLE CATCHPIT
- (P11) DCPS — EXISTING CATCHPIT/DOUBLE CATCHPIT
- 31 — LOT NUMBER

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAITAKERE CITY COUNCIL'S (WCC) CODE OF PRACTICE FOR CITY INFRASTRUCTURE AND LAND DEVELOPMENT.
2. ALL MANHOLES ARE 1050ø UNLESS NOTED OTHERWISE.
3. ALL CATCHPIT LEADS ARE 225ø UNLESS NOTED OTHERWISE.
4. ALL PIPELINES UNDER ROADS OR ACCESSWAYS SHALL BE BACKFILLED WITH APPROVED COMPACTED HARDFILL TO DESIGN SUBGRADE LEVEL.
5. ALL EXISTING MANHOLES SHALL BE ADJUSTED TO SUIT FINISHED GROUND LEVELS.
6. THE CONTRACTOR IS TO CONFIRM THE POSITION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO WORKS COMMENCING.
7. ALL WORK ON EXISTING WCC SEWER TO BE UNDERTAKEN BY AN APPROVED CONTRACTOR. THIS INCLUDES LOWERING AND EXTENTION OF EXISTING MANHOLES.
8. ALL DRAINAGE LINES UNDER RETAINING WALLS TO COMPLY WITH WCC REQUIREMENTS.

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DRAWING NOTES

APPROVED
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on : RMA 2060 1672 1675
signed: _____ date: 9/10/08
authorised officer

CALCULATED 100 YEAR FLOOD LEVEL
DRAINAGE EASEMENT
EX. SS LINE TO BE ABANDONED AND CAPPED
EX. SSMH TO BE REMOVED
FOOTBRIDGE
EX. SS LINE TO BE REMOVED AND RELAID
PROPOSED DETENTION BASIN 2 REFER SHEET C19
PROPOSED WETLAND AND DETENTION BASIN 1 REFER SHEET C17
GAS PIPELINE EASEMENT
DRAINAGE EASEMENT
ROAD 1
ROAD 2
ROAD 4
ROAD 5
TITCH PLACE
WOODBANK DRIVE
EX. SW OUTLET TO BE EXTENDED
SWMH G2 TO BE PLACED ON END OF EXISTING SW OUTLET
OUTLET G1
OUTLET C1
OUTLET A1
OUTLET S1

REV	DATE	DESCRIPTION	DRAWN	CHECK
C	210908	BSMH 32 ADDED	FK	DR
B	150808	POND ADDED	FK	DR
A	130808	VARIOUS AMENDMENTS	FK	DR

DRAWING REVISIONS

Babbage CONSULTANTS
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

DRAINAGE PLAN (SHEET 1)

SHEET 1 OF 2

	DATE	INITIAL
DESIGNED	JUNE 2008	FK
DRAWN	JUNE 2008	FK
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB NUMBER	DRAWING NUMBER	REVISION
4260	C1	C

29/09/2008 2:48:12 p.m. I:\dgn\4260\01\4260BCIVMC10 DRAINAGE PLAN SHEET 1.dwg

KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- DRAINAGE EASEMENT
- SWMH L5 — PROPOSED STORMWATER LINE
- SSMH 9C — PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED CATCHPIT/DOUBLE CATCHPIT
- CP11 * DCPS ** EXISTING CATCHPIT/DOUBLE CATCHPIT
- PROPOSED SWALE
- 58 LOT NUMBER

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAITAKERE CITY COUNCIL'S (WCC) CODE OF PRACTICE FOR CITY INFRASTRUCTURE AND LAND DEVELOPMENT.
2. ALL MANHOLES ARE 1050ø UNLESS NOTED OTHERWISE.
3. ALL CATCHPIT LEADS ARE 225ø UNLESS NOTED OTHERWISE.
4. ALL PIPELINES UNDER ROADS OR ACCESSWAYS SHALL BE BACKFILLED WITH APPROVED COMPACTED HARDFILL TO DESIGN SUBGRADE LEVEL.
5. ALL EXISTING MANHOLES SHALL BE ADJUSTED TO SUIT FINISHED GROUND LEVELS.
6. THE CONTRACTOR IS TO CONFIRM THE POSITION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO WORKS COMMENCING.
7. ALL WORK ON EXISTING WCC SEWER TO BE UNDERTAKEN BY APPROVED CONTRACTOR. THIS INCLUDES LOWERING AND EXTENTION OF EXISTING MANHOLES.
8. ALL DRAINAGE LINES UNDER RETAINING WALLS TO COMPLY WITH WCC REQUIREMENTS.

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on : RMA 20060771078
signed: [signature] date: 19/10/06
authorised officer

ALBION VALE DRIVE

EX. POND TO BE DECOMMISSIONED AND BACKFILLED AS DIRECTED BY THE ENGINEER

EXISTING 1800ø CULVERT

WEST COAST RD

ROAD 9 · ROAD 8 · ROAD 7 · ROAD 6

SWALE 2 · SWALE 1

CONCRETE CHANNEL

DRAINAGE EASEMENT

CALCULATED 100 YEAR FLOOD LEVEL

OUTLET L1 · OUTLET R1 · OUTLET M1 · OUTLET J1 · OUTLET I1

DCPS 63

WOODBANK DRIVE

PYRAMID PLACE

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.09.06	SWALE ADDED	FK	DR

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100 FANSHAWE STREET
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AUCKLAND 1 NEW ZEALAND
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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

DRAINAGE PLAN (SHEET 2)

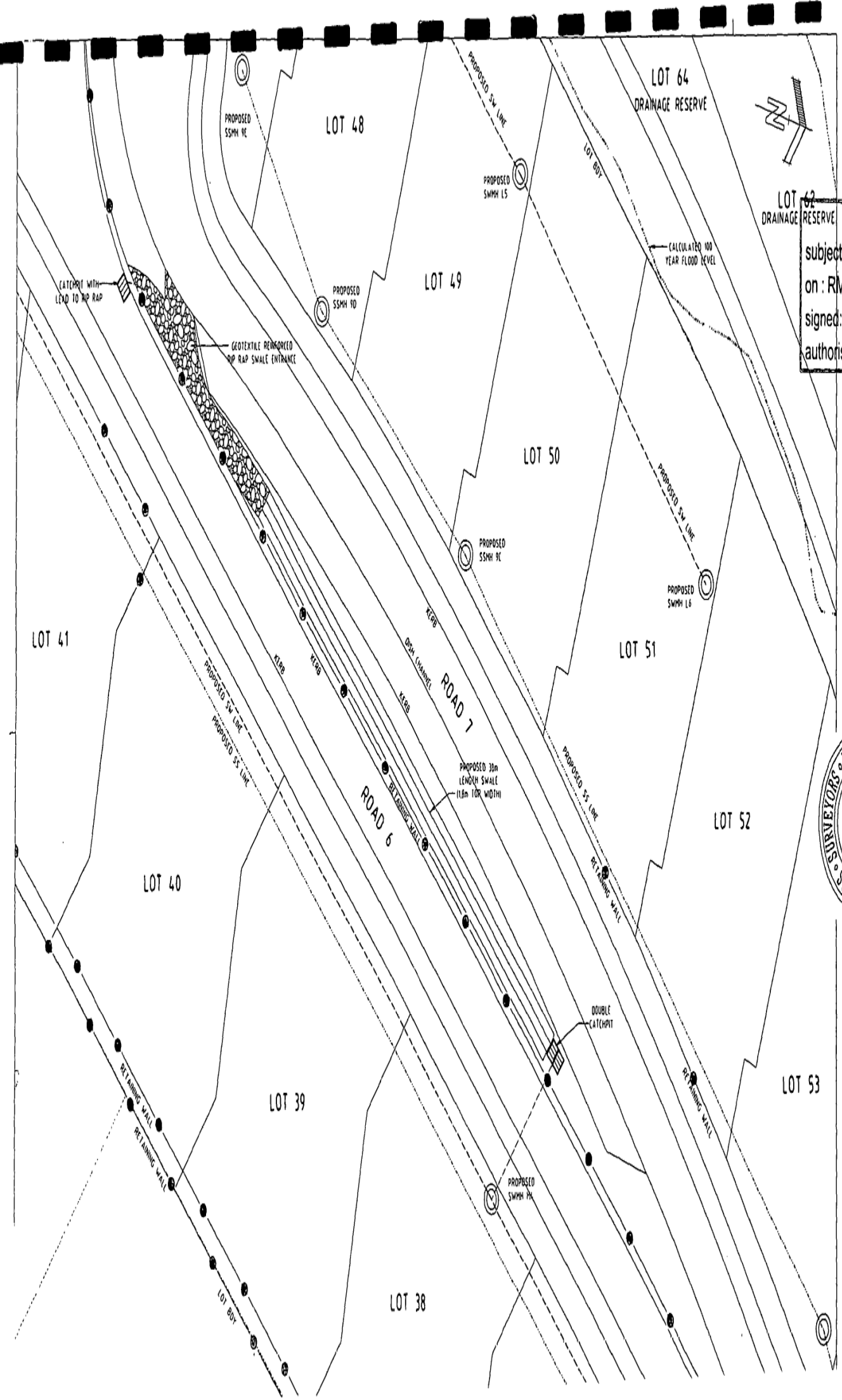
	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

25 SEP 2006

SCALE (A1)

1:500

JOB NUMBER | DRAWING NUMBER | REVISION



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authorised officer

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admin@babbage.co

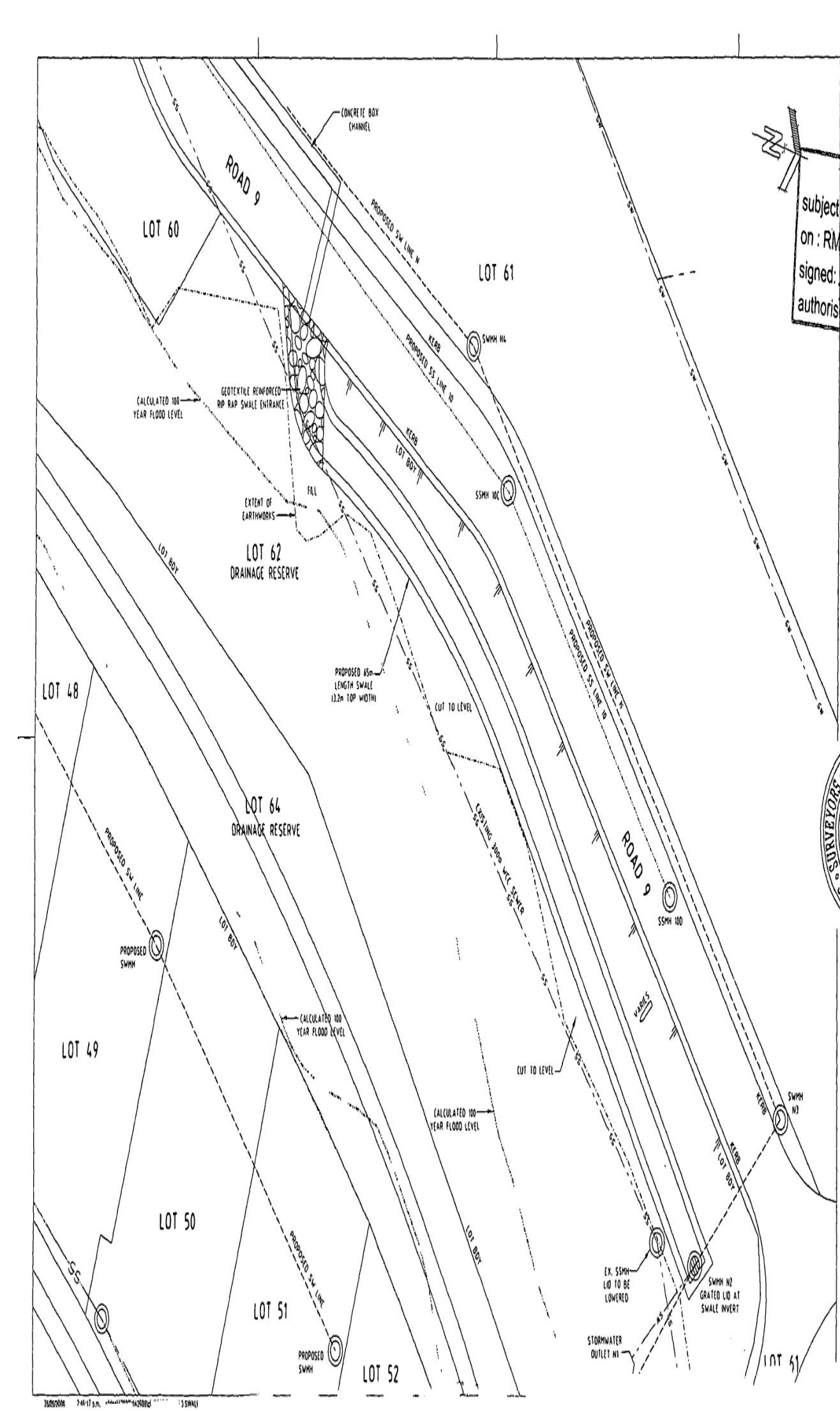
CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMEN
FOR
NZ HOUSING FOUNDATIO

DRAWING TITLE
STAGE 2
SWALE LAYOUT

	DATE	INITIAL
DESIGNED	SEPT 2006	FK
DRAWN	SEPT 2006	FK
CHECKED		
APPROVED		

SCALE (A1)
1:125

JOB NUMBER	DRAWING NUMBER	REVISION



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REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.07.06	SWALE REPLACES POND	PK	DMR

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

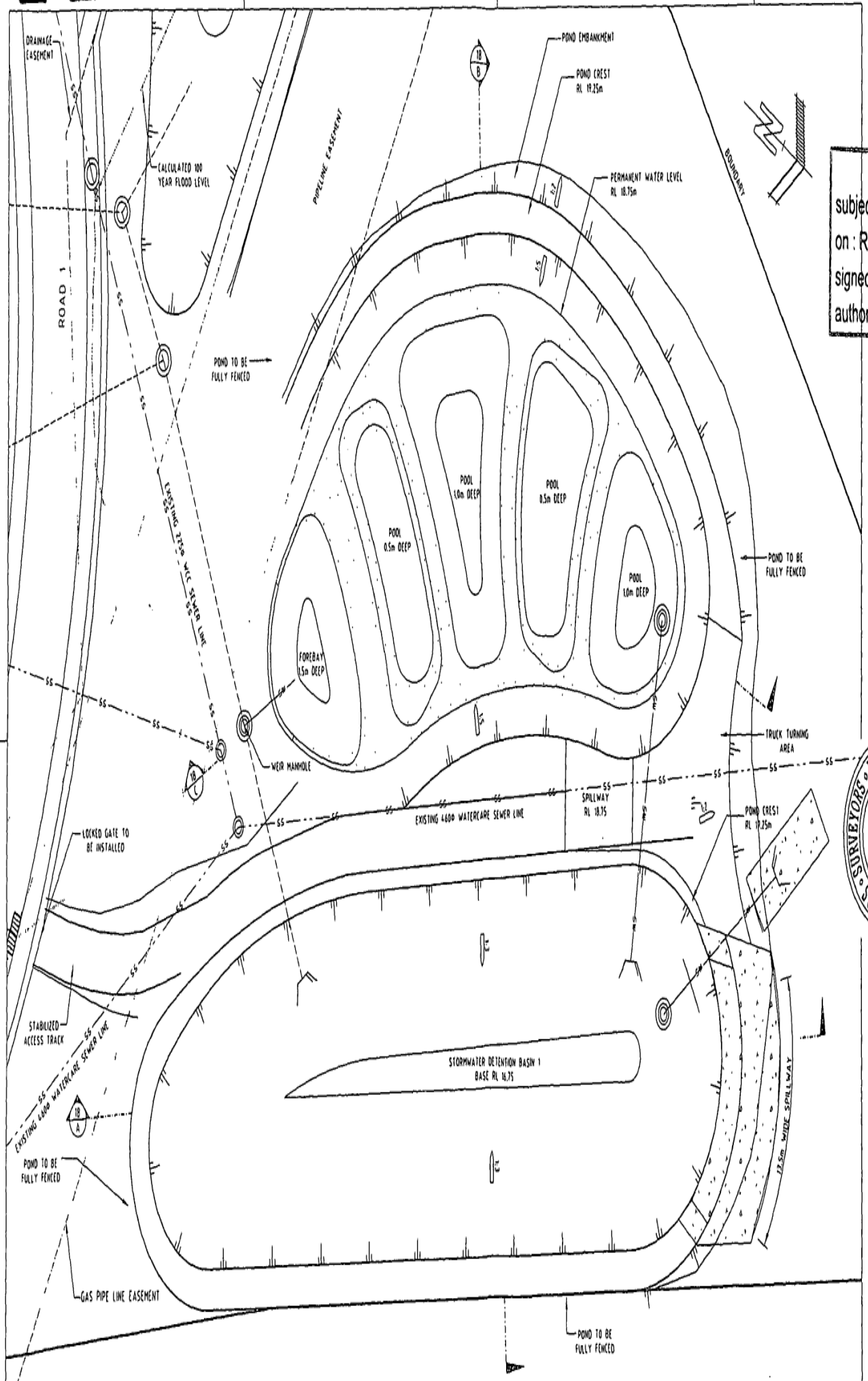
STAGE 3
SWALE LAYOUT

	DATE	INITIAL
DESIGNED	JUNE 2006	DMR
DRAWN	JUNE 2006	MJD
CHECKED		
APPROVED		

SCALE (A1)
1:125

JOB NUMBER	DRAWING NUMBER	REVISION
2602	51	A

25 SEP 2006



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signed: _____ date: 19/
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	1008	VARIOUS AMENDMENTS	FK	

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CLIENT / PROJECT
WEST COAST ROAD HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
WETLAND & DETENTION BASIN 1 LAYOUT

	DATE	INITIAL
DESIGNED	JUNE 2008	GMR
DRAWN	JUNE 2008	GW
CHECKED		
APPROVED		

29 SEP 2008

SCALE (A1)
1:125

JOB NUMBER	DRAWING NUMBER	REVISION

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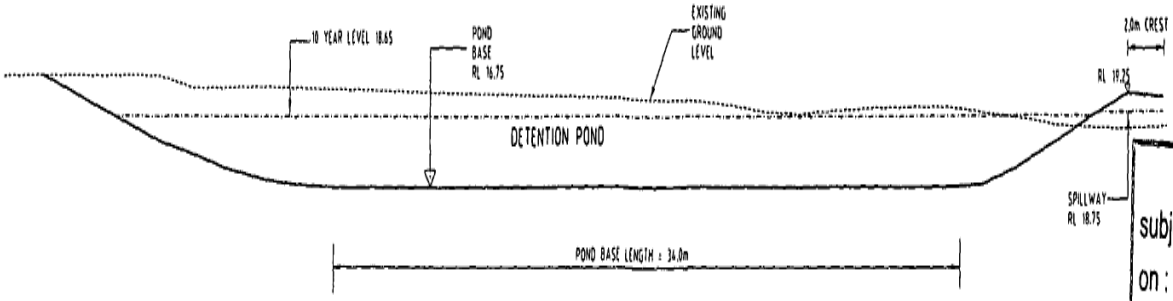

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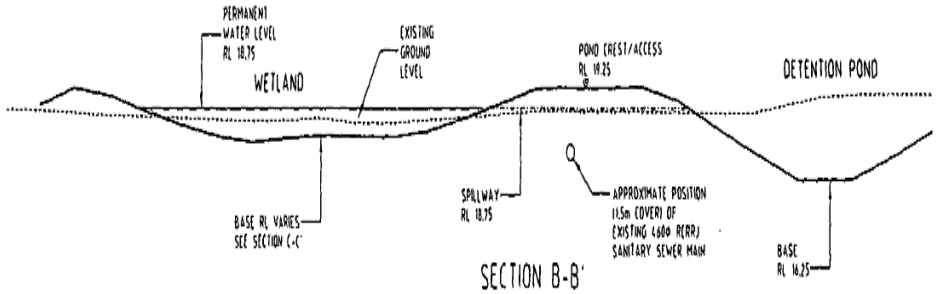
SCALE 1:100



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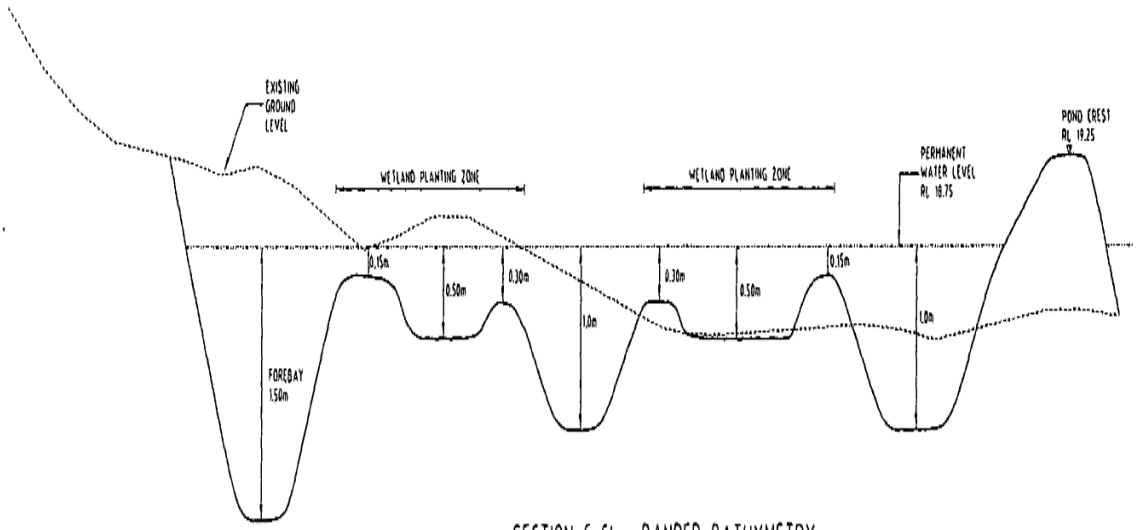
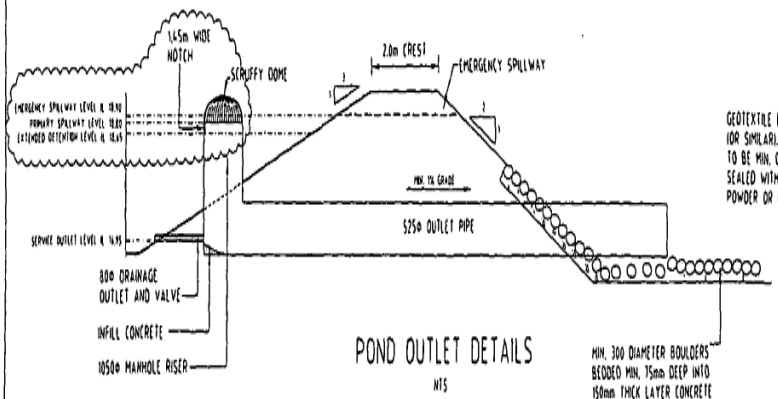
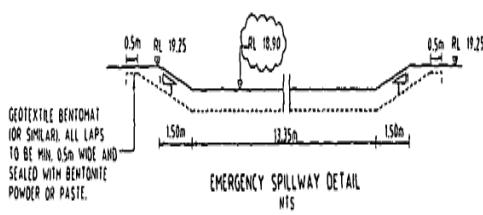
SCALE 1:100



SECTION C-C' - BANDED BATHYMETRY
SCALE HOR 1:100 VERT 1:20



POND OUTLET DETAILS
NTS



EMERGENCY SPILLWAY DETAIL
NTS

APPROVED
subject to conditions endorsed
on : RMA 2206 1677 | 1677
signed: _____ date: 19/1
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	18.08.08	WORDING AMENDED	PK	
A	29.08.08	WORDING AMENDED	DMR	

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CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
POND
DETAILS PLAN

	DATE	INITIALS
DESIGNED	JUNE 2008	DMR
DRAWN	JUNE 2008	DMR
CHECKED		
APPROVED		

SCALE (A1)
AS SHOWN

JOB | DRAWING | REVISION

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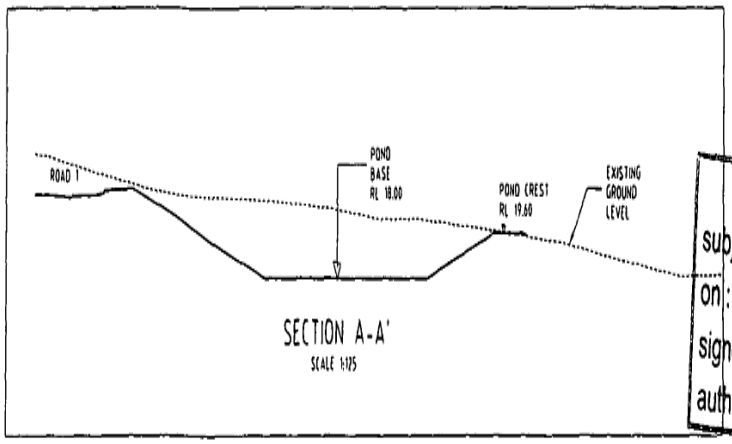

SECTION A-A'
SCALE 1:125

APPROVED
subject to conditions endorsed
on: RMA 20061077 11.7.08
signed: _____ date: 11/10
authorised officer

CALCULATED 100 YEAR FLOOD LEVEL

POND CREST RL 19.60m

7.5m WIDE SPILLWAY

STORMWATER DETENTION BASIN 2
BASE RL 18.00

PIPELINE EASEMENT

ROAD 1

DRAINAGE EASEMENT

POND TO BE FULLY FENCED

GAS PIPE LINE EASEMENT

BOUNDARY

EXISTING 300ø WW SEWER LINE

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

DETENTION
BASIN 2 LAYOUT

29 SEP 2008

	DATE	INITIAL
DESIGNED	AUG 2008	DMR
DRAWN	AUG 2008	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
40209		

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DRAWING NOTES

KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- PROPOSED STORMWATER LINE
- PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED CESSPIT/DOUBLE CESSPIT
- EXISTING CESSPIT/DOUBLE CESSPIT
- PROPOSED PRAM CROSSING
- K&C VERTICAL KERB & CHANNEL
- K&N VERTICAL KERB & NIB
- DC DISH CHANNEL
- 31 LOT NUMBER

APPROVED
subject to conditions endorsed
on : RMA 20061071 & 1075
signed: _____ date: 19/10/06
authorised officer

REV	DATE	DESCRIPTION	DRAWN	CHKD
A	07.09.06	INTERSECTIONS AMENDED	FK	DMR

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

ROADING PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	CW
CHECKED		
APPROVED		

SCALE (A1)
1:500

JOB / DRAWING / REVISION

ROAD 1 ROAD 2 ROAD 3 ROAD 4 ROAD 5 ROAD 6
TITCH PLACE
WOODBANK DRIVE

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DRAWING NOTES

KEY

- EXISTING BOUNDARY
- CALCULATED 100 YEAR FLOOD LEVEL
- PROPOSED STORMWATER LINE
- PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED CESSPIT/DOUBLE CESSPIT
- EXISTING CESSPIT/DOUBLE CESSPIT
- PROPOSED PRAM CROSSING
- KBC VERTICAL KERB & CHANNEL
- KBN VERTICAL KERB & NIB
- DC DISH CHANNEL
- CES CONCRETE EDGE STRIP
- 58 LOT NUMBER

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: _____ date: 19/10/06
authorised officer

ALBION VALE DRIVE

WEST COAST RD

WOODBANK DRIVE

PYRAMID PLACE

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	07.09.06	SWALE ADDED	FK	DMR

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

ROADING PLAN
(SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
4067		

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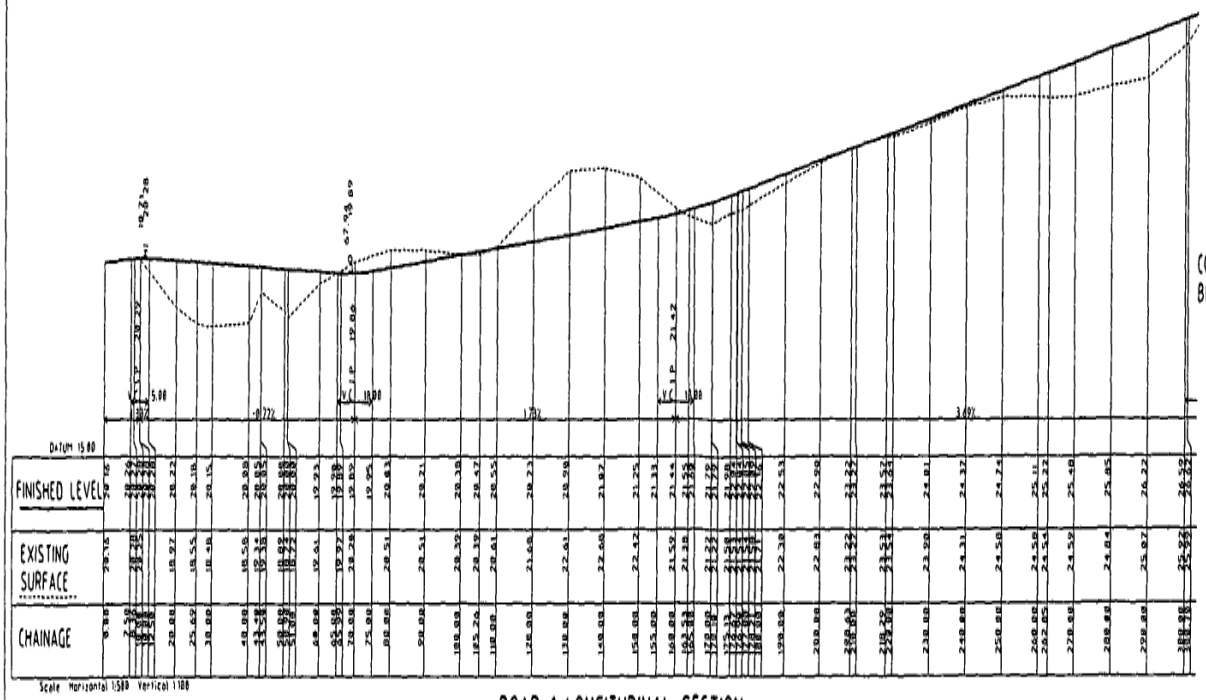
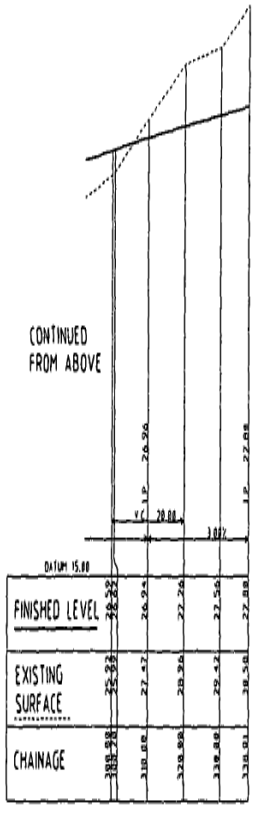
signed: _____ date: 17
authorised officer



ROAD 1 LONGITUDINAL SECTION



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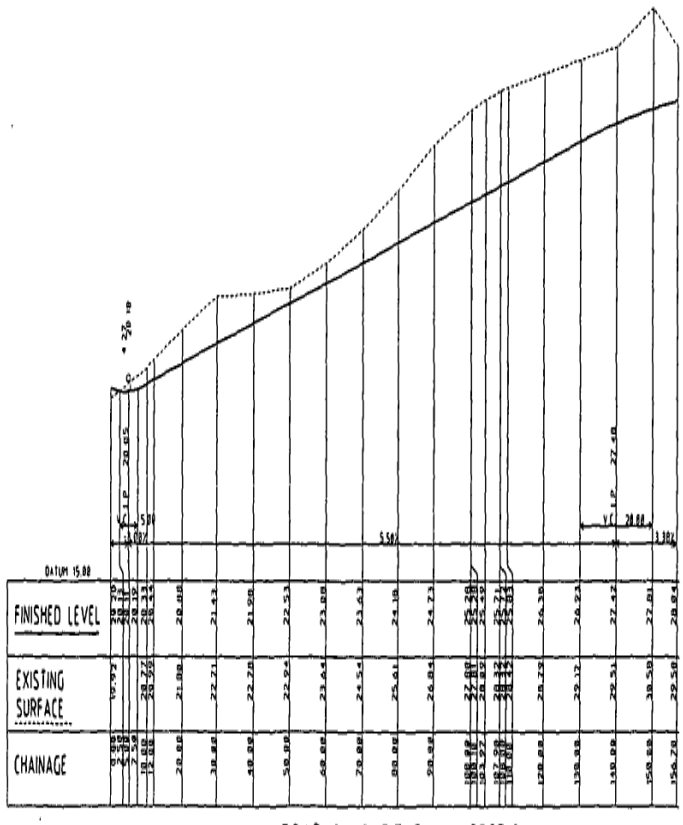

ROAD 2 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

ROAD LONGITUDINAL SECTIONS (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 03	RM
DRAWN	JUNE 03	GM
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APPROVED		

SCALE (A1)

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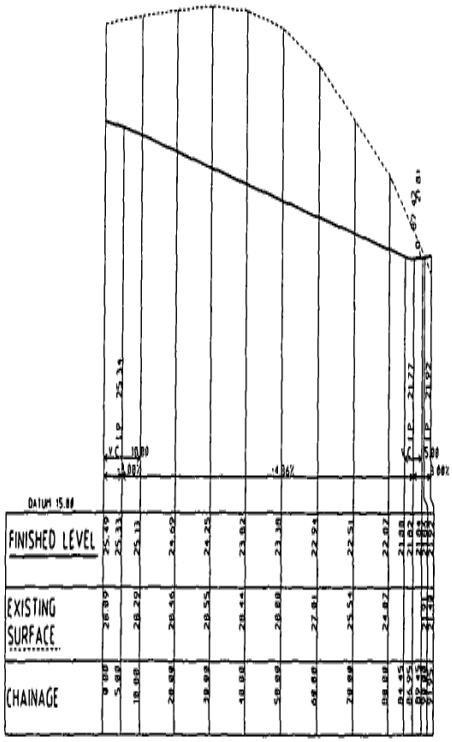
signed: _____ date: 19/10
authorised officer



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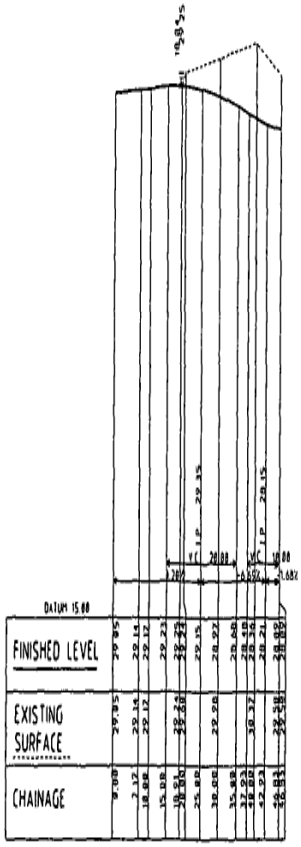

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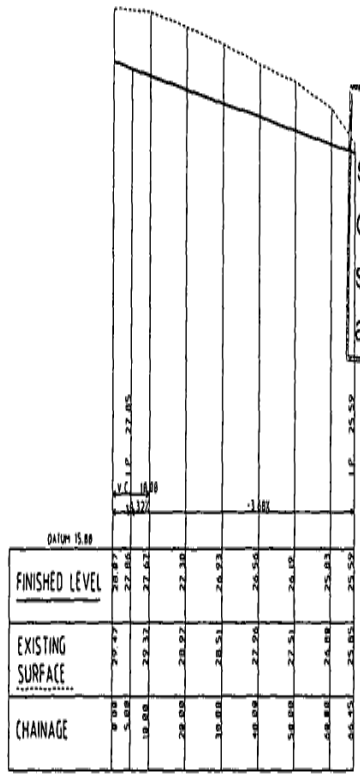
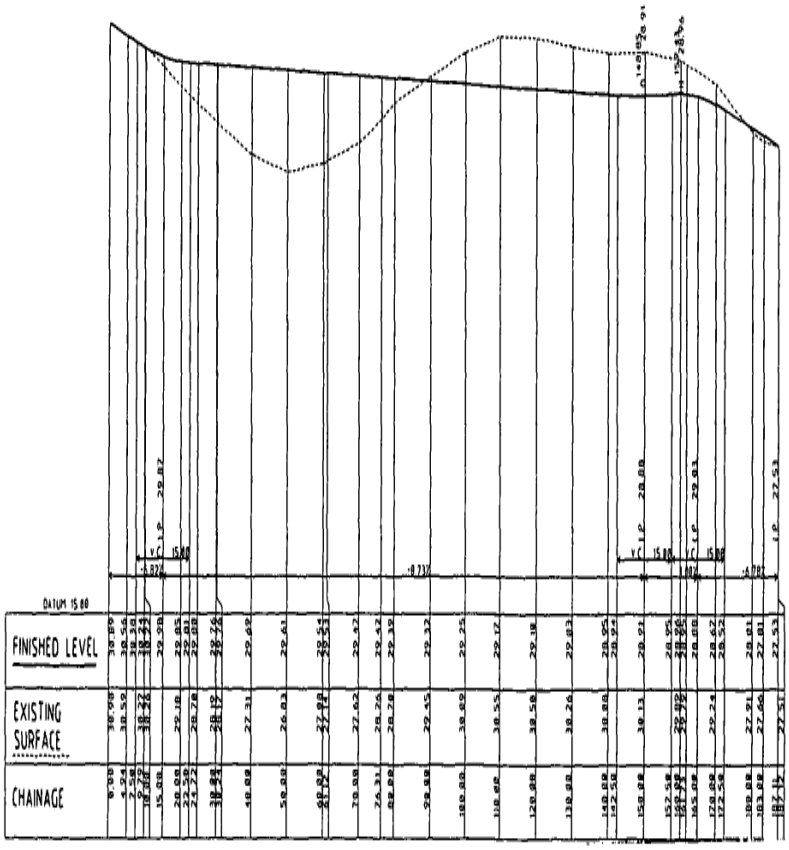


ROAD 5 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS



ROAD 6 LONGITUDINAL SECTION

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admin@babbage.co.nz

CLIENT / PROJECT
WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE
ROAD LONGITUDINAL SECTIONS (SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 06	FK
DRAWN	JUNE 06	OW
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APPROVED		

29 SEP 2006

SCALE (A1)
HORT 1:500 VERT 1:100

JOB NUMBER	DRAWING NUMBER	REVISION
0606	053	

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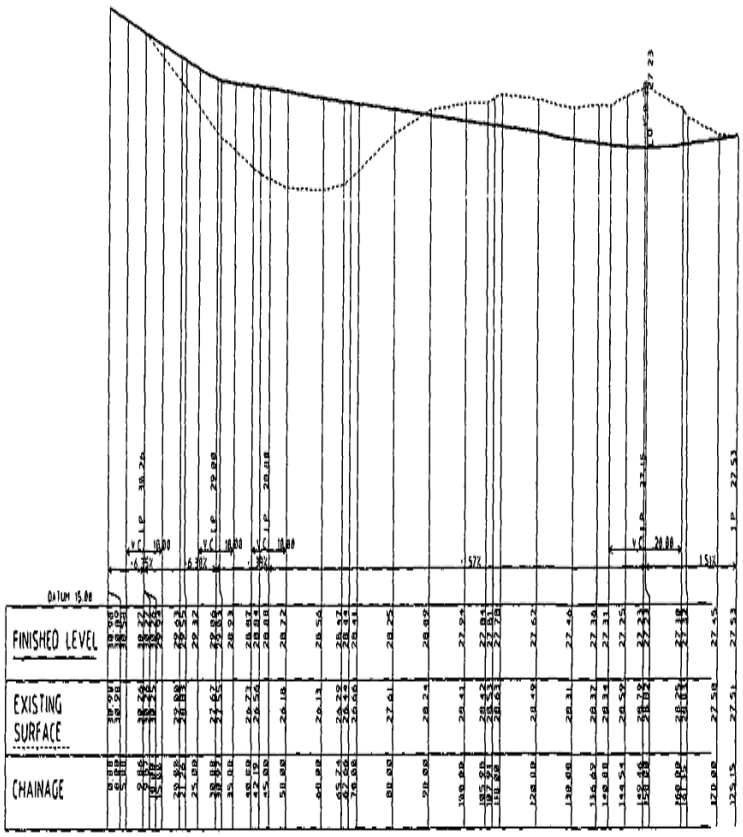
on : RMA 20216277 | 1078
signed: [signature] date: 9/11/20
authorised officer



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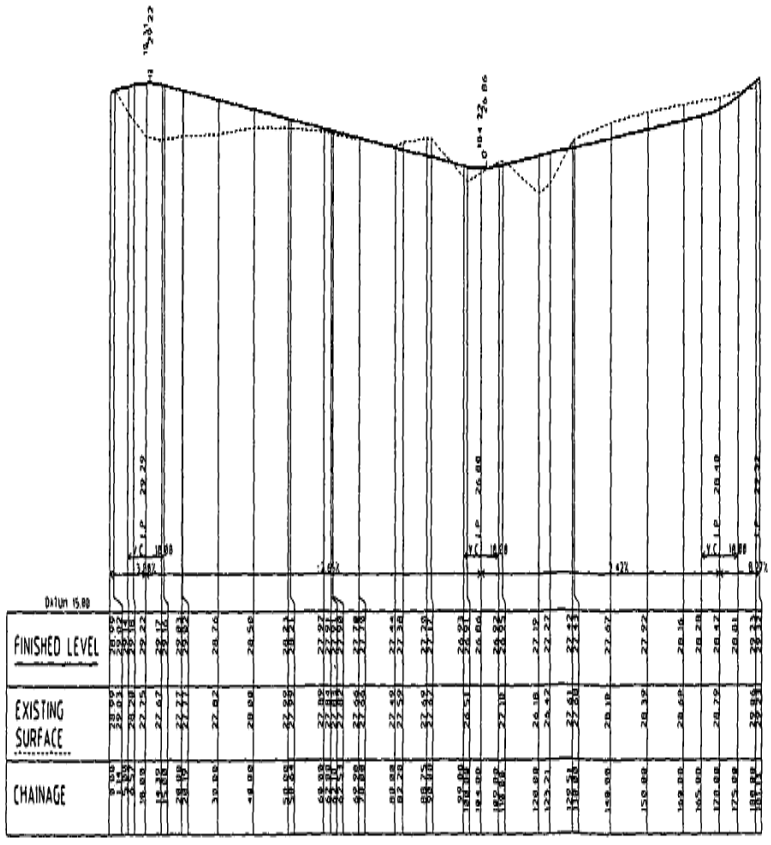

ROAD 9 LONGITUDINAL SECTION

REV	DATE	DESCRIPTION	DRAWN	CHECK

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PHONE 09 - 379 9990 FAX 09 - 377 1170
admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

ROAD LONGITUDINAL SECTIONS (SHEET 3)

	DATE	INITIAL
DESIGNED	JUNE 08	FK
DRAWN	JUNE 08	GW
CHECKED		
APPROVED		

SCALE (A1)

HORT 1:500 VERT 1:100

JOB NUMBER | DRAWING NUMBER | REVISION

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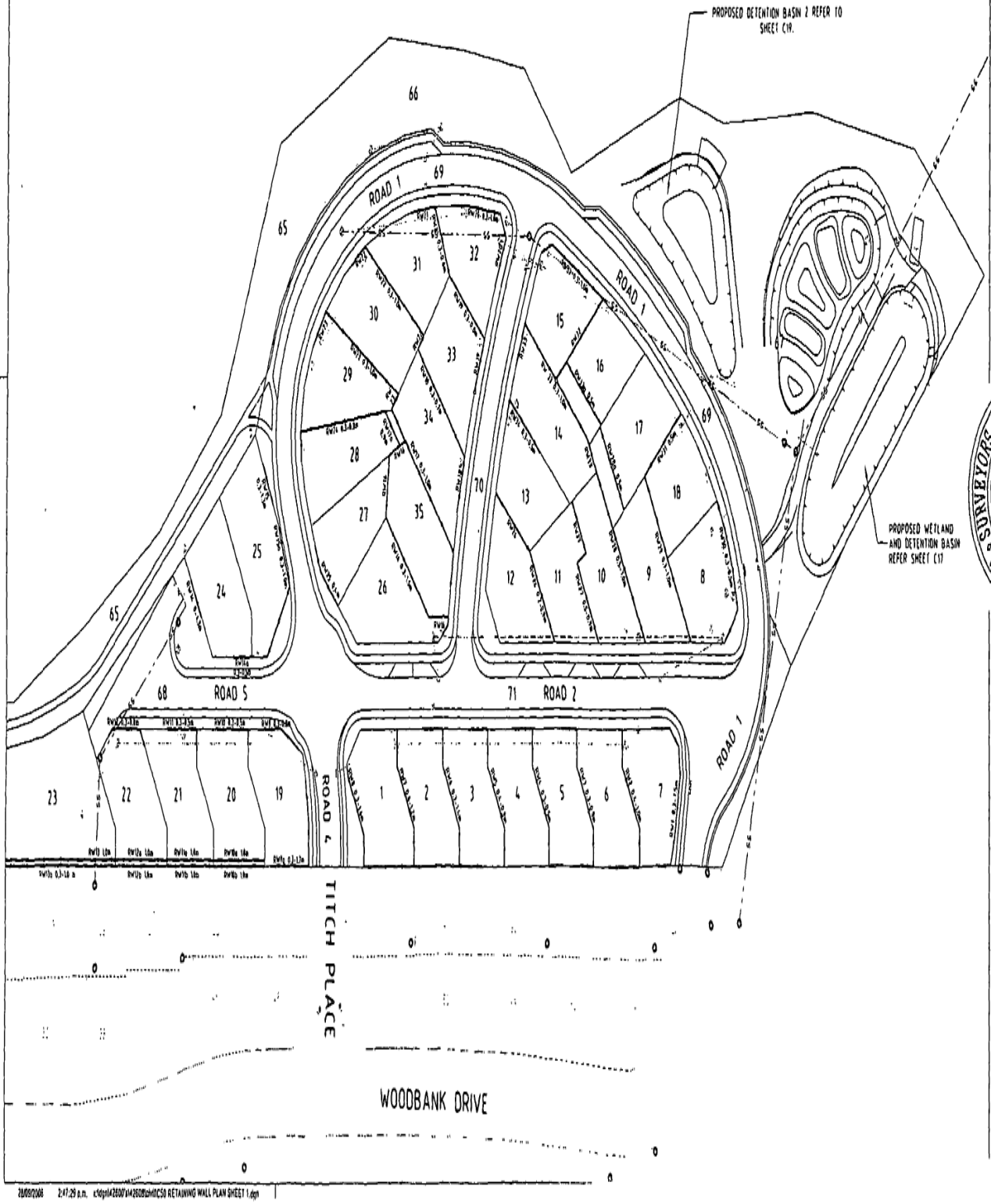
APPROVED
subject to conditions endorsed
on : RMA 20061077 10278
signed: _____ date: 19/6/09
authorised officer

KEY

- RETAINING WALL
- 31 LOT NUMBER
- PROPOSED STORMWATER LINE
- PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE



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DRAWING REVISIONS

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AUCKLAND 1 NEW ZEALAND
PHONE 09 - 379 8990 FAX 09 - 377 1170
admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD
HOUSING DEVELOPMENT
FOR
NZ HOUSING FOUNDATION

DRAWING TITLE

RETAINING WALL
PLAN
(SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2008	FK
DRAWN	JUNE 2008	FK
CHECKED		
APPROVED		

SCALE (A1)
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JOB NUMBER	DRAWING NUMBER	REVISION
4868	C18	

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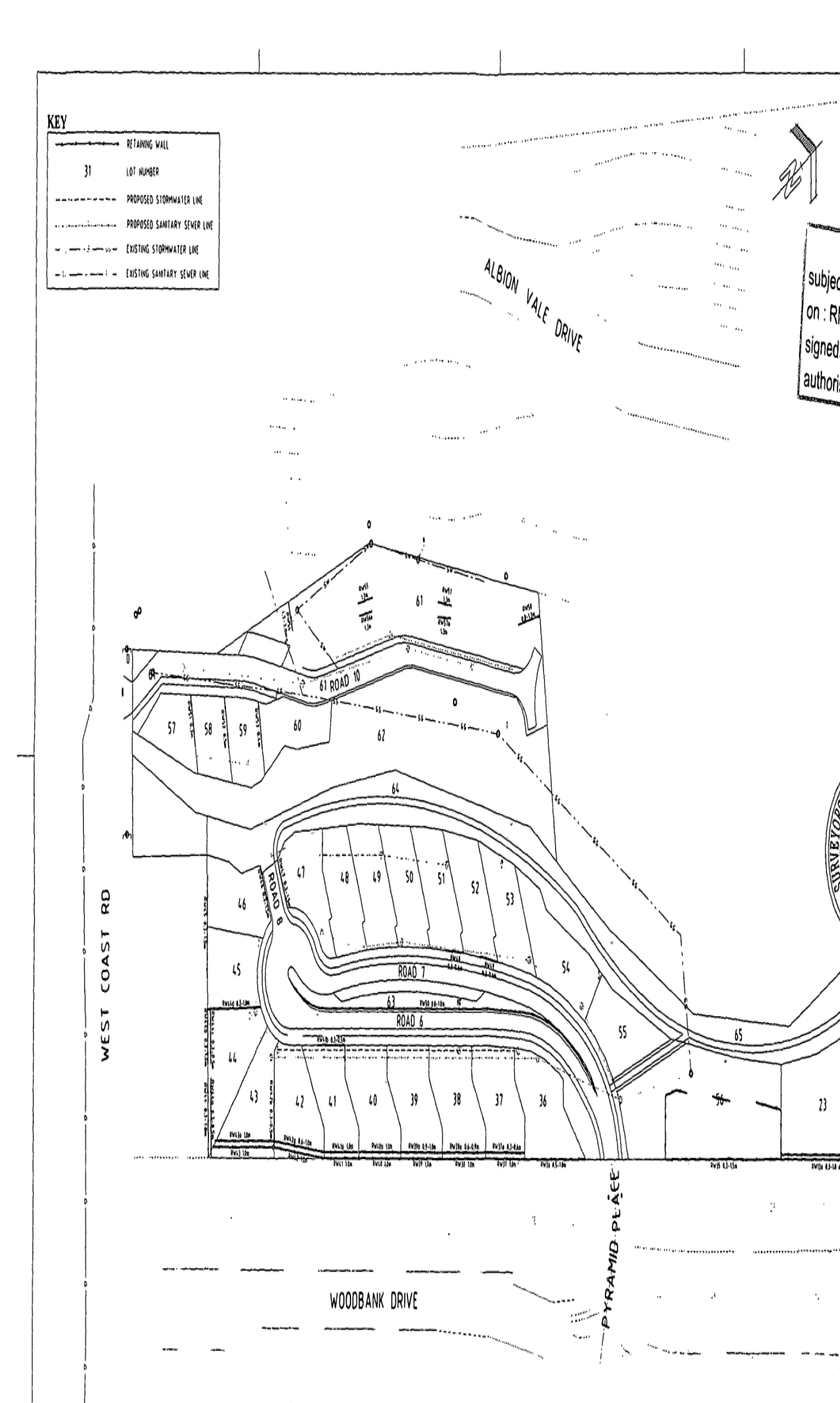
DRAWING NOTES

KEY

- RETAINING WALL
- 31 LOT NUMBER
- PROPOSED STORMWATER LINE
- PROPOSED SANITARY SEWER LINE
- EXISTING STORMWATER LINE
- EXISTING SANITARY SEWER LINE

APPROVED
subject to conditions endorsed
on : RMA 20061077 / 1078
signed: _____ date: 19/10/06
authorised officer



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WEST COAST ROAD
HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

RETAINING WALL
PLAN
(SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
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APPROVED		

SCALE (A1)

1:500

JOB NUMBER [redacted] DRAWING [redacted] REVISION [redacted]

28/09/2 11 p m 4260060 ING WALL 2.dgn

KEY

- EXISTING BOUNDARY
- EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- EARTHWORK CONTOUR (1.0m INTERVAL)
- DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION, TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EROSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.

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authorised officer

SILT FENCE

DIRTY WATER RUNOFF DIVERSION BUND

AREA A
11.96 Ha

INDICATIVE LOCATION FOR CHEMICAL TREATMENT SHED

SEDIMENT POND
AREA : 1053m²
VOL. CAPACITY : 1306m³
VOL. REQUIRED : 588m³
RAIN ACTIVATED CHEMICAL TREATMENT (PAC) REQUIRED FOR POND DURING EARTHWORKS, BATCH DOSING AS REQUIRED.

SUPER SILT FENCE

AREA B
(0.98 Ha)

FLOW

TITCH PLACE

WOODBANK DRIVE

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	07.09.06	POND & LEVELS AMENDED	FK	DR
A	120906	VARIOUS AMENDMENTS	FK	DR

DRAWING REVISIONS

SURVEYORS • ARCHITECTS • ENGINEERS
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	GW
DRAWN	JUNE 2006	GW
CHECKED		
APPROVED		

SCALE (A1)

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JOB NUMBER | DRAWING NUMBER | REVISION

13 SEP 2006

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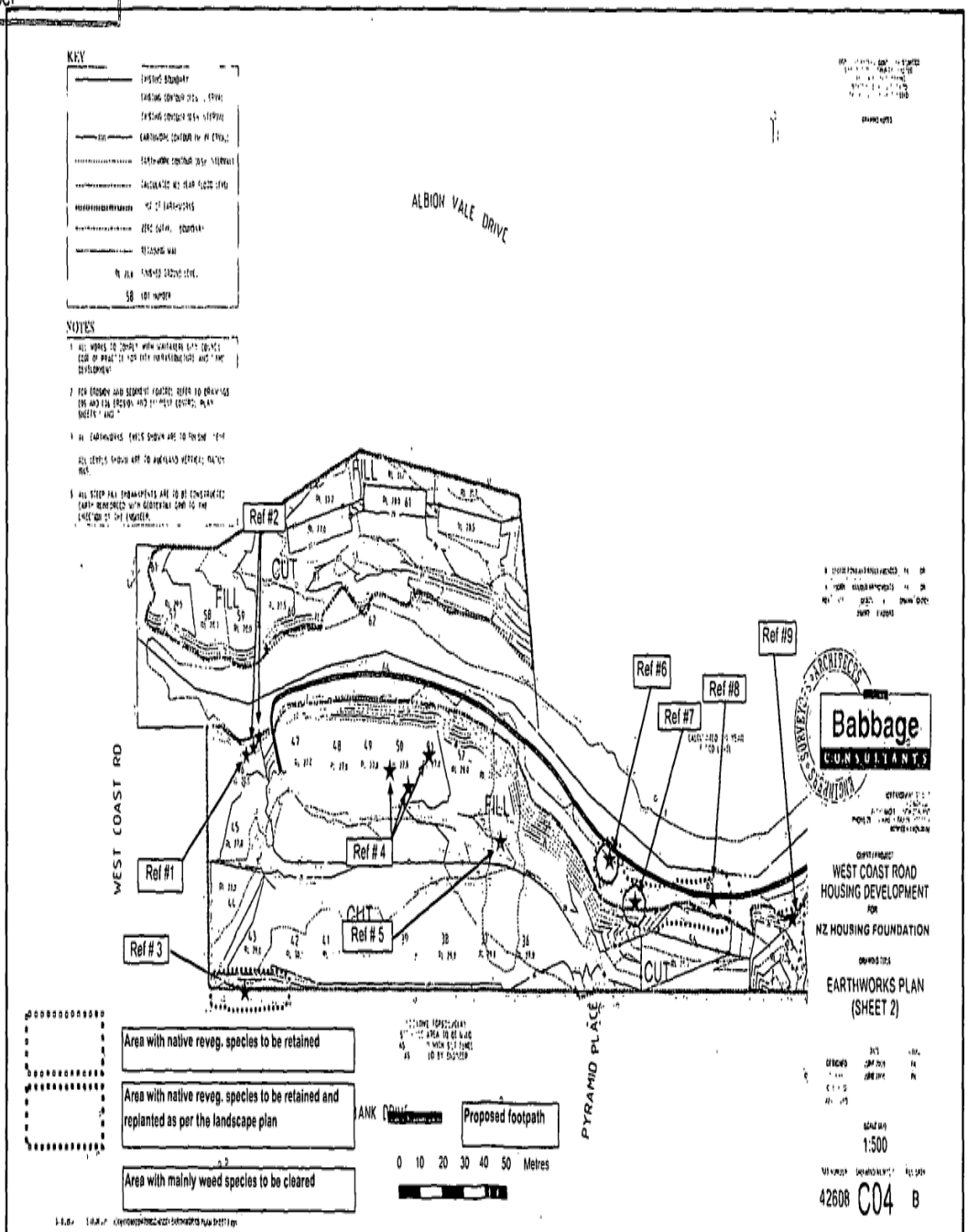
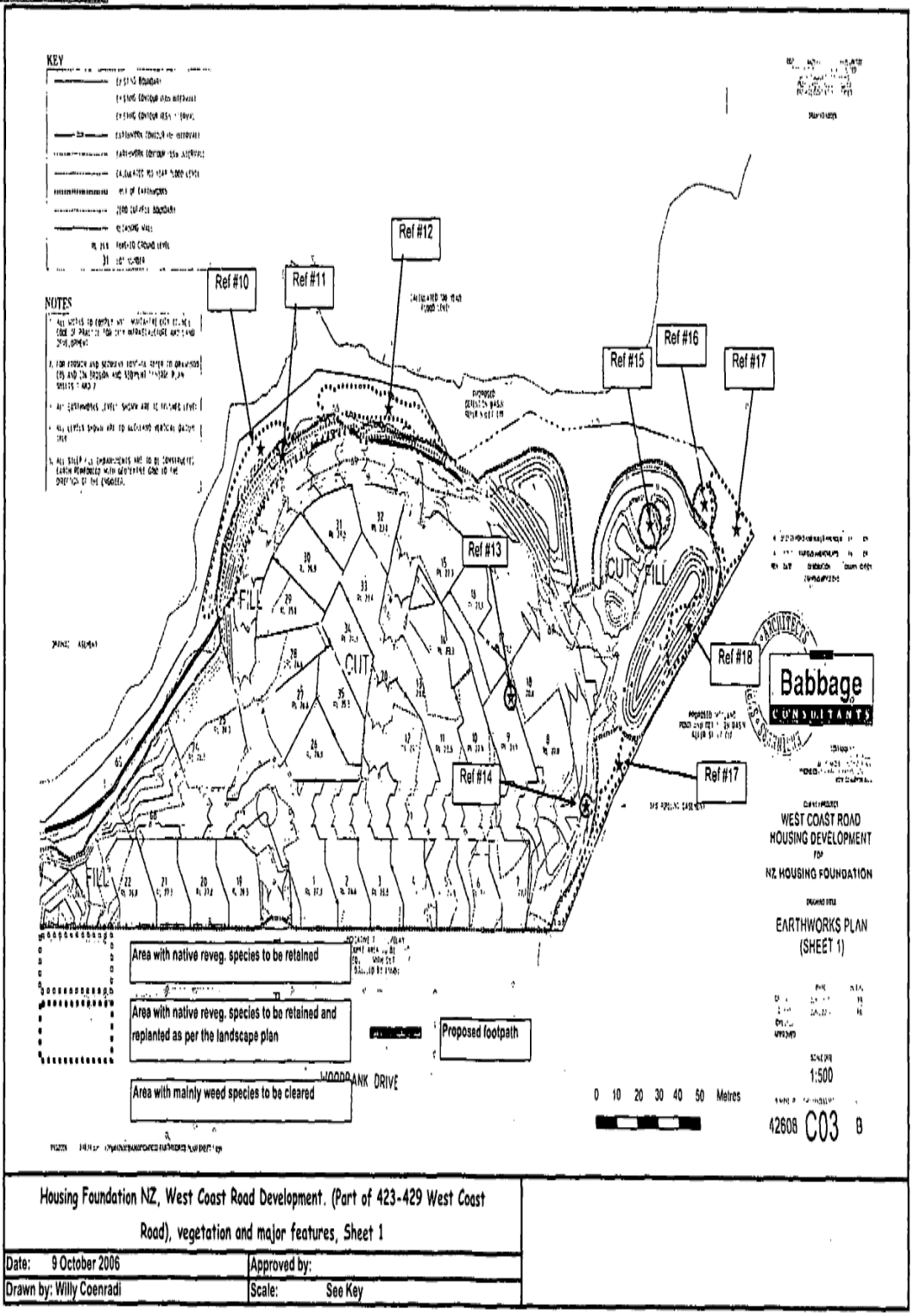


Housing Foundation NZ, West Coast Road Development. (Part of 423-429 West Coast Road), vegetation and major features plan, Sheet 2

Date: 9 October 2006	Approved by:
Drawn by: Willy Coenradi	Scale: See Key

APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: _____ date: 19/10/06
authorised officer



Housing Foundation NZ, West Coast Road Development. (Part of 423-429 West Coast Road), vegetation and major features, Sheet 1

Date: 9 October 2006	Approved by:
Drawn by: Willy Coenradi	Scale: See Key

PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061077 | 076
SIGNED [signature] DATE: 17.10.06
AUTHORISED OFFICER

NZ Housing Foundation
Babbage Consultants

423-429 West Coast Road, Henderson - Housing Development **Rev C**

Additional information on proposed planting

13-Oct-06

Plant species, stock and spacings for planting types B, C, D, E and F shown on Landscape Concept drawings LSP 01 and LSP 02

All native planting stock is to be eco-sourced from plants propagated from the Waitakere region
Plant quantities in the schedules below are indicative only, and are calcuated per 1000 square metres. The full extent of the planting areas is shown on drawings LSP 01 and 02 Rev C

Types B and C: Re-vegetation shrub and tree mixes:

Planting on higher stream bank areas
Area sq m 1000

	BOTANICAL NAME	pot size	Plant Height (cm)	% of total plants	Plant in Groups of	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
BC1	*Dacrycarpus dacrydioides*	PB8	150-180	10%	5 to 10	0.9	123	secondary tree species, short stake
BC2	*Cordyline australis*	PB5	30-45	10%	5 to 10	0.9	123	
BC3	*Cortaderia fulvida*	PB5	30-45	10%	10 to 20	1.2	69	Do not plant within 2.5m of paths
BC4	*Phormium tenax*	PB3	30-45	10%	20 to 30	1.0	100	
BC5	*Leptospermum scoparium*	PB3	30-45	10%	20 to 30	0.9	123	
BC6	*Hoheria populnea*	PB3	30-45	10%	20 to 30	1.0	100	
BC7	*Carpodetus serratus*	PB5	30-45	10%	5 to 10	0.9	123	plant in partial shade of existing trees
BC8	*Hedycaria arborea*	PB5	30-45	10%	5 to 10	0.9	123	plant in partial shade of existing trees
BC9	*Coprosma lucida*	PB3	30-45	20%	10 to 20	1.0	200	
TOTAL plants per 1000 sq m				**100%**			**963**	

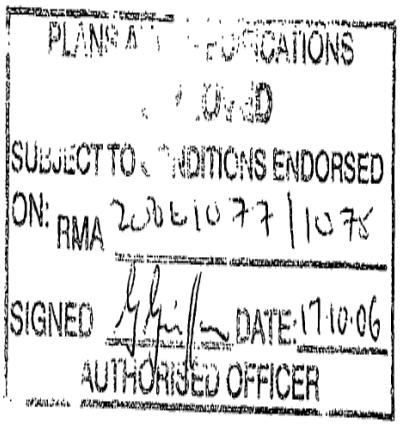
Received
16 OCT 2006

Types B and C: Re-vegetation shrub and tree mixes continued:

Riparian areas outside common flood areas

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
BC10	*Vitex lucens*	PB8	100-150	8%	20 to 30	1.0	80	secondary tree species, short stake
BC11	*Podocarpus totara*	PB8	150-180	6%	20 to 30	1.0	60	secondary tree species, short stake
BC12	*Phyllocladus trichomanoides*	PB8	150-180	5%	20 to 30	1.0	50	secondary tree species, short stake
BC13	*Coprosma robusta*	PB3	30-45	10%	10 to 20	1.2	69	
BC14	*Aristotelia serrata*	PB3	30-45	5%	5 to 10	1.2	35	
BC15	*Sophora microphylla*	PB3	30-45	5%	3 to 5	0.9	62	
BC16	*Cyathea medullaris*	PB3	30-45	3%	3 to 5	1.0	30	plant in partial shade of existing trees
BC17	*Cyathea dealbata*	PB3	30-45	4%	3 to 5	1.0	40	plant in partial shade of existing trees
BC18	*Leptospermum scoparium*	PB3	30-45	8%	10 to 30	0.9	99	
BC19	*Myrsine australis*	PB3	30-45	15%	10 to 20	0.9	185	
BC20	*Melicytus ramiflorus*	PB3	30-45	10%	10 to 20	1.2	69	
BC21	*Pseudopanax arboreus*	PB3	30-45	5%	5 to 10	1.2	35	
BC22	*Corokia buddleioides*	PB3	30-45	5%	5 to 10	0.9	62	
BC23	*Olearia furfuracea*	PB3	30-45	5%	5 to 10	1.0	50	
BC24	*Cortaderia fulvida*	PB5	30-45	6%	10 to 20	1.2	42	Do not plant within 2.5m of paths
TOTAL plants per 1000 sq m				**100%**			**736**	

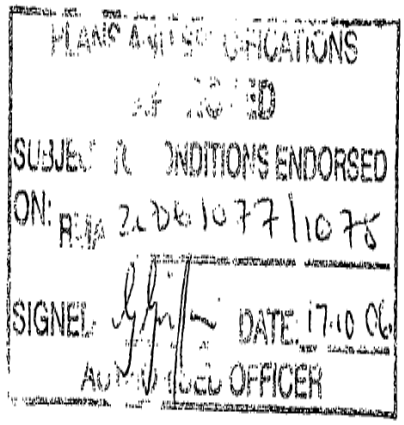


Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks:

Planting on upper bank: Generally moist ground with high water table and occasional flooding

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant In Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D1	*Dianella nigra*	PB3	30 - 45	8%	10 to 20	0.8	125	plant in partial shade of existing trees
D2	*Dacrycarpus dacrydioides*	PB8	150-180	5%	5 to 10	0.6	139	secondary tree species, short stake
D3	*Cyathea dealbata*	PB3	20 - 40	5%	10 to 20	0.7	102	plant in partial shade of existing trees
D4	*Cyatea medullaris*	PB3	20 - 40	5%	10 to 20	0.7	102	
D5	*Carex flagellifera*	PB3	20 - 40	15%	10 to 20	0.7	306	
D6	*Carex lessoniana*	PB3	20 - 40	15%	10 to 20	0.7	306	
D7	*Baumea tenax*	PB3	20 - 40	15%	10 to 20	0.7	306	
D8	*Phormium tenax*	PB3	20 - 40	15%	10 to 20	0.7	306	
D9	*Cordyline australis*	PB5	30-45	9%	5 to 10	0.9	111	
D10	*Coprosma robusta*	PB3	30-45	8%	10 to 20	1.0	80	
TOTAL plants per 1000 sq m				**100%**			**1692**	

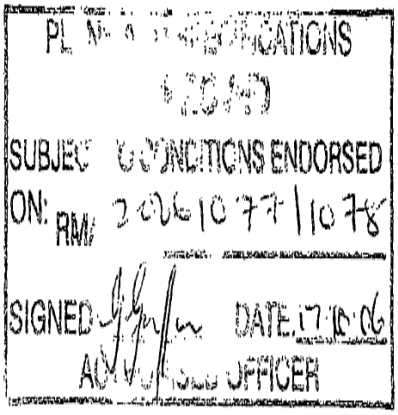


Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks continued:

Marginal emergents: marsh areas and below winter water levels

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant In Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D9	*Baumea articulata*	PB3	30 - 45	15%	10 to 20	0.8	234	
D10	*Cyperus ustulatus*	PB3	20 - 40	15%	10 to 20	0.7	306	
D11	*Baumea teretifolia*	PB3	20 - 40	15%	10 to 20	0.7	306	
D12	*Carex lessoniana*	PB3	20 - 40	10%	10 to 20	0.7	204	
D13	*Carex virgata*	PB3	20 - 40	15%	10 to 20	0.7	306	
D14	*Juncus pallidus*	PB3	20 - 40	10%	10 to 20	0.7	204	
D15	*Carex secta*	PB3	20 - 40	10%	10 to 20	0.7	204	
D+A105	*Typha orientalis*	PB3	20 - 40	10%	10 to 20	0.7	204	
TOTAL plants per 1000 sq m				100%			1969	



Type D: Wetland re-vegetation mixes: for emergents, marginals and stream banks continued:

Lower stream bank: ground above common water levels but subject to flooding

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant In Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
D17	*Blechnum novae zelandiae*	PB3	30 - 45	20%	10 to 20	0.8	313	
D18	*Dacrycarpus dacrydioides*	PB3	30 - 45	10%	5 to 10	0.6	278	
D19	*Cyperus ustulatus*	PB3	20 - 40	5%	10 to 20	0.7	102	
D20	*Phormium tenax*	PB3	30 - 45	20%	10 to 20	1.0	200	
D21	*Cortaderia fulvida*	PB3	30 - 45	10%	5 to 10	0.8	156	
D22	*Carex virgata*	PB3	30 - 45	20%	10 to 20	0.8	313	
D23	*Dicksonia squarrosa*	PB3	30 - 45	5%	3 to 5	0.9	62	
D24	*Carex secta*	PB3	30 - 45	10%	10 to 20	0.9	123	
TOTAL plants per 1000 sq m				**100%**			**1546**	

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Type E: Low to medium height amenity shrub planting for reserve to include following:

Planting in reserves at road sides, and adjacent to house lot boundaries

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants used	Plant in Groups of:	Spacing (m)	COMMENTS
E1	*Coprosma* 'Hawera'	PB5	30-45	15%	10to 20	0.9	
E2	*Coprosma* 'Taiko'	PB5	30-45	15%	5 to 10	0.9	
E3	*Hebe* 'First Light'	PB5	30-45	15%	3 to 5	0.7	
E4	*Hebe* 'Wiri Charm'	PB5	30-45	10%	3 to 5	0.7	
E5	*Phormium* 'Green Dwarf'	PB5	30-45	18%	3 to 5	0.9	
E6	*Hebe topiaria*	PB5	30-45	5%	3 to 5	0.6	
E7	Coleonema *'Winter Charm'*	PB5	30-45	5%	3 to 5	0.7	
E8	*Yucca filimentosa* 'Ivory'	PB5	30-45	2.5%	3 to 5	0.5	
E9	*Grevillea* 'Mt. Tambouritha'	PB5	30-45	10%	3 to 5	0.8	
E10	*Viburnum* 'Emerald Lustre'	PB*	30-45	2.5%	3 to 5	2.0	specimens and small groups with ground cover below
E11	*Luculia grandifolia*	PB8	30-45	2.5%	3 to 5	2.0	specimens and small groups with ground cover below
TOTAL plants per 1000 sq m				**100%**			

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Type F: Mix of low growing sedges for ground cover in attenuation ponds:

Planting in areas to take flooding during periods of heavy and prolonged rainfall

Area sq m 1000

	BOTANICAL NAME	Size	Plant Height (cm)	% of total plants	Plant in Groups of:	Spacing (m)	TOTAL PLANTS PER 1000 SQ M	COMMENTS
F1	*Carex lessoniana*	1Litre	20 - 40	20%	10 to 20	0.8	313	
F2	*Carex lambertiana*	1Litre	20 - 40	10%	10 to 20	0.7	204	
F3	*Carex dipsacea*	1Litre	20 - 40	20%	10 to 20	1.0	200	
F4	*Carex flagellifera*	1Litre	20 - 40	15%	10 to 20	0.8	234	
F5	*Carex litorosa*	1Litre	20 - 40	20%	10 to 20	0.8	313	
F6	*Carex secta*	1Litre	20 - 40	15%	10 to 20	0.9	185	
TOTAL plants per 1000 sq m				**100%**			**1449**	

PLANS AND SPECIFICATIONS
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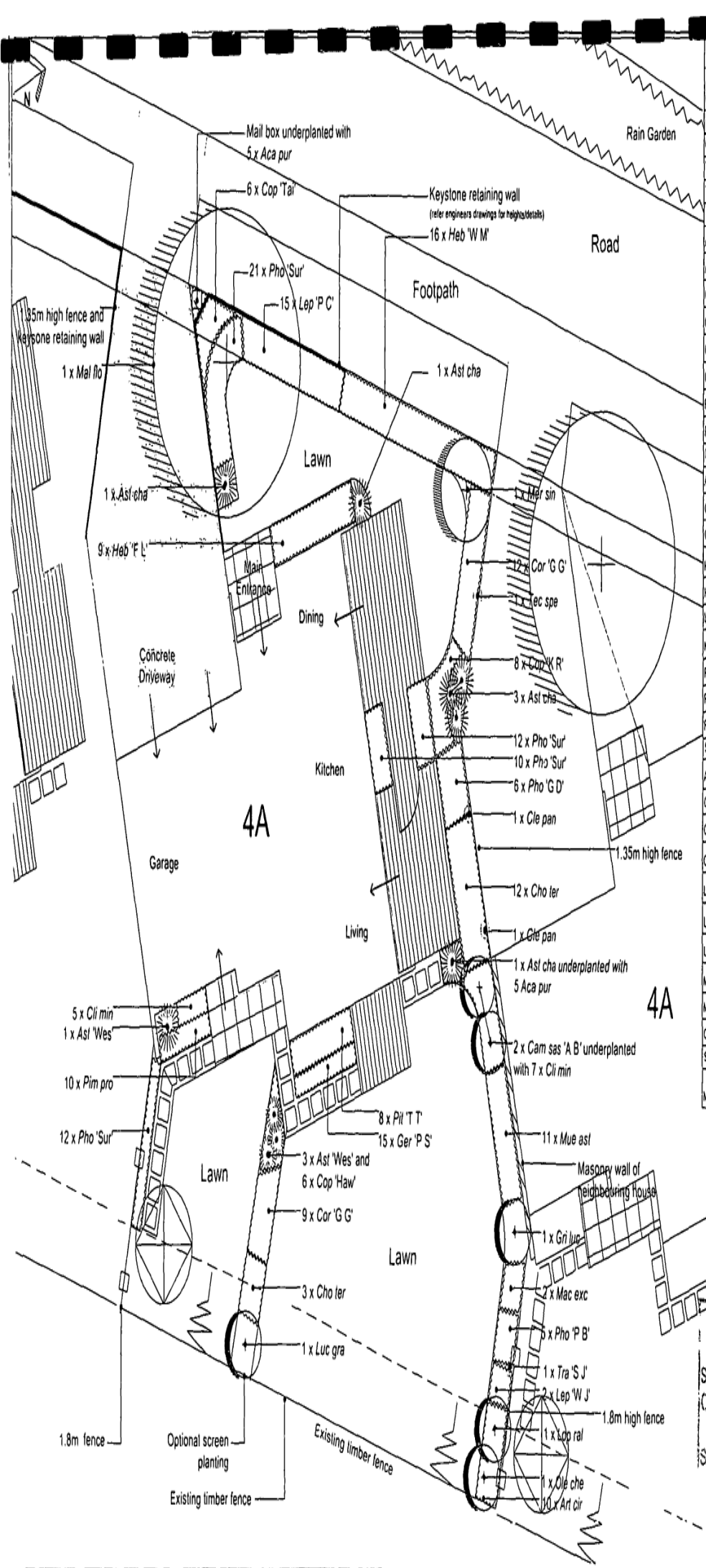


Planting Schedule House Type 4A

CODE	BOTANICAL NAME	COMMON NAME	SIZE	STOCK HEIGHT (min)	SPACING	QUANTITY
Climbers						
Cle pan	*Clematis paniculata*	Clematis	PB5	0.3m	As Shown	2
Tec spe	*Tecomanthe speciosa*	Tecomanthe	PB5	0.3m	As Shown	1
Tra 'S J'	*Trachelospermum 'Star Jasmine'*	Star Jasmine	PB5	0.3m	As Shown	1
Ground covers and low growing plants up to 0.5m						
Aca pur	*Aceana purpurea*	Piri piri	PB3	0.1m	0.3m	10
Art cir	*Arthropodium cirratum*	Renga Renga Lily	PB3	0.2m	0.4m	10
Cli min	*Clivia miniata*	Kaffir Lily	PB3	0.2m	0.4m	12
Cop 'Haw'	*Coprosma 'Hawera'*	Sand Coprosma	PB3	0.2m	0.6m	6
Cop 'Tai'	*Coprosma 'Taiko'*	Sand Coprosma	PB3	0.2m	0.6m	6
Ger 'P S'	*Geranium 'Pink Spice'*	Geranium 'Pink Spice'	PB3	0.1m	0.3m	15
Pho 'Sur'	*Phormium 'Surfer'*	Flax	PB3	0.2m	0.4m	55
Pim pro	*Pimelea prostrata*	Pinatoro	PB3	0.1m	0.6m	10
Plants 0.5-1m for mixed garden beds or hedging						
Ast 'Wes'	*Astelia 'Westland'*	Westland Red	PB8	0.3m	As Shown	4
Cor 'G G'	*Corokia 'Geentys Green'*	Korokio	PB5	0.4m	0.7m	21
Cop 'K R'	*Coprosma 'Karo Red'*	Coprosma 'Karo Red'	PB5	0.3m	0.5m	8
Heb 'F L'	*Hebe 'First Light'*	Hebe	PB3	0.3m	0.5m	9
Heb 'W M'	*Hebe 'Win Mist'*	Hebe	PB3	0.3m	0.5m	16
Lep 'P C'	*Leptospermum 'Pink Cascade'*	Manuka	PB3	0.3m	0.5m	15
Mue ast	*Muehlenbeckia astonii*	Shrubby Tororaro	PB5	0.4m	0.8m	11
Pho 'G D'	*Phormium cookianum 'Green Dwarf'*	Mountain Flax	PB5	0.4m	0.8m	8
Pho 'P B'	*Phormium 'Platts Black'*	Flax cultivar	PB8	0.5m	0.8m	5
Pit 'T T'	*Pittosporum 'Tom Thumb'*	Kohuhu cultivar	PB5	0.4m	0.7m	8
Specimen plants 1-2m for garden beds						
Ast cha	*Astelia chathamica*	Silver Spear	PB8	0.5m	As Shown	6
Cam sas 'A B'	*Camellia sasanqua 'Apple Blossom'*	Camelia	PB12	0.6m	As Shown	2
Cho ter	*Chosya ternata 'Aztec Pearl'*	Mexican Orange	PB8	0.5m	0.8m	15
Gri luc	*Griselinia lucida*	Puka	PB8	0.7m	1m	1
Lep 'W J'	*Leptospermum 'Wri Joan'*	Manuka	PB12	0.8m	0.8m	2
Lop ral	*Laphomyrtus x ralphii 'Kathryn'*	Ramarama	PB12	0.8m	As Shown	1
Luc gra	*Lucuila grandifolia*	Lucuila	PB12	0.8m	As Shown	1
Mac exc	*Macropiper excelsum*	Kawakawa	PB12	0.7m	1m	2
Mer sin	*Meryla sinclarii*	Puka	PB12	0.8m	As Shown	1
Ole che	*Olearia cheesemanii*	Tree Daisy	PB12	0.8m	As Shown	1
Specimen Trees						
Mal flo	*Malus floribunda*	Japanese Flowering Crabtree	PB95	2m	As Shown	1

PLANS AND SPECIFICATIONS APPROVED
SUBJECT TO CONDITIONS ENDORSED ON: RMA 20060772 lot 75
SIGNED [signature] DATE 7.10.06
AUTHORISED OFFICER

Revision	Description	Drawn	Checked

Drawing Statust: DRAFT

SOUL
PO Box 46211 Herne Bay, Auckland, New Zealand
phone 64 9 817 3783 | fax 64 9 817 3189
email contact@soularchitecture.co.nz
www.soularchitecture.co.nz

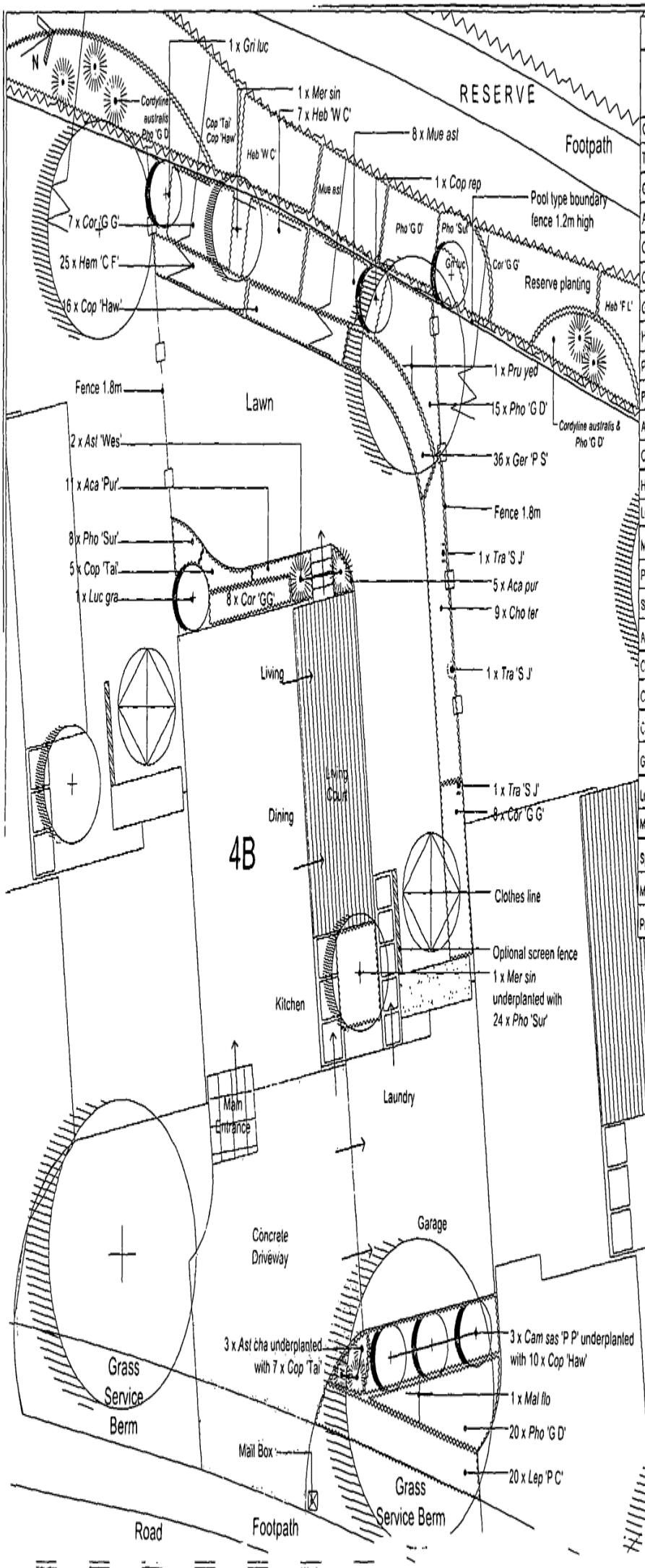
Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Typical Planting Plan
House Type 4A

Drawing Number: LSP-07

Job Number: SOUL-05/06-161



Planting Schedule House Type 4B

CODE	BOTANICAL NAME	COMMON NAME	SIZE	STOCK HEIGHT (min)	SPACING	QUANTITY
Climbers						
Tra 'S J'	*Trachelospermum 'Star Jasmine'*	Star Jasmine	PB5	0.3	As Shown	3
Ground covers and low growing plants up to 0.5m						
Ace pur	*Acaena purpurea*	Piri piri	PB3	0.1	0.3m	16
Cop 'Haw'	*Coprosma 'Hawera'*	Sand Coprosma	PB3	0.2	0.6m	26
Cop 'Tai'	*Coprosma "Taiko'*	Sand Coprosma	PB3	0.2	0.6m	12
Ger 'P S'	*Geranium 'Pink Spice'*	Geranium	PB3	0.2	0.3m	36
Ham 'C F'	*Hemerocallis 'Cabbage Flower'*	Day Lily	PB3	0.2	0.4m	25
Pho 'Sur'	*Phormium 'Surfer'*	Flax	PB3	0.2	0.4m	32
Plants 0.5-1m for mixed garden beds or hedging						
Ast 'Wes'	*Astelia 'Westland'*	Westland Red	PB8	0.4	As Shown	2
Cor 'G G'	*Corokia 'Geenlys Green'*	Korokio	PB5	0.4	0.7m	23
Heb 'W C'	*Hebe 'Wiri Charm'*	Hebe cultivar	PB5	0.4	0.8m	7
Lep 'P C'	*Leptospermum 'Pink Cascade'*	Manuka	PB5	0.4	0.5m	20
Mue ast	*Muehlenbeckia astoni*	Shrubby Tororaro	PB5	0.5	0.8m	8
Pho 'G D'	*Phormium cookianum 'Dwarf Green'*	Mountain Flax	PB5	0.5	0.8m	35
Specimen plants 1-2m for garden beds						
Ast cha	*Astelia chathamica*	Silver Speer	PB8	0.5	As Shown	3
Cam sas 'P P'	*Camellia sasanqua 'Paradise Petite'*	Camelia	PB12	0.6	As Shown	3
Cho ter	*Choisya ternata 'Aztec Pearl'*	Mexican Orange Blossom	PB8	0.5	0.8m	9
Cop rep	*Coprosma repens*	Taupata	PB8	0.6	As Shown	1
Gri luc	*Griselinia lucida*	Puka	PB8	0.7	As Shown	1
Luc gra	*Luculia grandifolia*	Luculia	PB12	0.8	As Shown	1
Mer sin	*Meryta sinclairii*	Puka	PB12	0.8	As Shown	2
Specimen Trees						
Mal flo	*Malus floribunda*	Japanese Flowering Crabtree	PB95	2m	As Shown	1
Pru yed	*Prunus yedoensis*	Flowering Cherry	PB40	0.5m	As Shown	1

NOTE: Reserve planting is not reflected in this Schedule

PLANS AND SPECIFICATIONS APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: R/MA 2006/10/77 1.0.76
SIGNED: DATE: 17.10.06
AUTHORISED OFFICER

Revision	Description	Drawn	Checked

Drawing Status: DRAFT

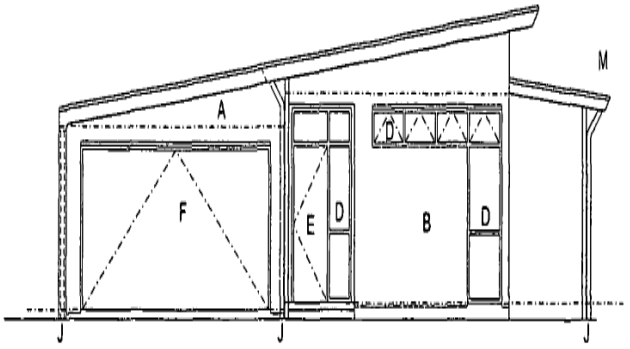
SOUL
PO Box 42211 Eltamp | Auckland, New Zealand
phone 64 9 817 2733 | fax 64 9 817 2739
email corey@soularchitecture.co.nz
www.soularchitecture.co.nz

Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Typical Garden Layout
House Type 4B

Drawing LSP 08 ... Number S ... 06-18



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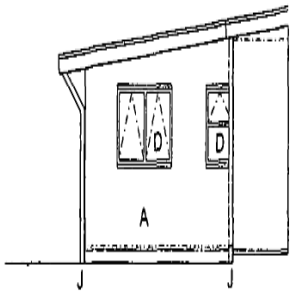

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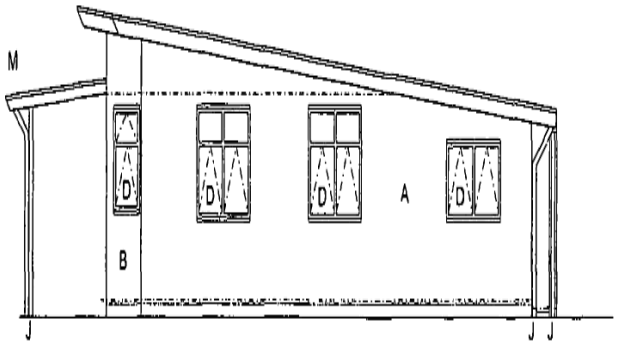

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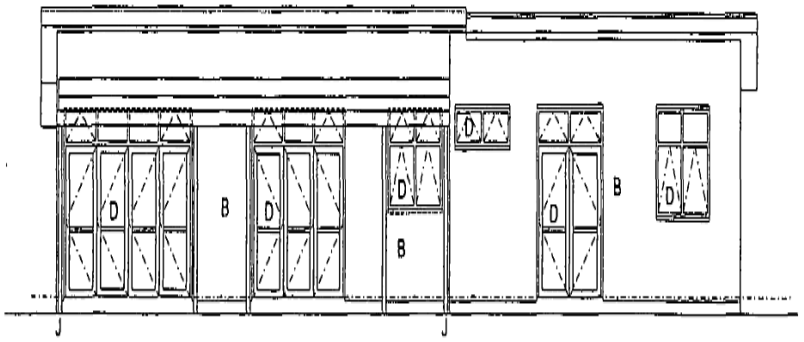

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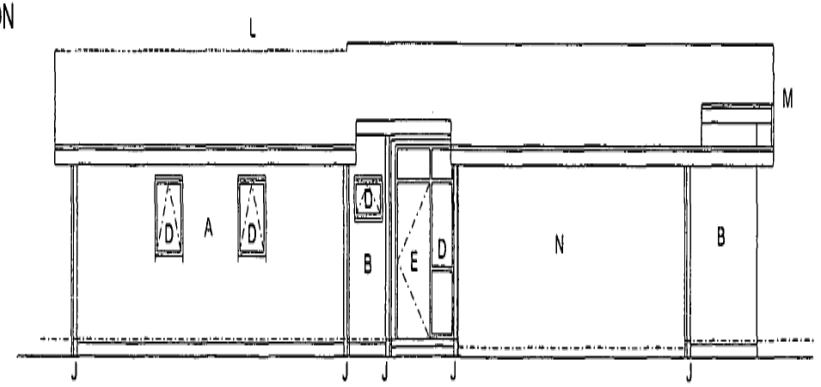

ELEVATION KEY

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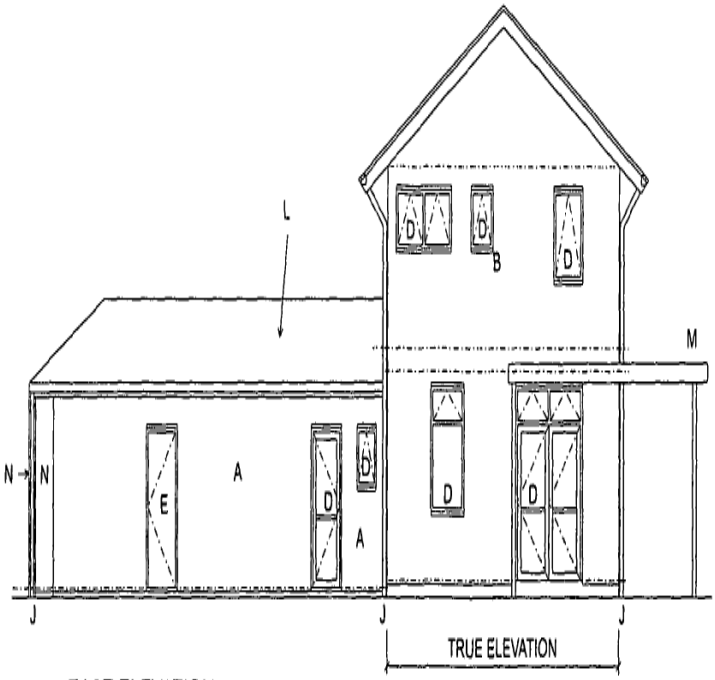
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: _____ date: 19/10
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5C HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS



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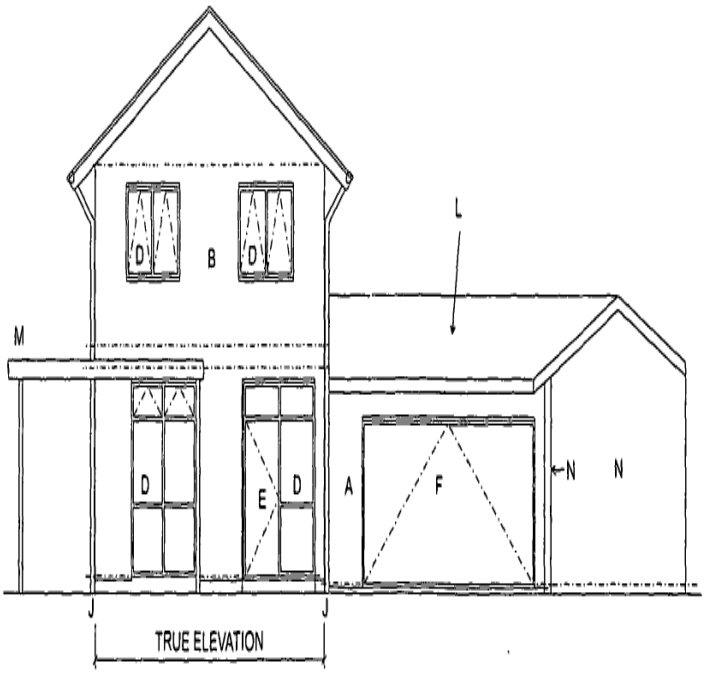

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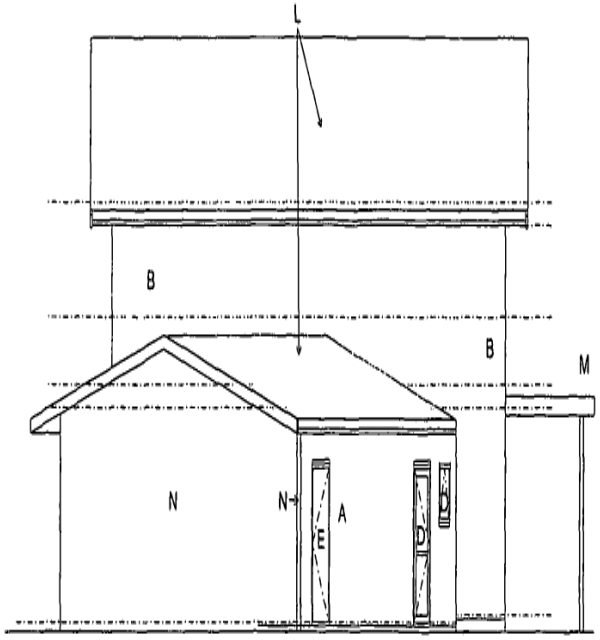
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20241027 [illegible]
signed: [illegible] date: [illegible]
authorised officer

WEST C[illegible]AST RD HOUSING DEVEL[illegible]PMENT

TYPE 5B H[illegible] - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS



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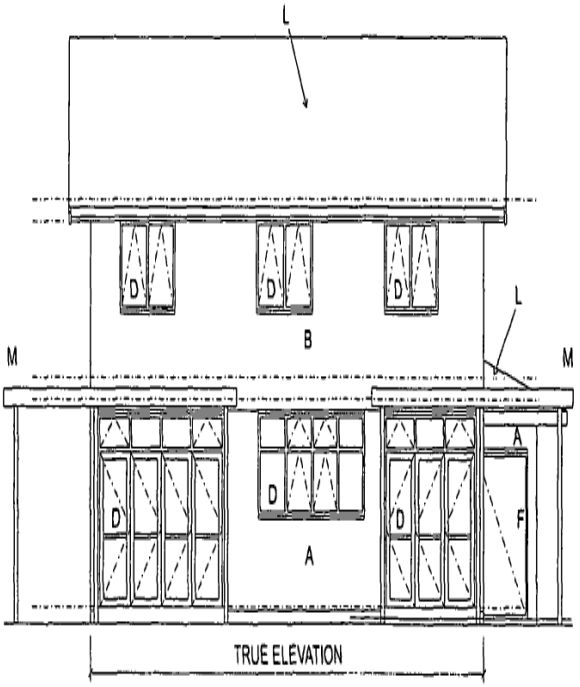

NORTH ELEVATION

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- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
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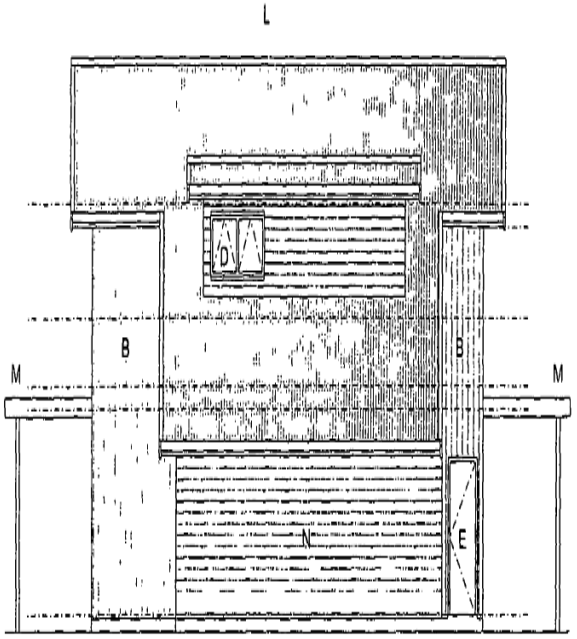
on : RMA 20061077 / 1077
signed: _____ date: 9/10/06
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

ELEVATIONS



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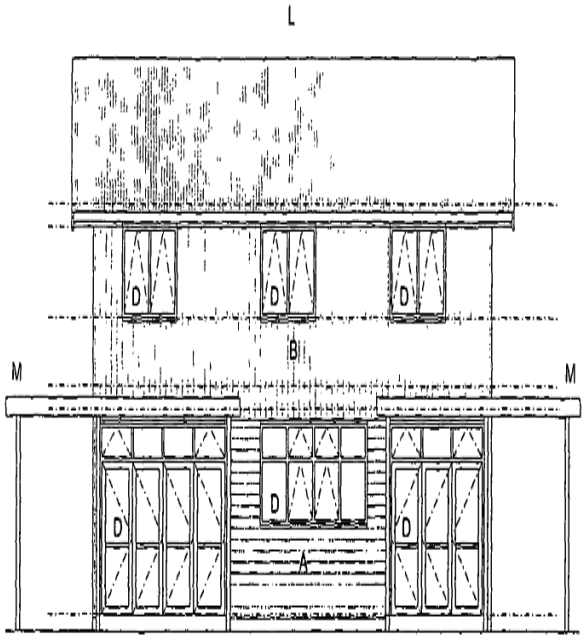

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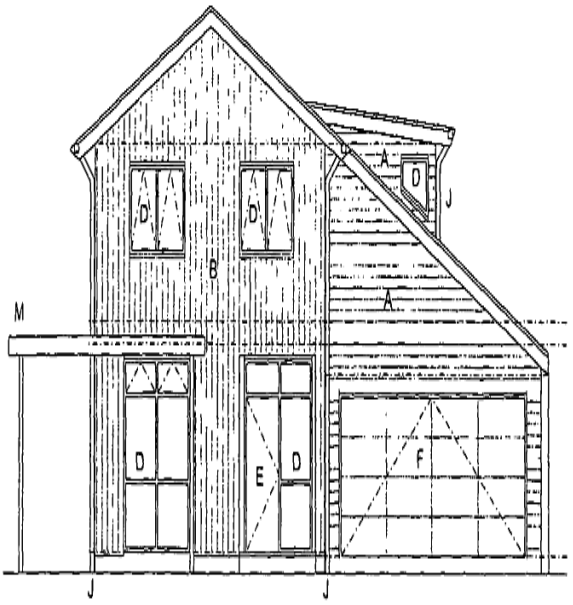

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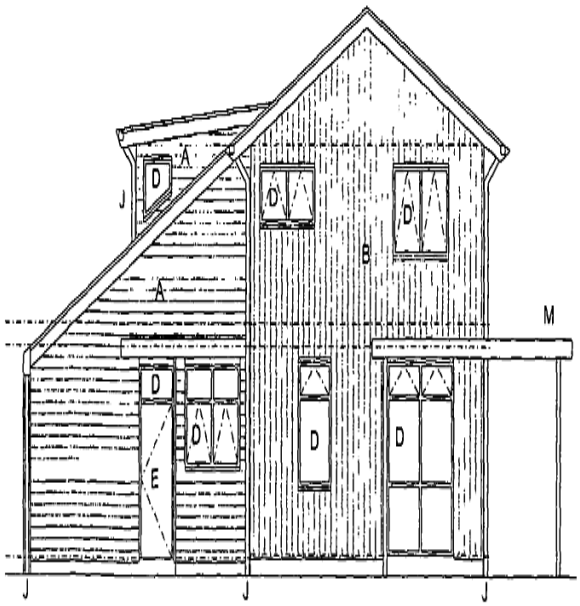

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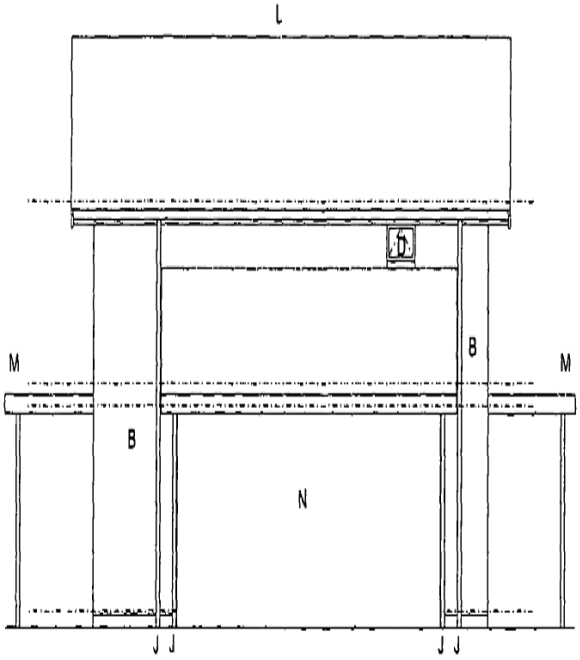
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20060077 / 107
signed: [signature] date: 7/10
authorised officer

WEST [redacted] AST RD H[redacted]USING DEVELOPMENT
TYPE 5A HOUSE - 5 BEDROOM / DOUBLE GARAGE
ELEVATIONS



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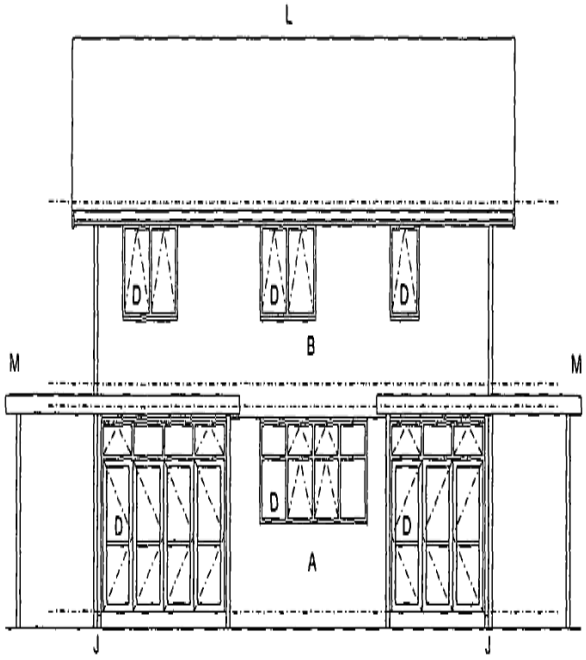

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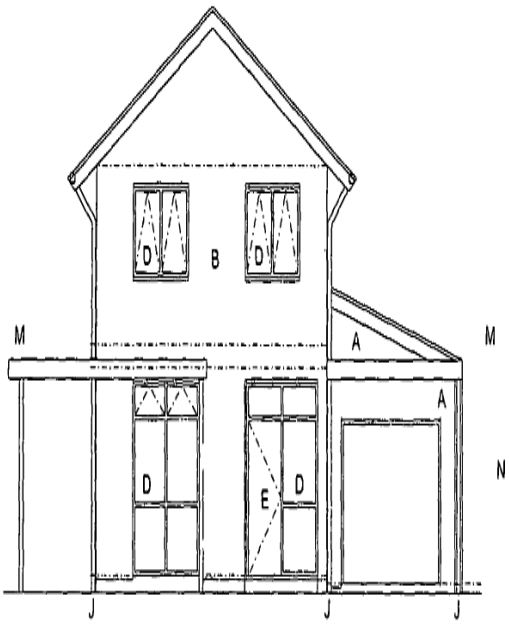

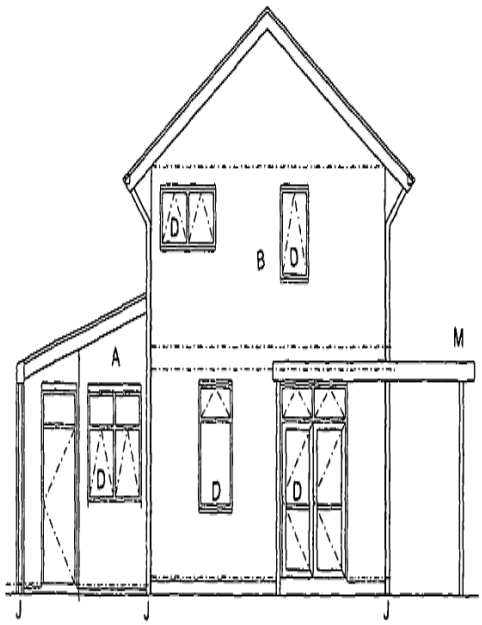

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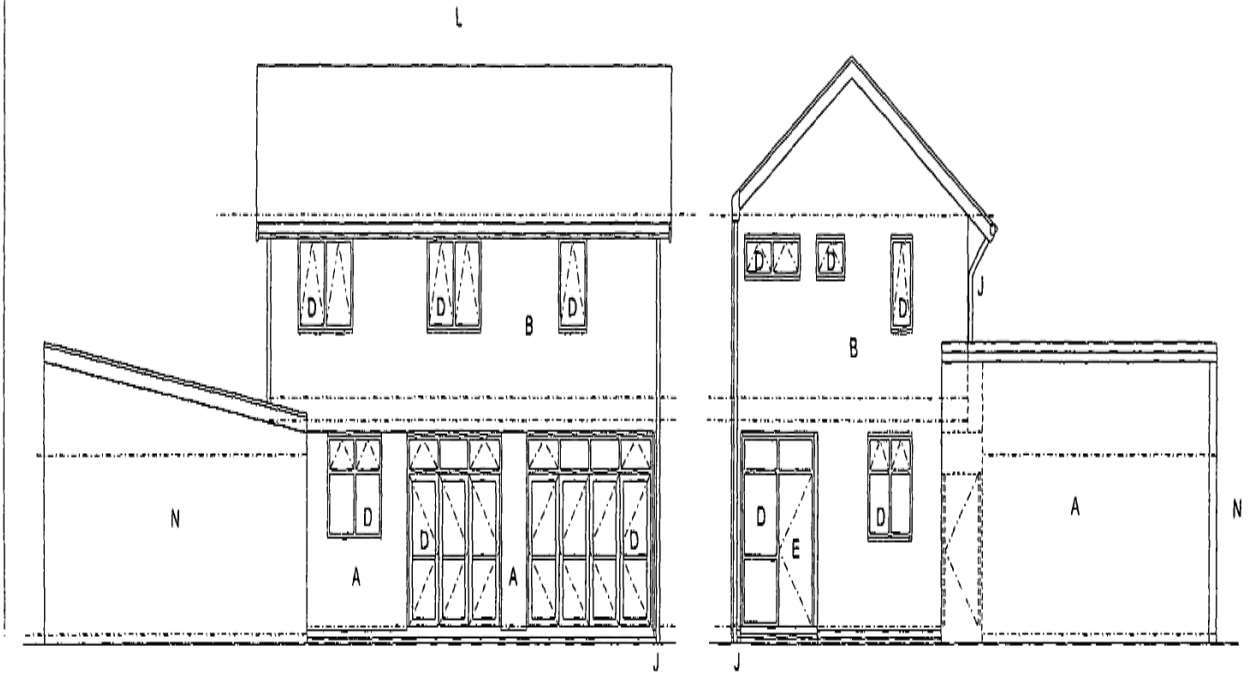
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 10 3-5
signed: [signature] date: 19/10
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

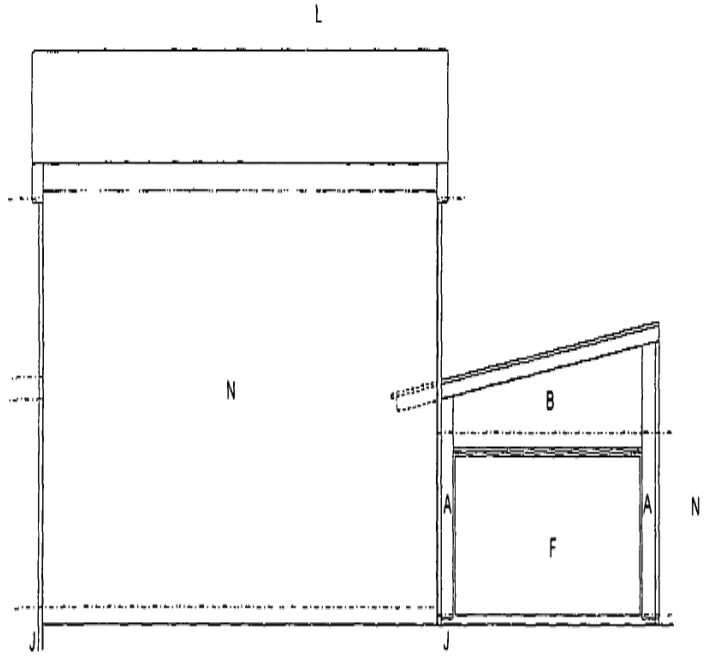
TYPE 4C HOUSE - 4 BEDROOM / DOUBLE GARAGE

ELEVATIONS

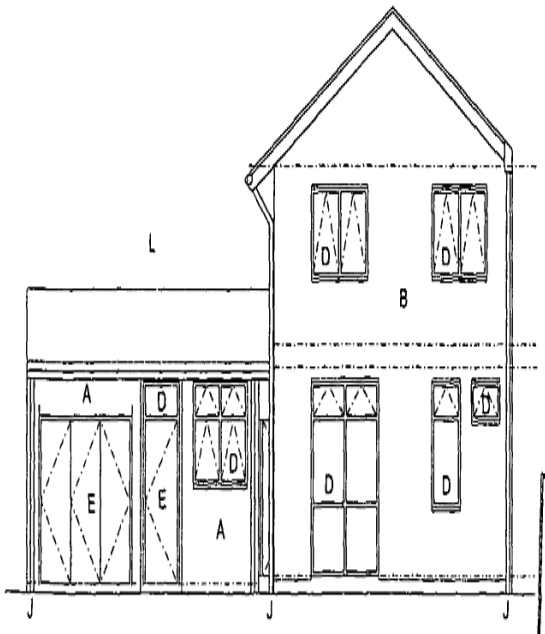


NORTH ELEVATION

EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

ELEVATION KEY

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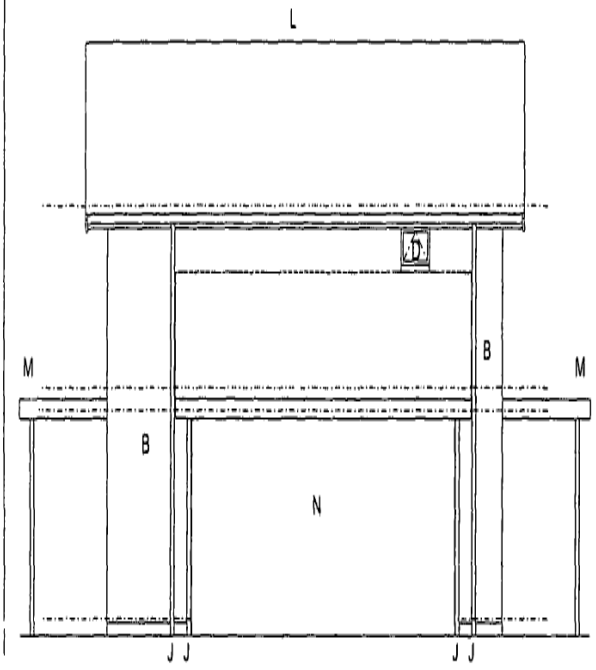
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061077 / 10 7
signed: _____ date: 9/10
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

TYPE 4B HOUSE - 4 BEDROOM / DOUBLE GARAGE

ELEVATIONS



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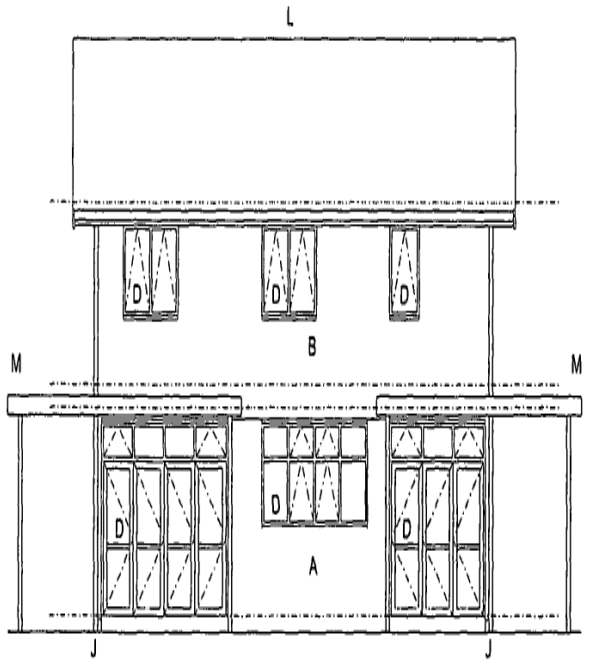

NORTH ELEVATION

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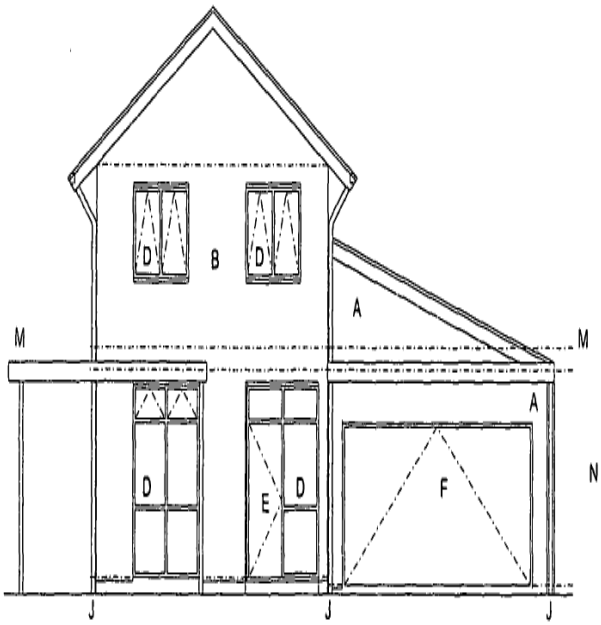
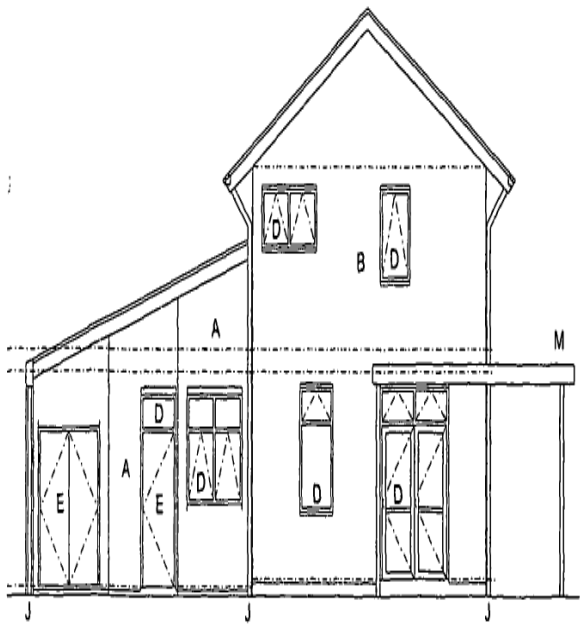


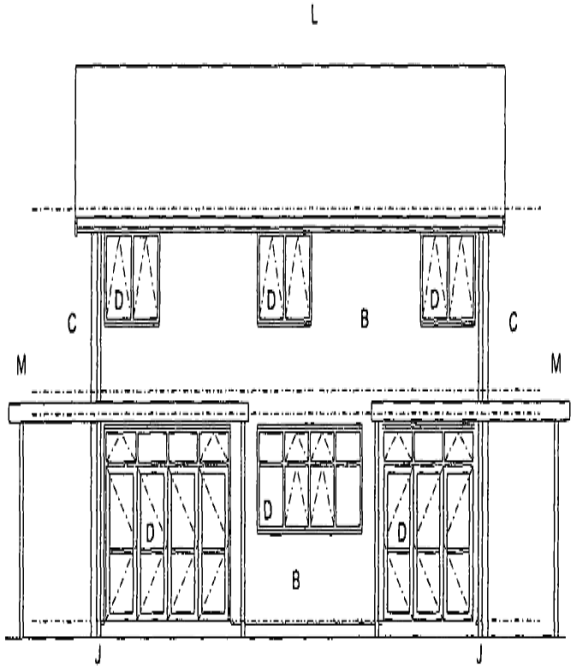


APPROVED
subject to conditions endorsed
on : RMA 2006 1077 | 1078
signed: [signature] date: 9/10
authorised officer

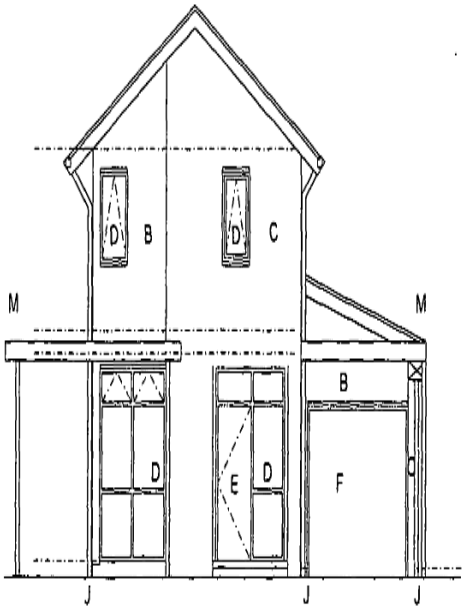
WEST COAST RD HOUSING DEVELOPMENT

TYPE 4A HOUSE - 4 BEDROOM / DOUBLE GARAGE

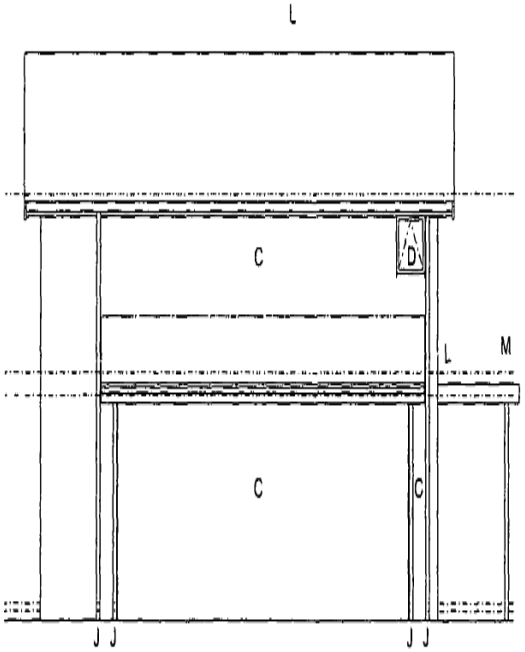
ELEVATIONS



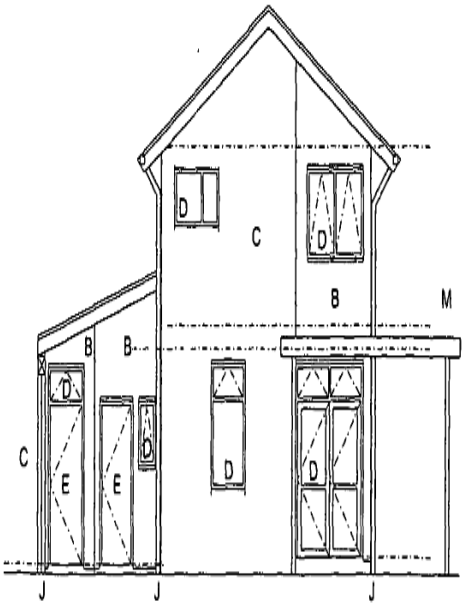
NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION

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I Colorsteel gutter and fascia

J UPVC down pipe. Paint finish

K Fibre cement panel soffit. Paint finish.

L Longrun colorsteel roof, corrugate profile

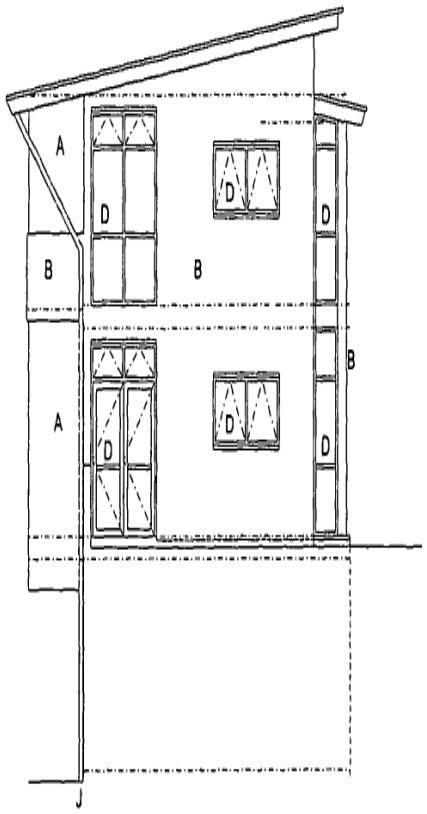
M Optional timber pergola. Paint finish.

N Solid masonry wall.

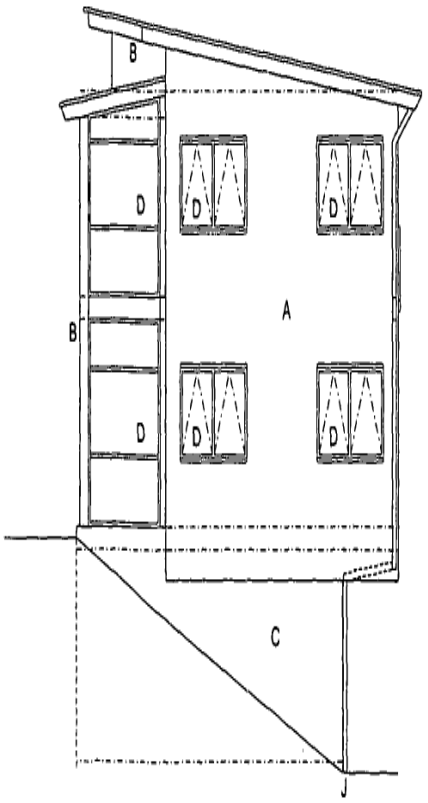
APPROVED
subject to conditions endorsed
on : RMA 20060077 | 10 of 15
signed: [signature] date: 7/11/06
authorised officer

WEST [redacted] AST RD H[redacted]USING DEVEL[redacted]PMENT
TYPE 3 H[redacted] - 3 BE[redacted]OOM / DOUBLE GA[redacted]E

ELEVATIONS



WEST ELEVATION



EAST ELEVATION

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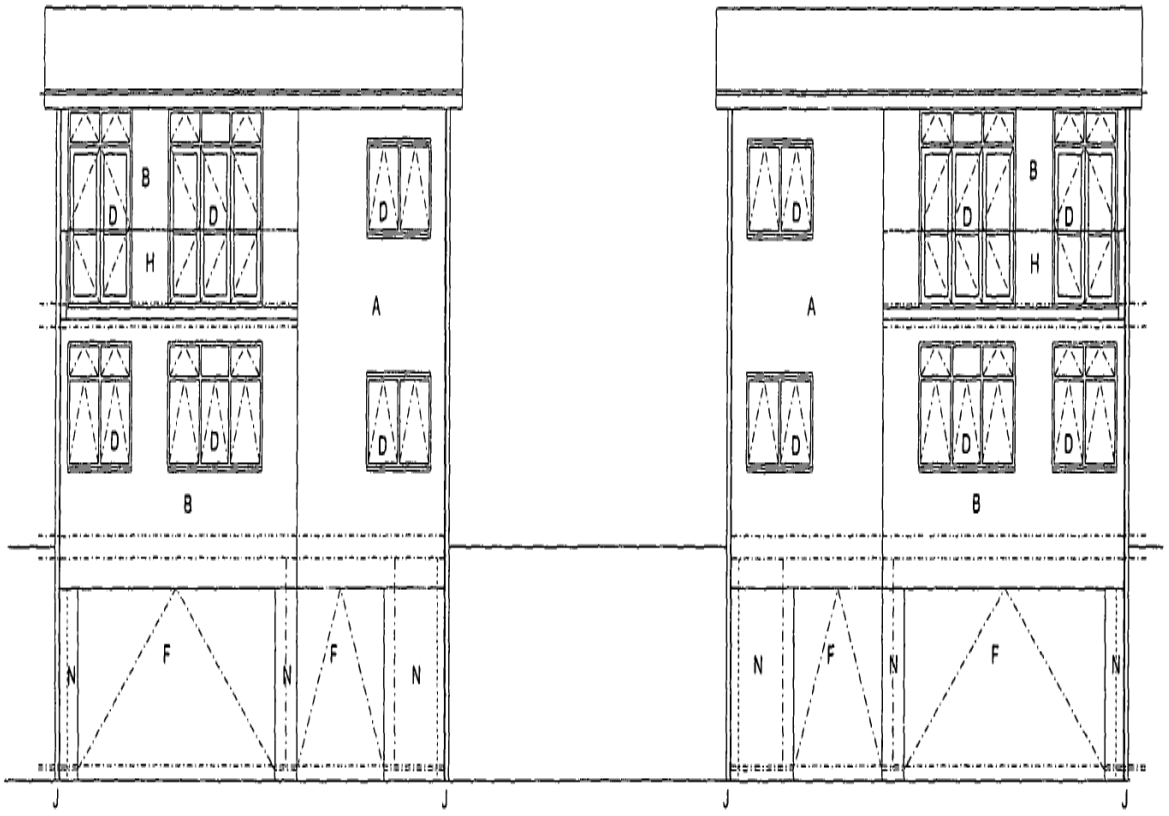
APPROVED
subject to conditions endorsed
on : RMA 20061077 [100]
signed: [signature] date: 1 Nov
authorised officer

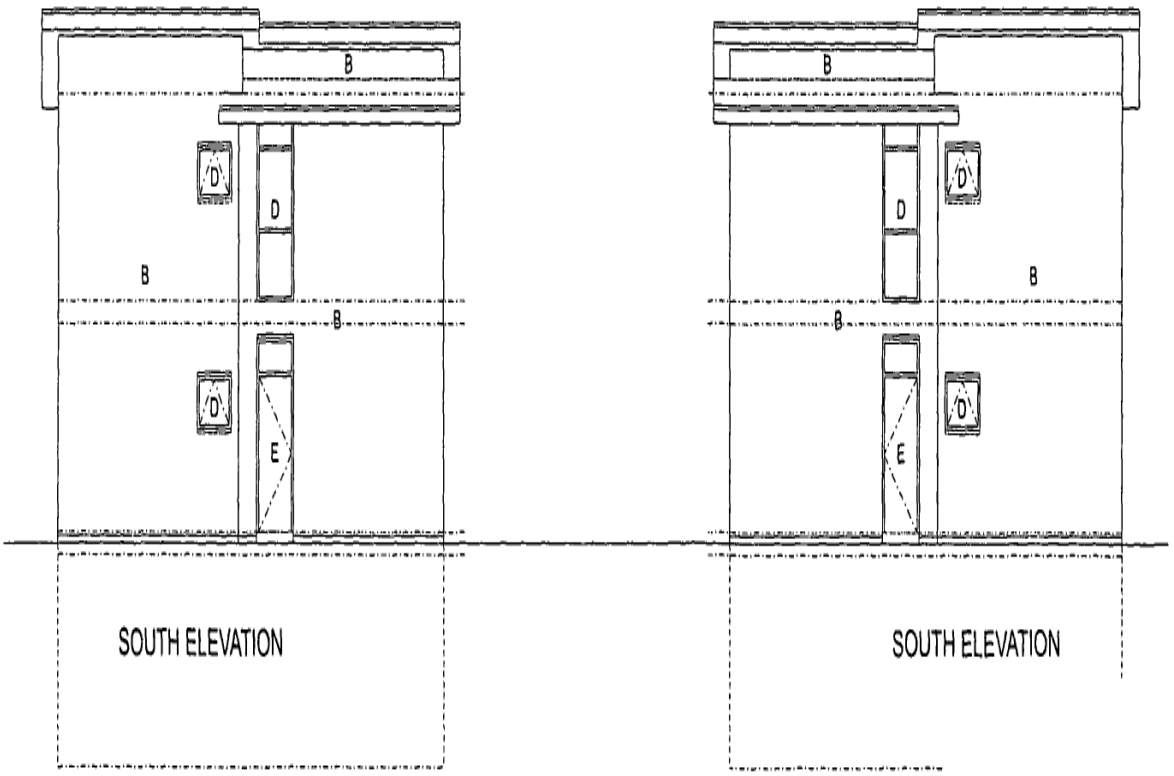
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / SEPARATE CARPORT

ELEVATIONS



NORTH ELEVATION



SOUTH ELEVATION

SOUTH ELEVATION

ELEVATION KEY

A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.

B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.

C Architectural masonry veneer.

D Powder coated aluminium window joinery.

E Solid core exterior door in aluminium frame. Paint finish.

F Timber sectional overhead garage door. Paint finish.

G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.

H Glazed-front balconies. Powder coated aluminium fixings.

I Colorsteel gutter and fascia

J UPVC down pipe. Paint finish

K Fibre cement panel soffit. Paint finish.

L Longrun colorsteel roof, corrugate profile

M Optional timber pergola. Paint finish.

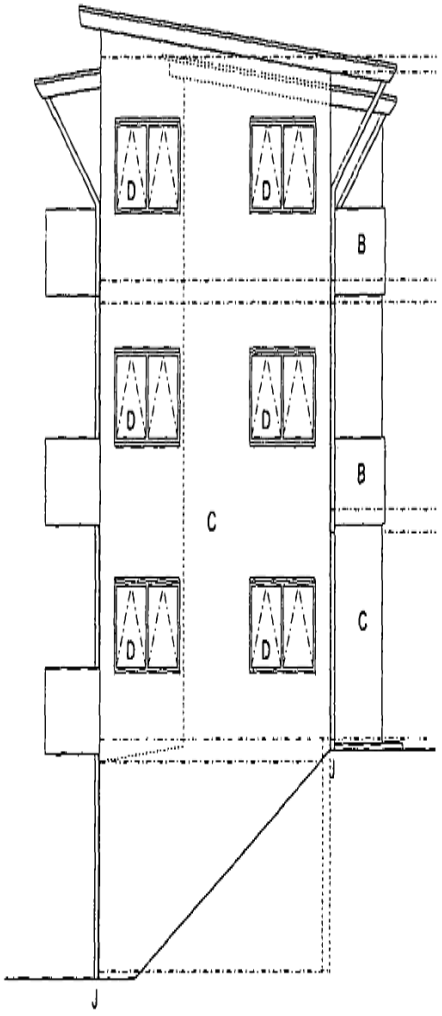
N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20060077 1075
signed: _____ date: 19/01/07
authorised officer

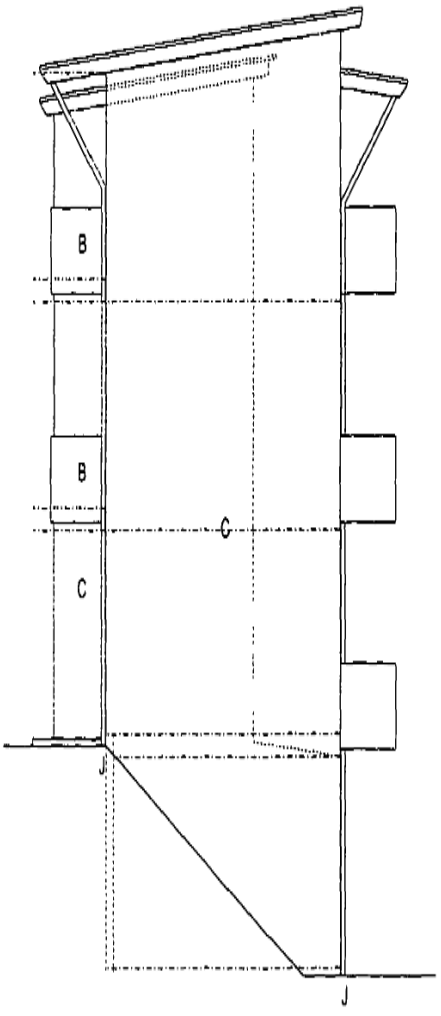
WEST C[illegible]AST RD HOUSING DEVELOPMENT

TYPE 2C HOUSE - 2 BEDROOM APARTMENT / SEPARATE CARPORT

ELEVATIONS



NORTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061071075
signed: [signature] date: 19/10/06
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

ELEVATIONS

ELEVATION KEY

A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.

B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.

C Architectural masonry veneer.

D Powder coated aluminium window joinery.

E Solid core exterior door in aluminium frame. Paint finish.

F Timber sectional overhead garage door. Paint finish.

G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.

H Glazed-front balconies. Powder coated aluminium fixings.

I Colorsteel gutter and fascia

J UPVC down pipe. Paint finish

K Fibre cement panel soffit. Paint finish.

L Longrun colorsteel roof, corrugate profile

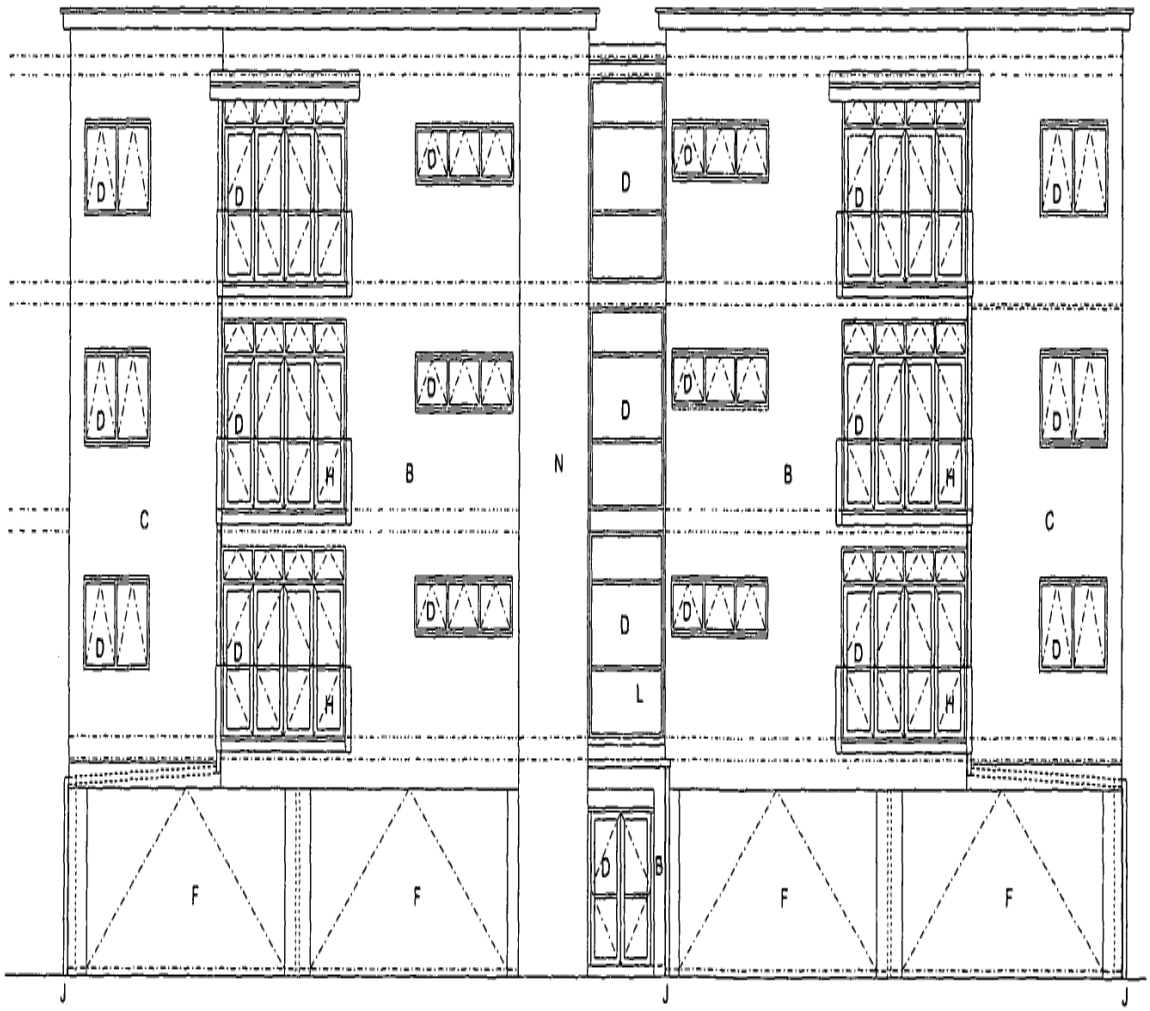
M Optional timber pergola. Paint finish.

N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 2020 1077 / 1078
signed: [redacted] date: 19/10/20
authorised officer

WEST C[redacted]AST RD HOUSING DEVELOPMENT
TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

ELEVATIONS



EAST ELEVATION

ELEVATION KEY

A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.

B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.

C Architectural masonry veneer.

D Powder coated aluminium window joinery.

E Solid core exterior door in aluminium frame. Paint finish.

F Timber sectional overhead garage door. Paint finish.

G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.

H Glazed-front balconies. Powder coated aluminium fixings.

I Colorsteel gutter and fascia

J UPVC down pipe. Paint finish

K Fibre cement panel soffit. Paint finish.

L Longrun colorsteel roof, corrugate profile

M Optional timber pergola. Paint finish.

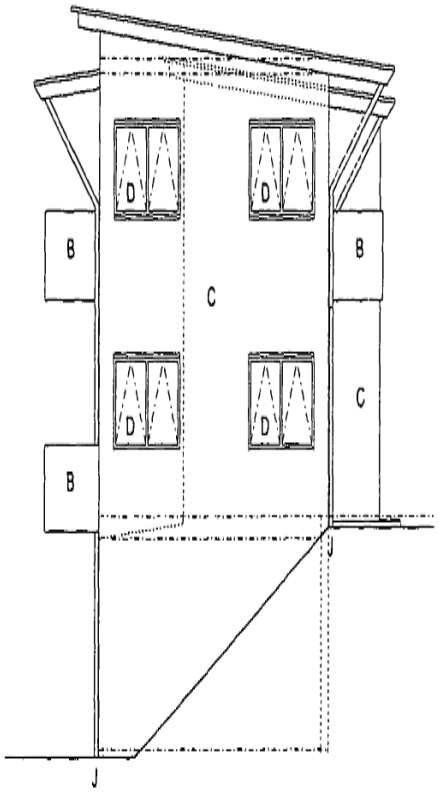
N Solid masonry wall.

APPROVED
subject to conditions endorsed
on : RMA 20061677 1075
signed: _____ date: 19/10/06
authorised officer

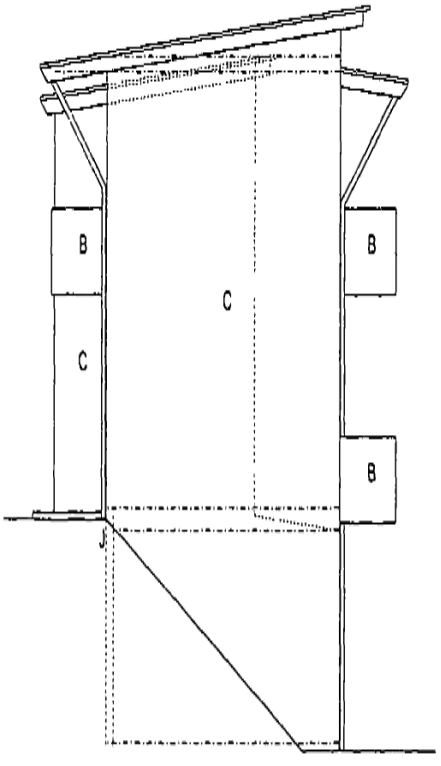
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

ELEVATIONS



NORTH ELEVATION



SOUTH ELEVATION

ELEVATION KEY

A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.

B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.

C Architectural masonry veneer.

D Powder coated aluminium window joinery.

E Solid core exterior door in aluminium frame. Paint finish.

F Timber sectional overhead garage door. Paint finish.

G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.

H Glazed-front balconies. Powder coated aluminium fixings.

I Colorsteel gutter and fascia

J UPVC down pipe. Paint finish

K Fibre cement panel soffit. Paint finish.

L Longrun colorsteel roof, corrugate profile

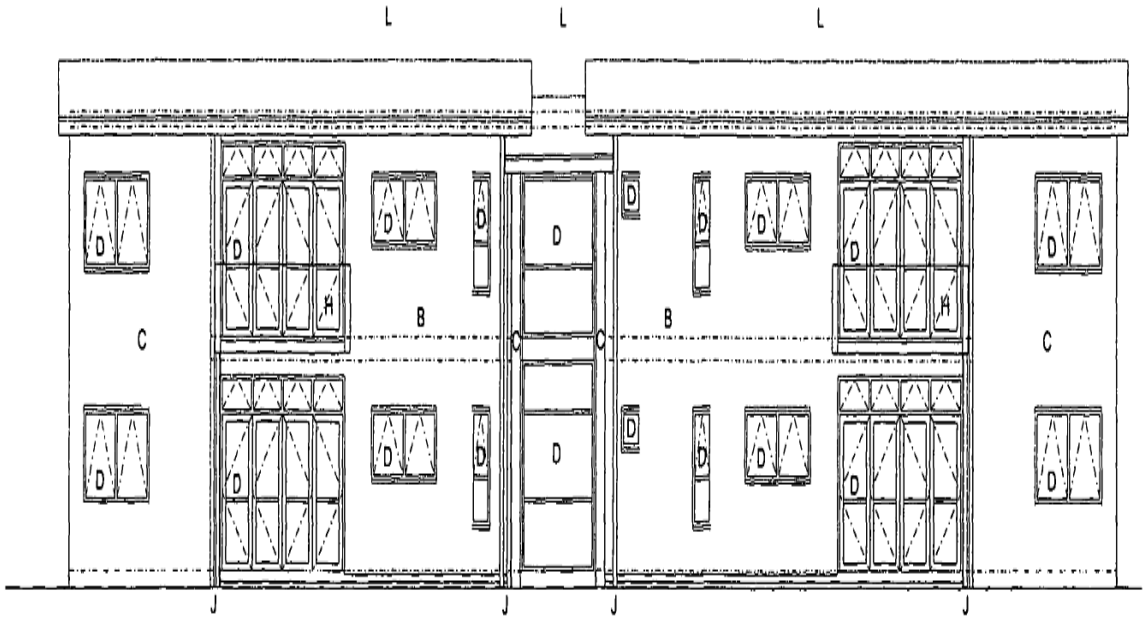
M Optional timber pergola. Paint finish.

N Solid masonry wall.

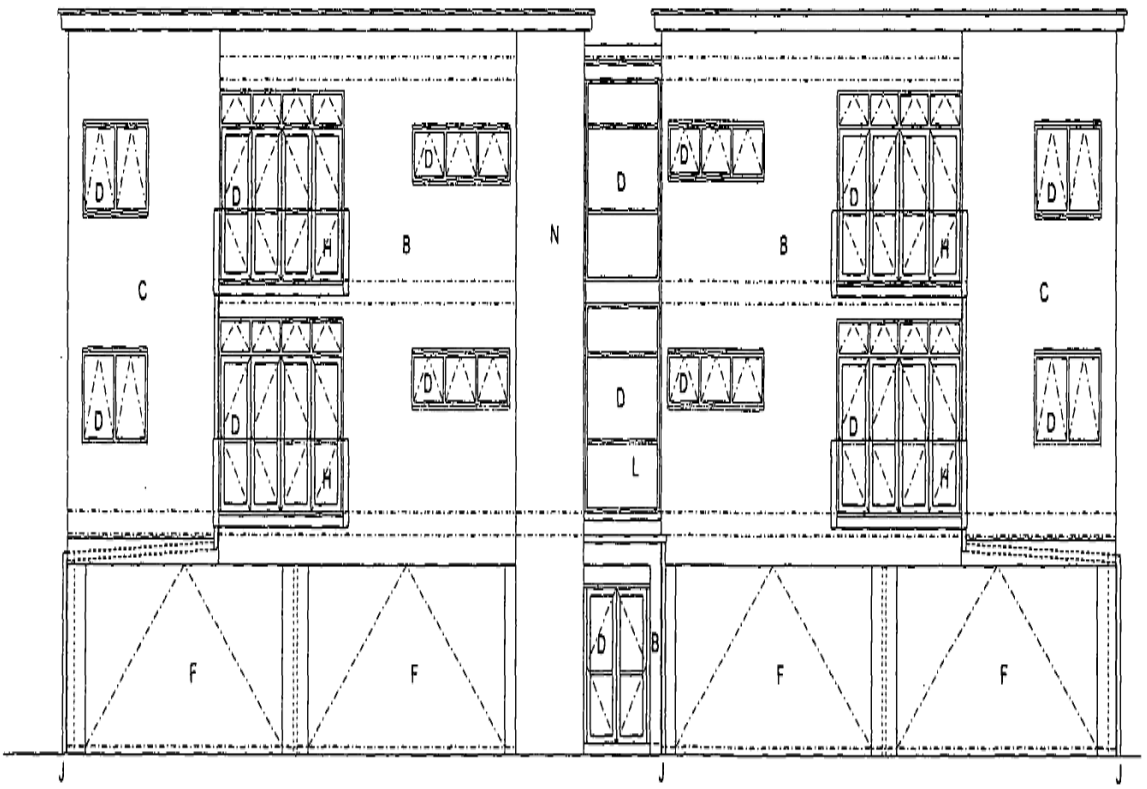
APPROVED
subject to conditions endorsed
on : RMA 2.006 1077/1096
signed: _____ date: 19/10/06
authorised officer

WEST [redacted] AST RD HOUSING DEVELOPMENT
TYPE 2A HOUSE - 2 BEDROOM [redacted] MENT / DOUBLE GARAGE

ELEVATIONS



WEST ELEVATION



EAST ELEVATION

ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

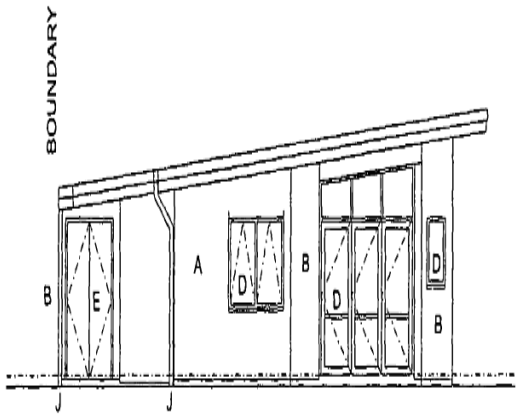
APPROVED
subject to conditions endorsed
on : RMA 2200 107 71 10-15
signed: [signature] date: 9/10/15
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

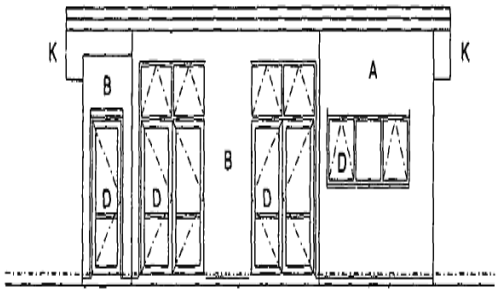
TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

ELEVATIONS

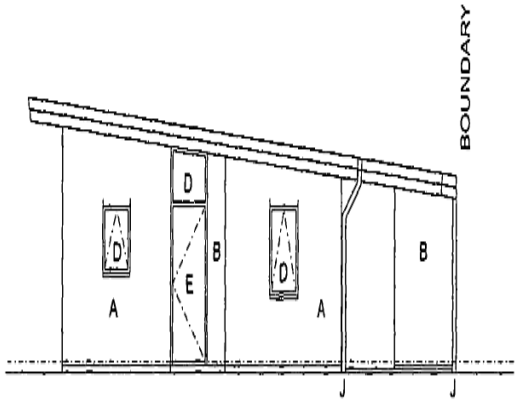
APPROVED
subject to conditions endorsed
on : RMA 20061077/1078
signed: [signature] date: 15/6/07
authorised officer



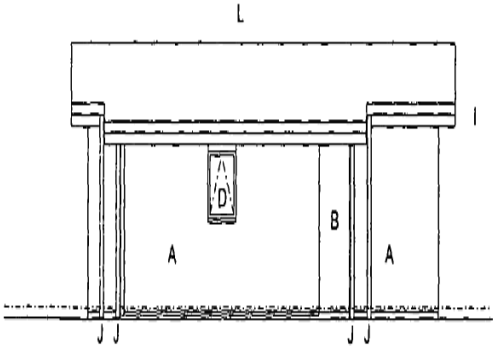
EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION

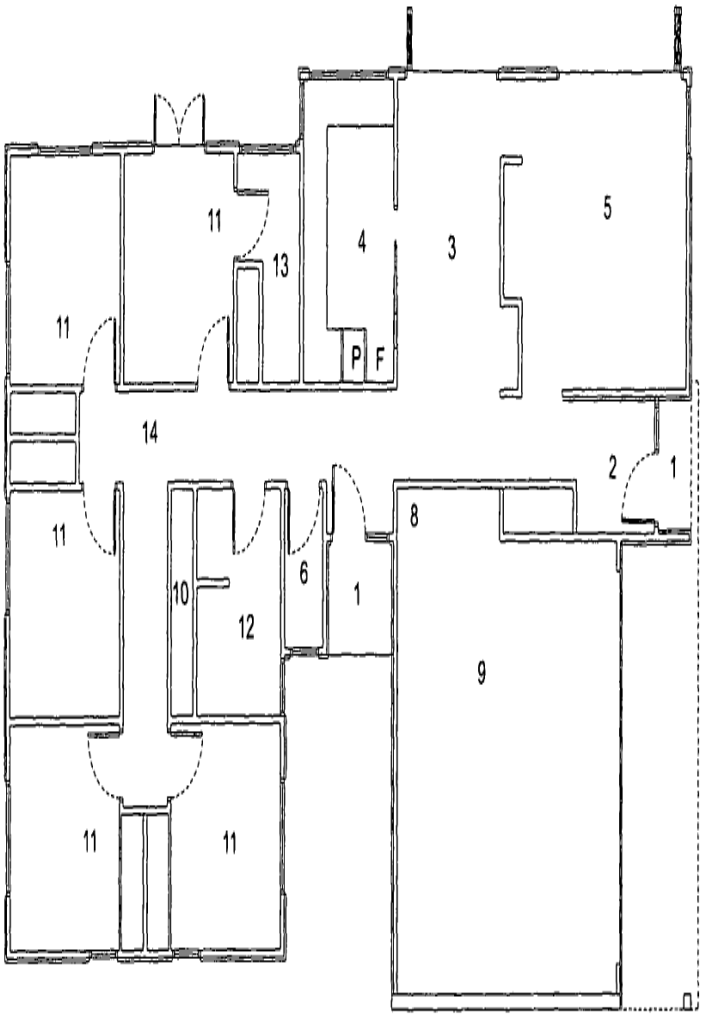
ELEVATION KEY

- A Timber weatherboards on batten & cavity. Shiplap detail, laid horizontally. Paint finish.
- B Timber weatherboards on batten & cavity. Rusticated detail, laid vertically. Paint finish.
- C Architectural masonry veneer.
- D Powder coated aluminium window joinery.
- E Solid core exterior door in aluminium frame. Paint finish.
- F Timber sectional overhead garage door. Paint finish.
- G Galvanised and powder coated balustrades/handrails. Pressed flashings to suit.
- H Glazed-front balconies. Powder coated aluminium fixings.
- I Colorsteel gutter and fascia
- J UPVC down pipe. Paint finish
- K Fibre cement panel soffit. Paint finish.
- L Longrun colorsteel roof, corrugate profile
- M Optional timber pergola. Paint finish.
- N Solid masonry wall.

WEST C[illegible]AST RD HOUSING DEVELOPMENT

TYPE 1 HOUSE - 2 BED[illegible]M SENIOR / CARPORT

ELEVATIONS



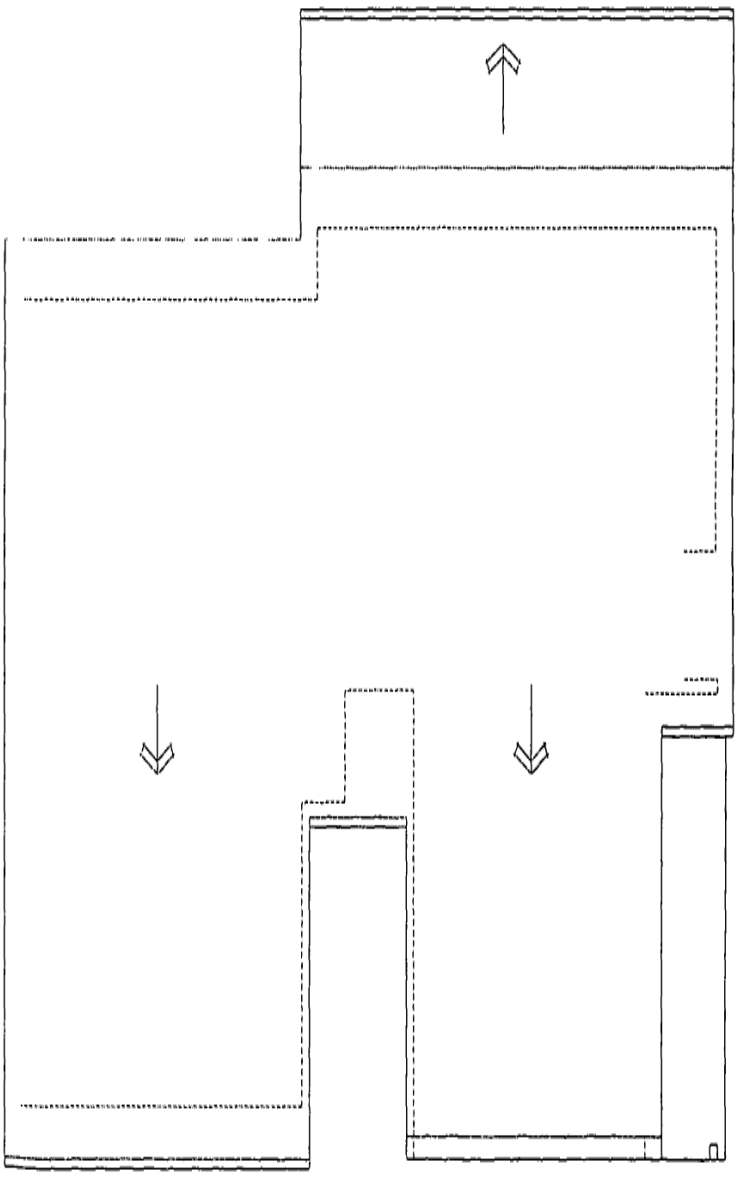
APPROVED
subject to conditions endorsed
on : RMA 2006 1077 | 1077
signed: [signature] date: 19/10/06
authorised officer

N

PLAN KEY

FLOOR PLAN

1 Covered Porch
2 Entry Hall
3 Dining
4 Kitchen
5 Living
6 WC
7 Stairs
8 Laundry
9 Garage
10 Storage
11 Bedroom
12 Bathroom
13 Ensuite
14 Hallway

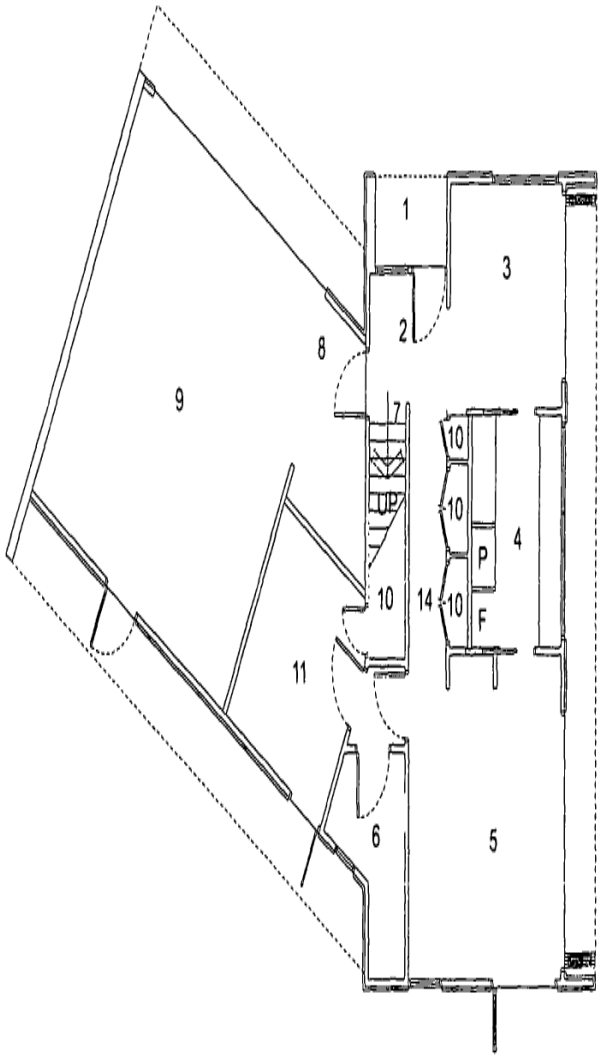


ROOF PLAN

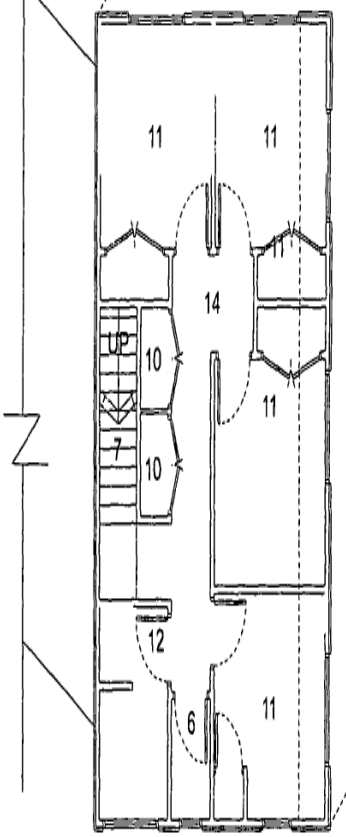
WEST COAST RD HOUSING DEVELOPMENT

TYPE 5C HOUSE - 5 BEDROOM / DOUBLE GARAGE

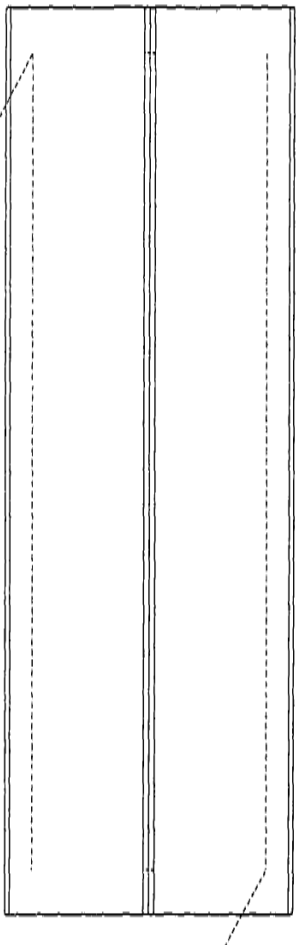
FLOOR PLAN



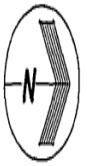
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

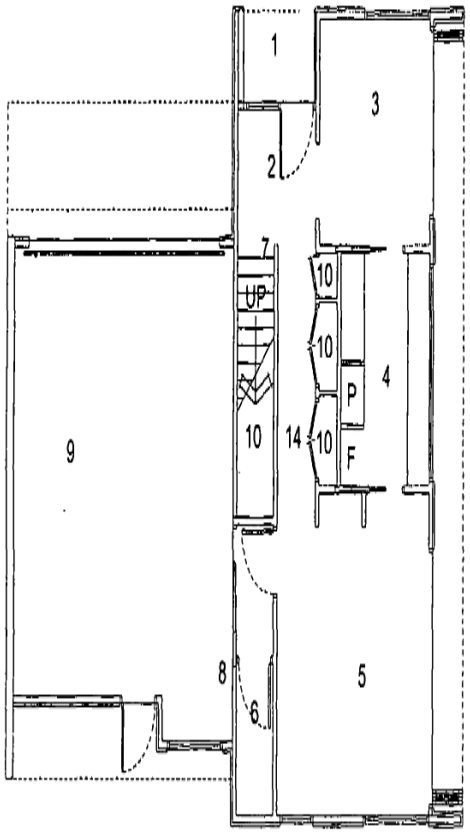
APPROVED
subject to conditions endorsed
on : RMA 20100977/01
signed: _____ date: 19/10/10
authorised officer

WEST [redacted] AST RD H[redacted]USING DEVELOPMENT

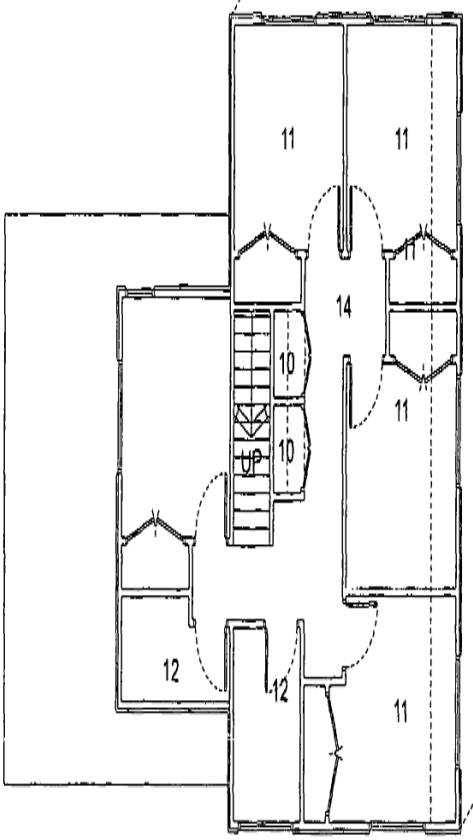
TYPE 5B HOUSE - 5 BEDROOM / DOUBLE GARAGE

FLOOR PLAN

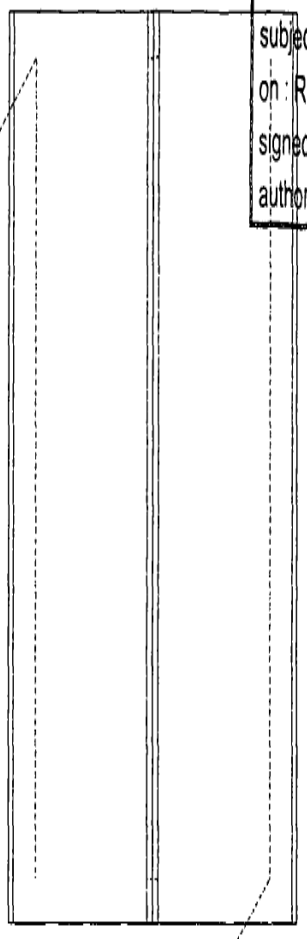
APPROVED
subject to conditions endorsed
on : RMA 20061077 1 of 5
signed: [signature] date: 19/12/
authorised officer



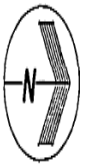
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



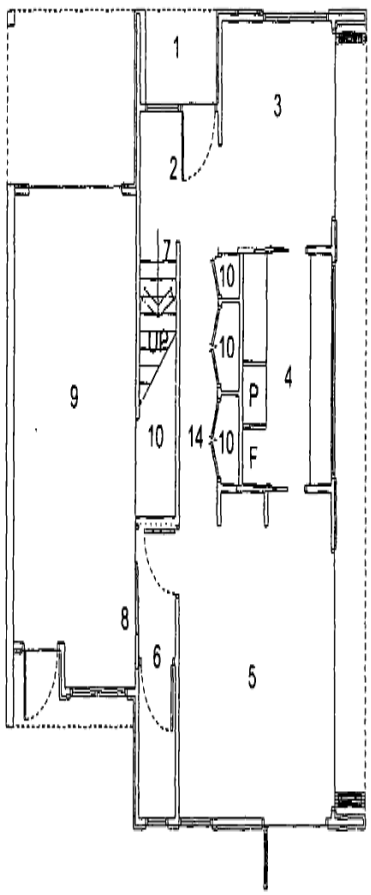
PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

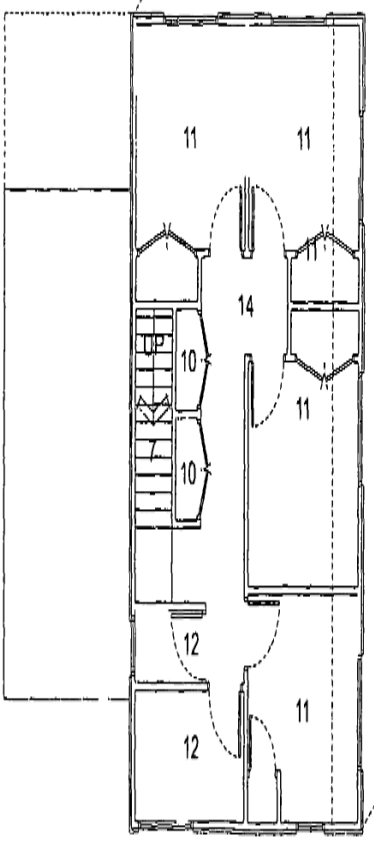
WEST COAST RD HOUSING DEVELOPMENT

TYPE 5A HOUSE - 5 BEDROOM / DOUBLE GARAGE

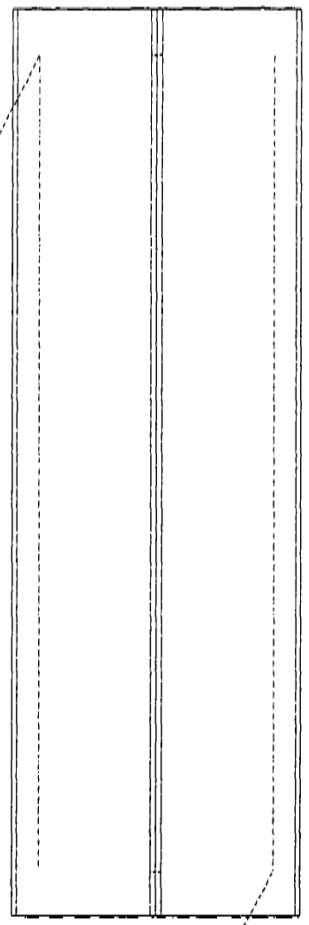
FLOOR PLAN



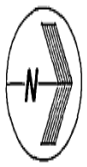
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



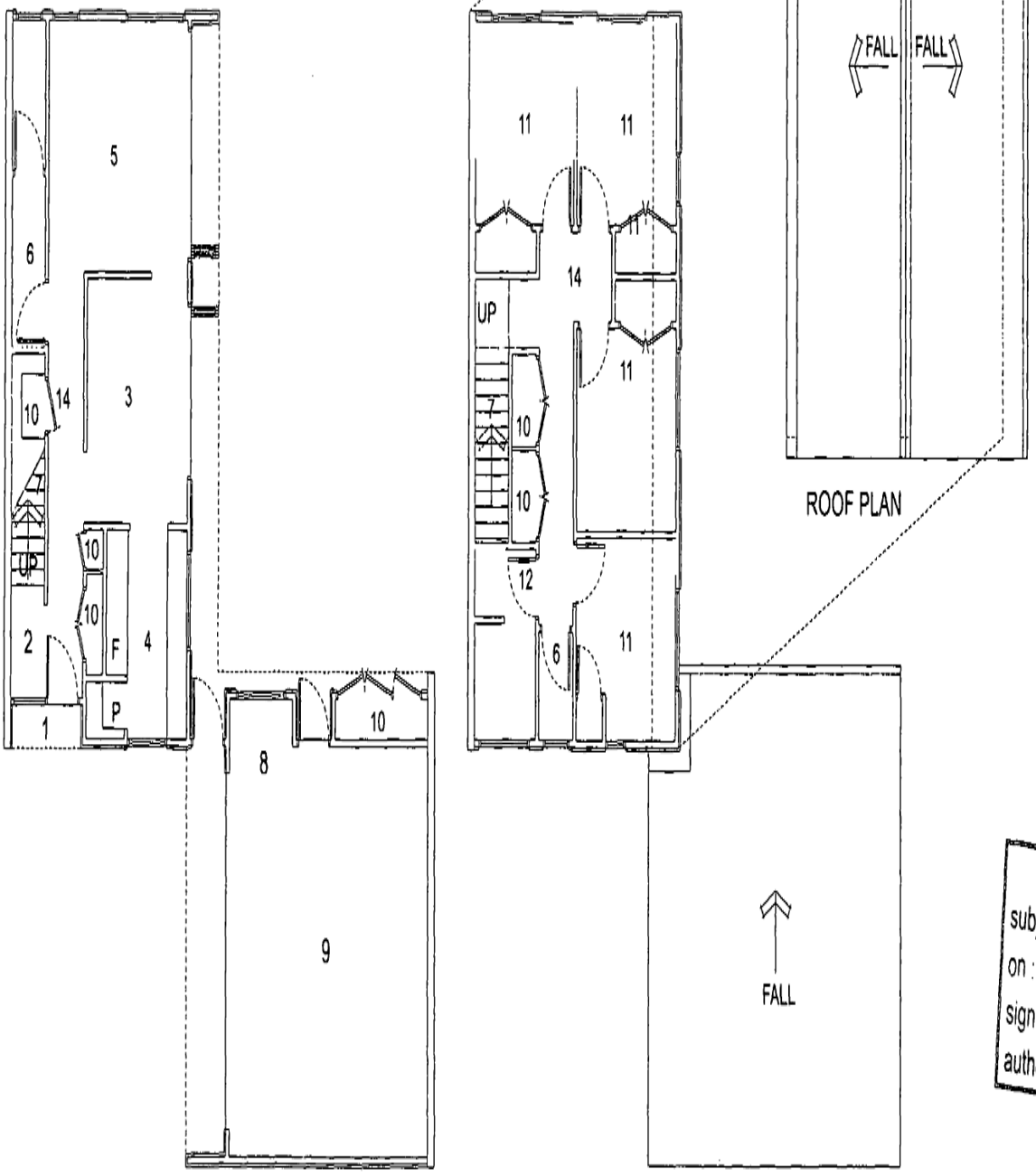
PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

APPROVED
subject to conditions endorsed
on : RMA
signed: date:
authorised officer

WEST C AST RD H USING DEVEL PMENT
TYPE 4C HOUSE - 4 BEDROOM / SINGLE G E

FLOOR PLANS



ROOF PLAN

GROUND FLOOR PLAN

UPPER FLOOR PLAN

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

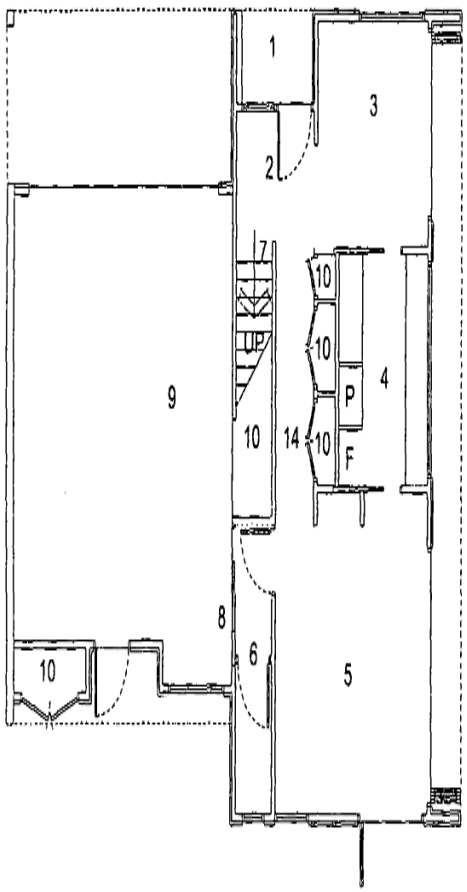
APPROVED
subject to conditions endorsed
on : RMA 2006 10 77 / 1078
signed: _____ date: 9/11/06
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

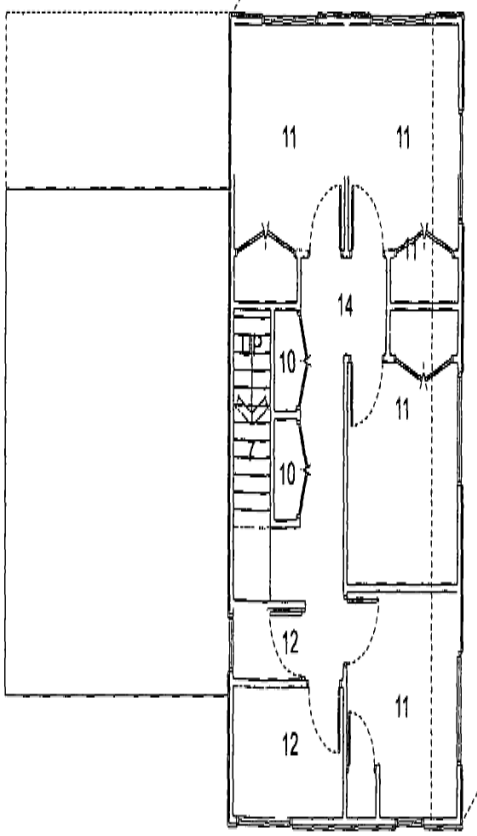
TYPE 4B HOUSE - 4 BEDROOM / DOUBLE GARAGE

FLOOR PLAN

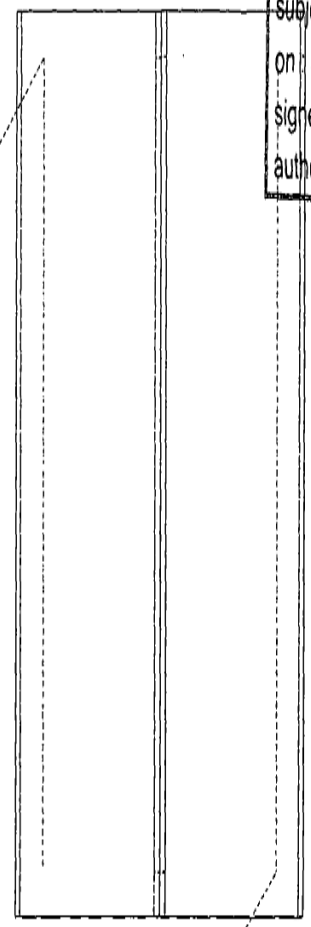
APPROVED
subject to conditions endorsed
on RMA 20160771/1076
signed: _____ date: 15/11/16
authorised officer



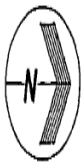
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



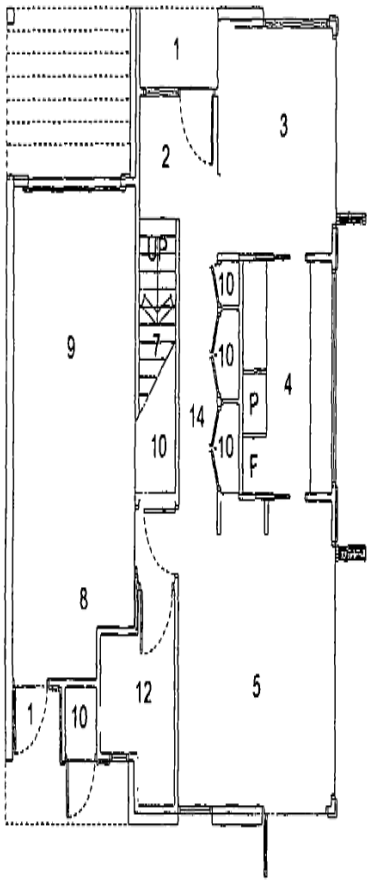
PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

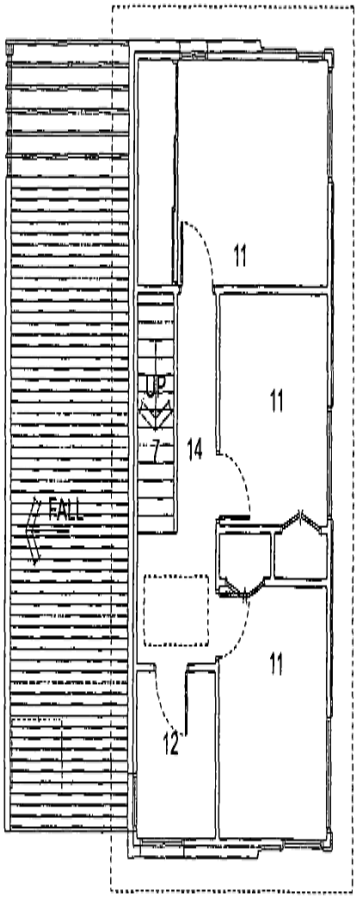
WEST C AST RD H USING DEVELOPMENT

TYPE 4A HOUSE - 4 BEDROOM / DOUBLE GARAGE

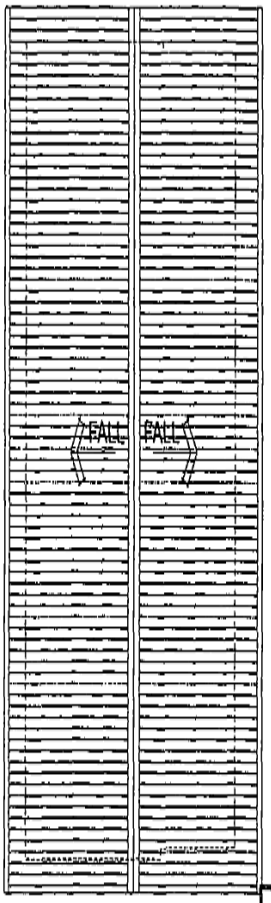
FLOOR PLAN



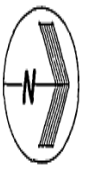
GROUND FLOOR PLAN



UPPER FLOOR PLAN



ROOF PLAN



PLAN KEY

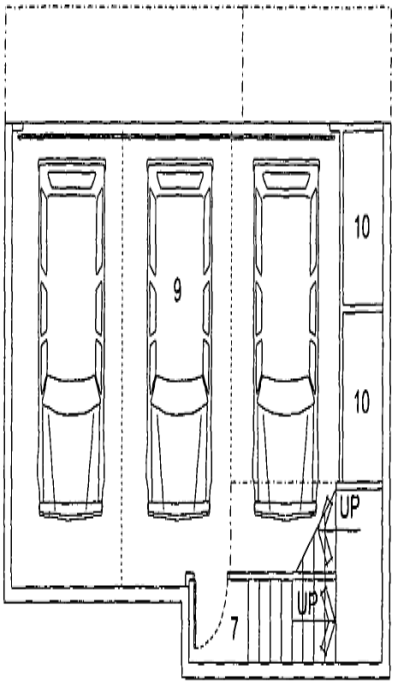
1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

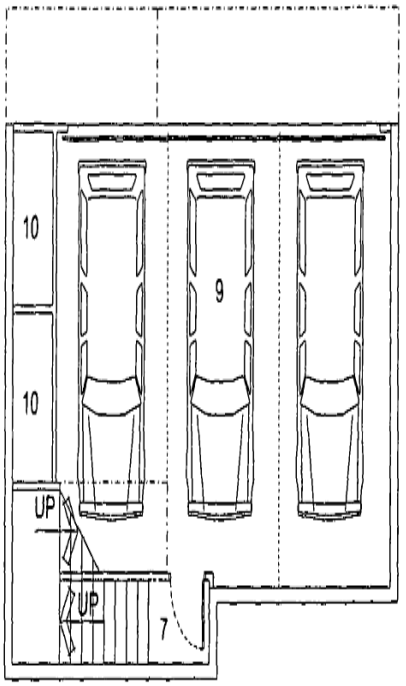
APPROVED
subject to conditions endorsed
on : RMA 2020 11 27 | 1078
signed: _____ date: 9/12/20
authorised officer

WEST COAST RD HOUSING DEVELOPMENT

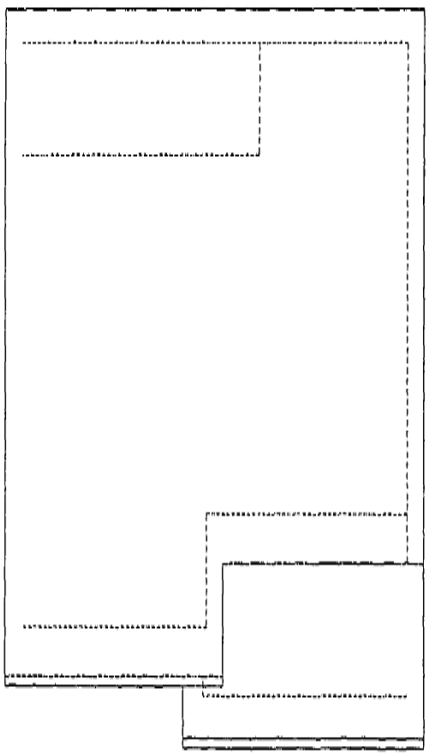
TYPE 3 HOUSE - 3 BEDROOM / SINGLE GARAGE

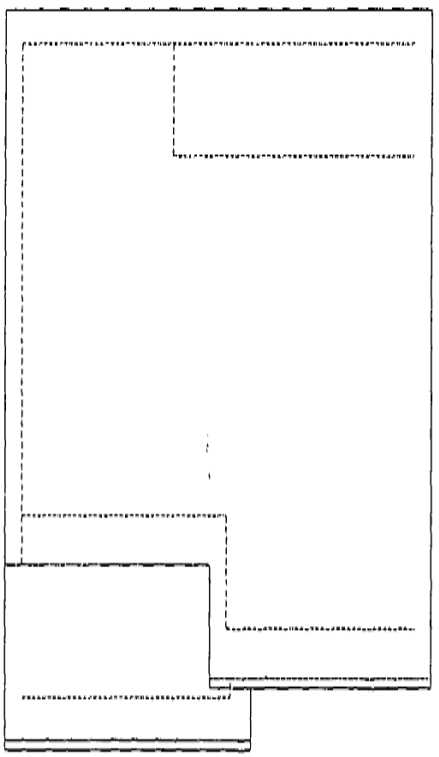
FLOOR PLAN





LOWER GROUND FLOOR GARAGE





ROOF PLAN

APPROVED
subject to conditions endorsed
on : RMA 20070771078
signed: [illegible] date: 9/10/08
authorised officer

N

PLAN KEY

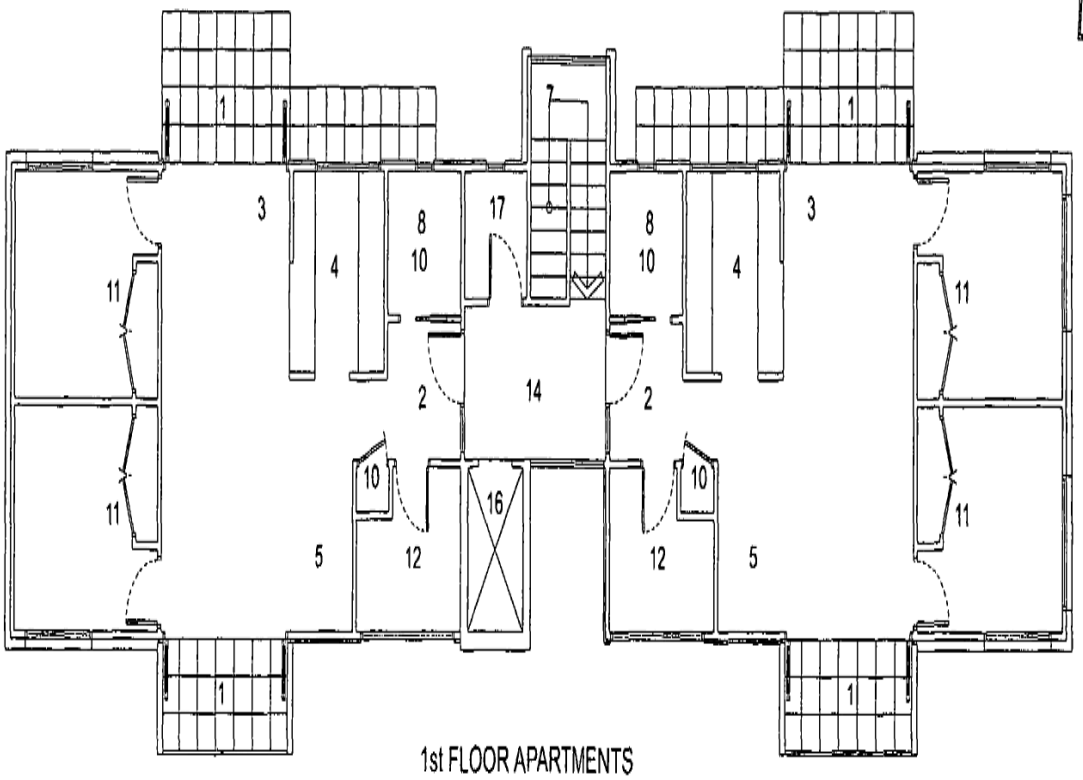
1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

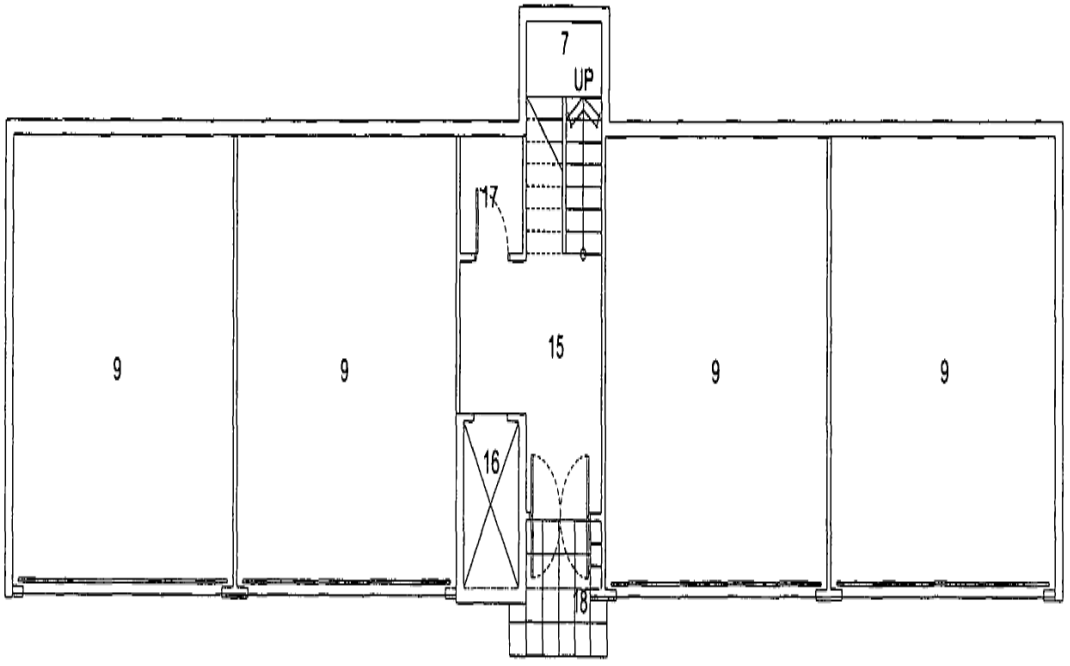
CONSULTANTS

WEST C[illegible]AST RD H[illegible]USING DEVELOPMENT
TYPE 2C HOUSE - 2 BE[illegible]OM APARTMENT / UND[illegible]OFT GARAGE

FLOOR PLANS

APPROVED
subject to conditions endorse
on : RMA 20261077/1075
signed: _____ date: 19/1
authorised officer





PLAN KEY

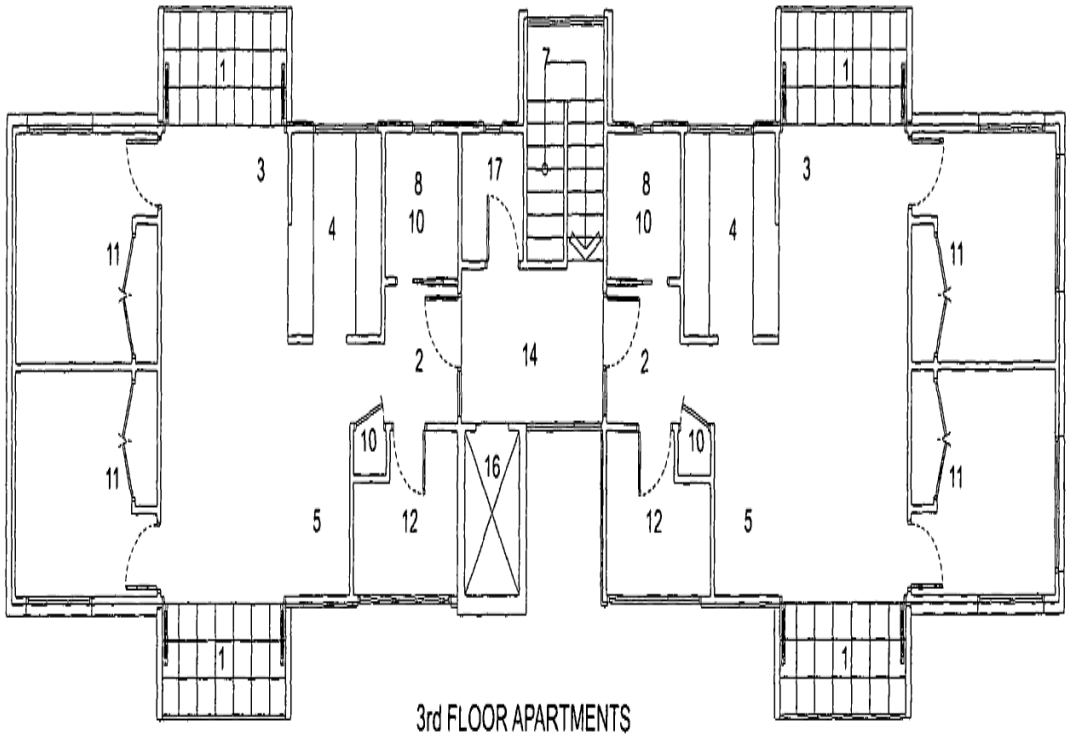
1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

WEST COAST RD HOUSING DEVELOPMENT

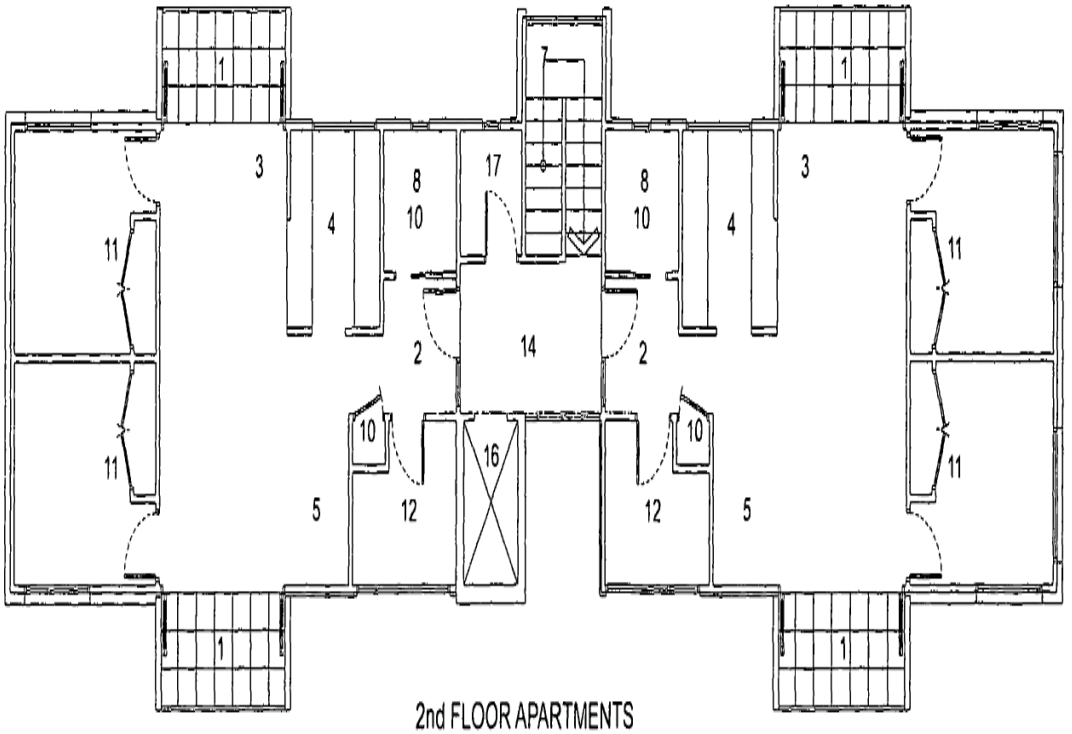
TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

FLOOR PLAN

APPROVED
subject to conditions endorsed
on : RMA 2006 1677 | 1C 7E
signed: _____ date: 4/10/07
authorised officer



3rd FLOOR APARTMENTS



2nd FLOOR APARTMENTS

PLAN KEY

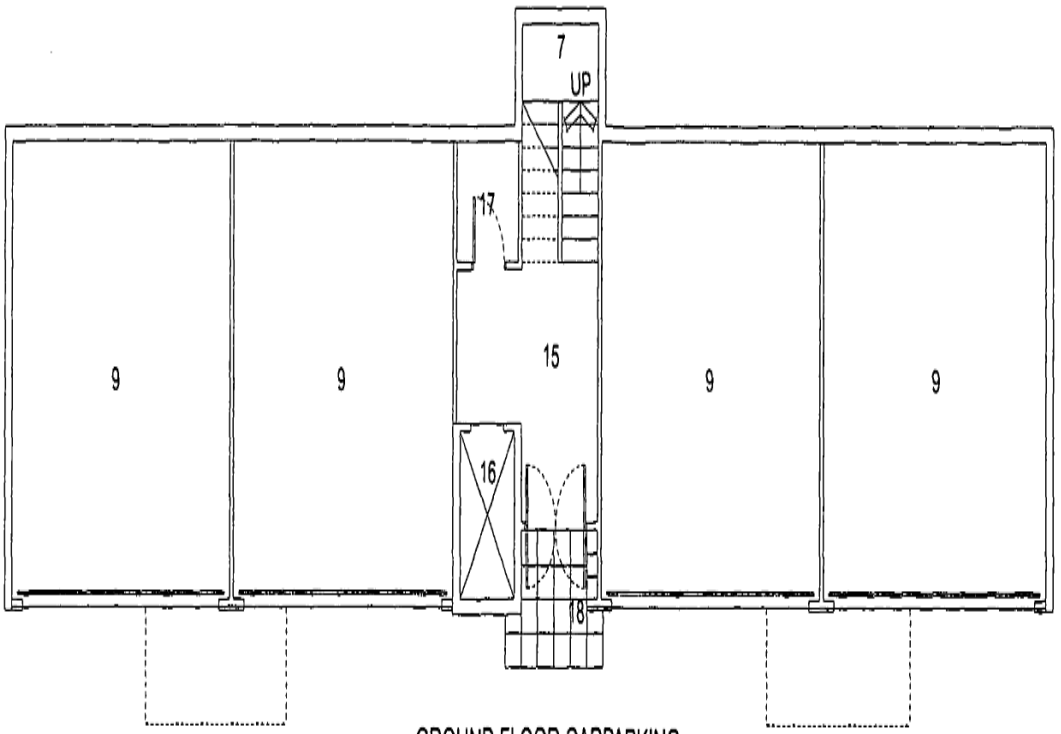
1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

WEST C[redacted]AST RD H[redacted]USING DEVELOPMENT

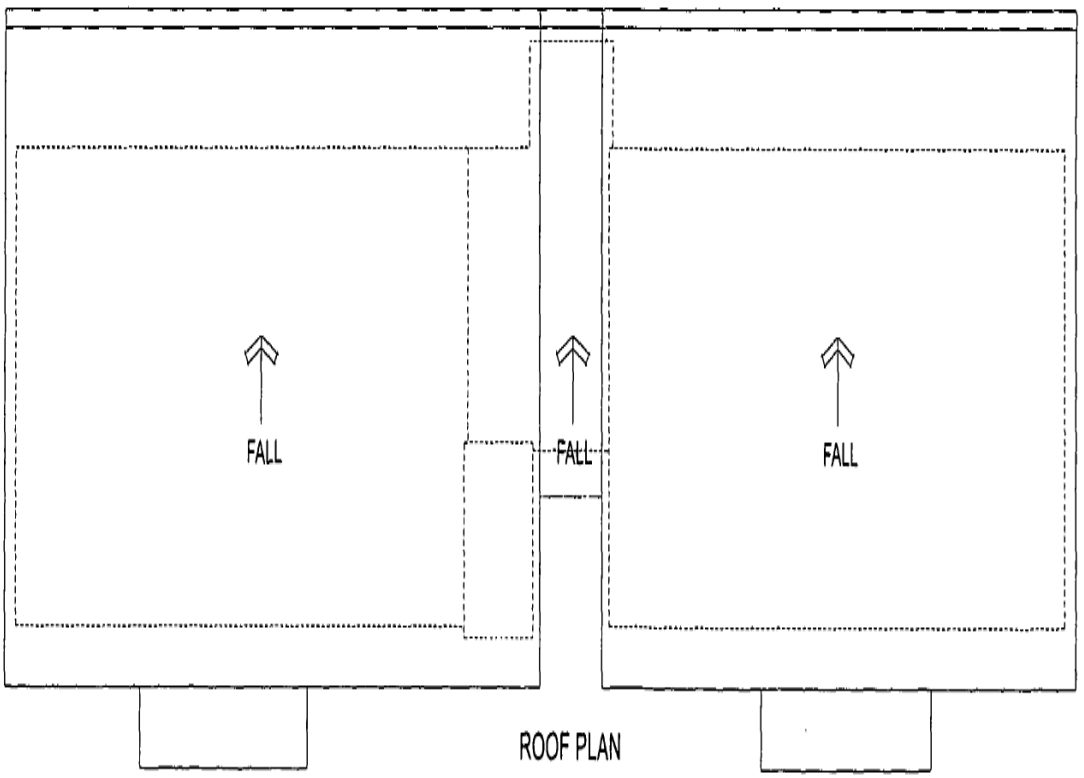
TYPE 2B HOUSE - 2 BEDROOM APARTMENT / GARAGE

FLOOR PLANS

APPROVED
subject to conditions endorsed
on : RMA 20121077/1075
signed: [signature] date: 9/10/12
authorised officer



GROUND FLOOR CARPARKING



ROOF PLAN

N

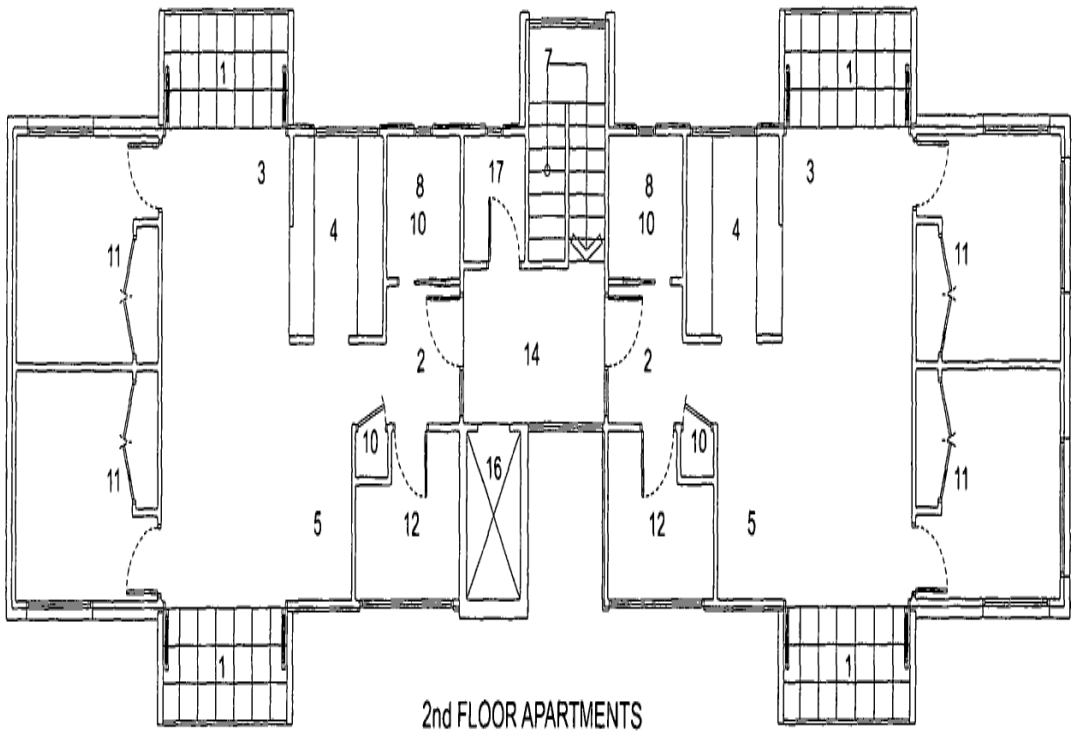
PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

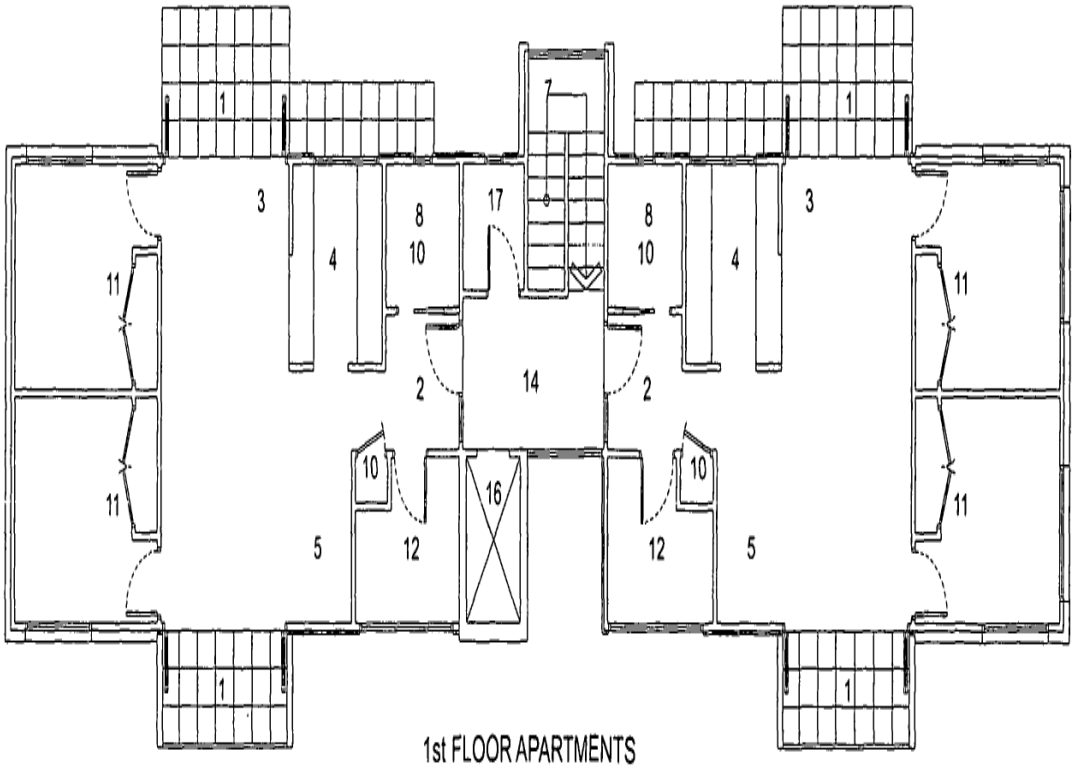
WEST COAST RD HOUSING DEVELOPMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

FLOOR PLANS



2nd FLOOR APARTMENTS



1st FLOOR APARTMENTS

N

PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry / Utility
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway
15	Common entry lobby
16	Lift
17	Services cupboard
18	Mail boxes / Intercom

APPROVED
subject to conditions endorsed
on · RMA 20610771078
signed: _____ date: 9/10/07
authorised officer

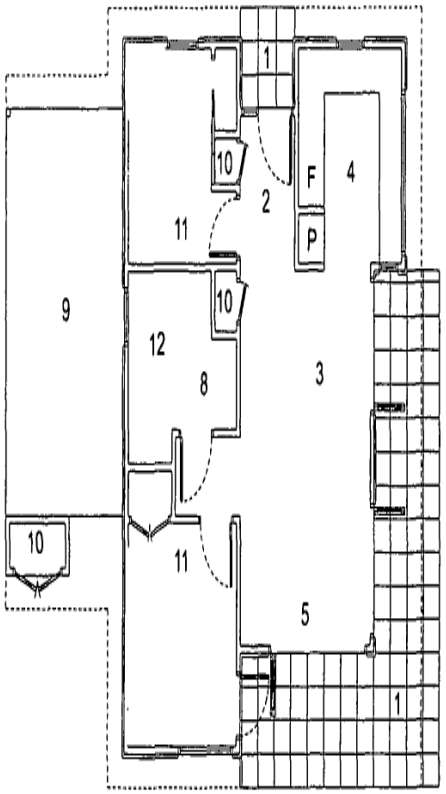
WEST C[illegible]AST RD H[illegible]USING DEVEL[illegible]PMENT

TYPE 2A HOUSE - 2 BEDROOM APARTMENT / DOUBLE GARAGE

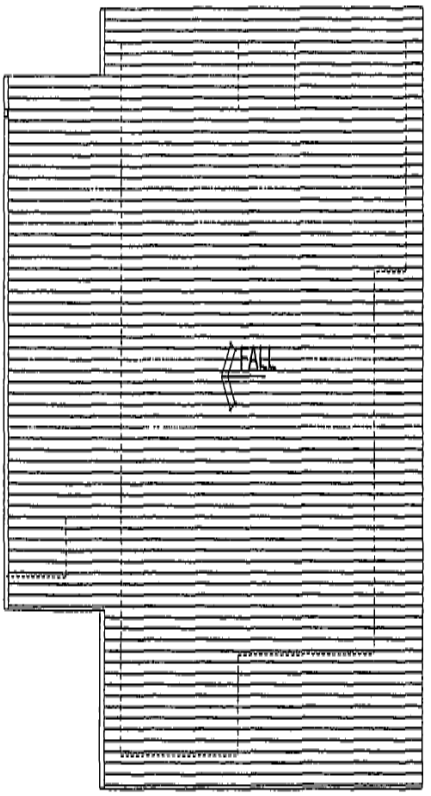
[redacted]

FLOOR PLAN

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 10 75
signed: [signature] date: 5/10/06
authorised officer



GROUND FLOOR PLAN



ROOF PLAN

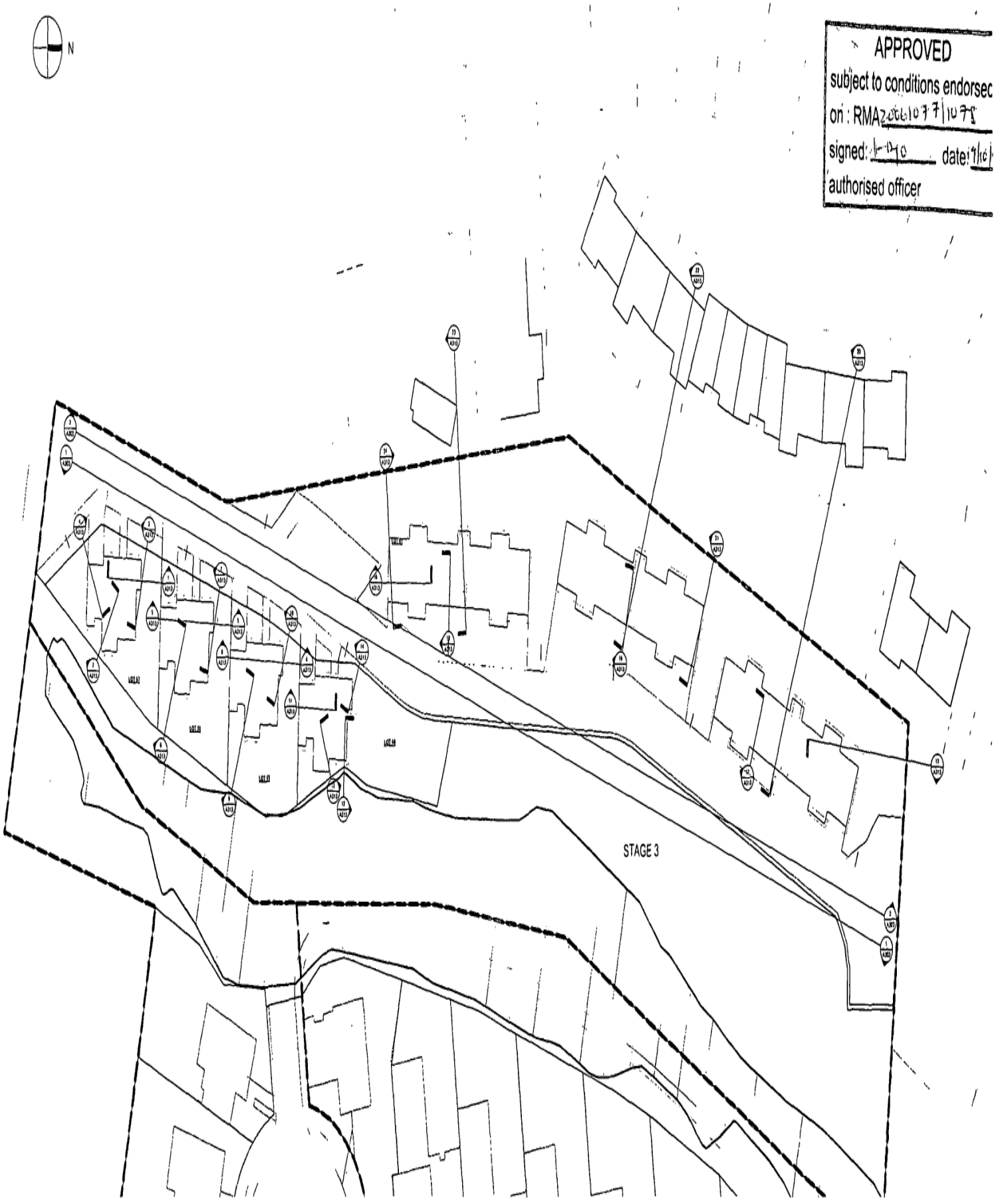
PLAN KEY

1	Covered Porch
2	Entry Hall
3	Dining
4	Kitchen
5	Living
6	WC
7	Stairs
8	Laundry
9	Garage
10	Storage
11	Bedroom
12	Bathroom
13	Ensuite
14	Hallway

WEST COAST RD HOUSING DEVELOPMENT

TYPE 1 HOUSE - 2 BEDROOM SENIOR / CARPORT

FLOOR PLAN
A101

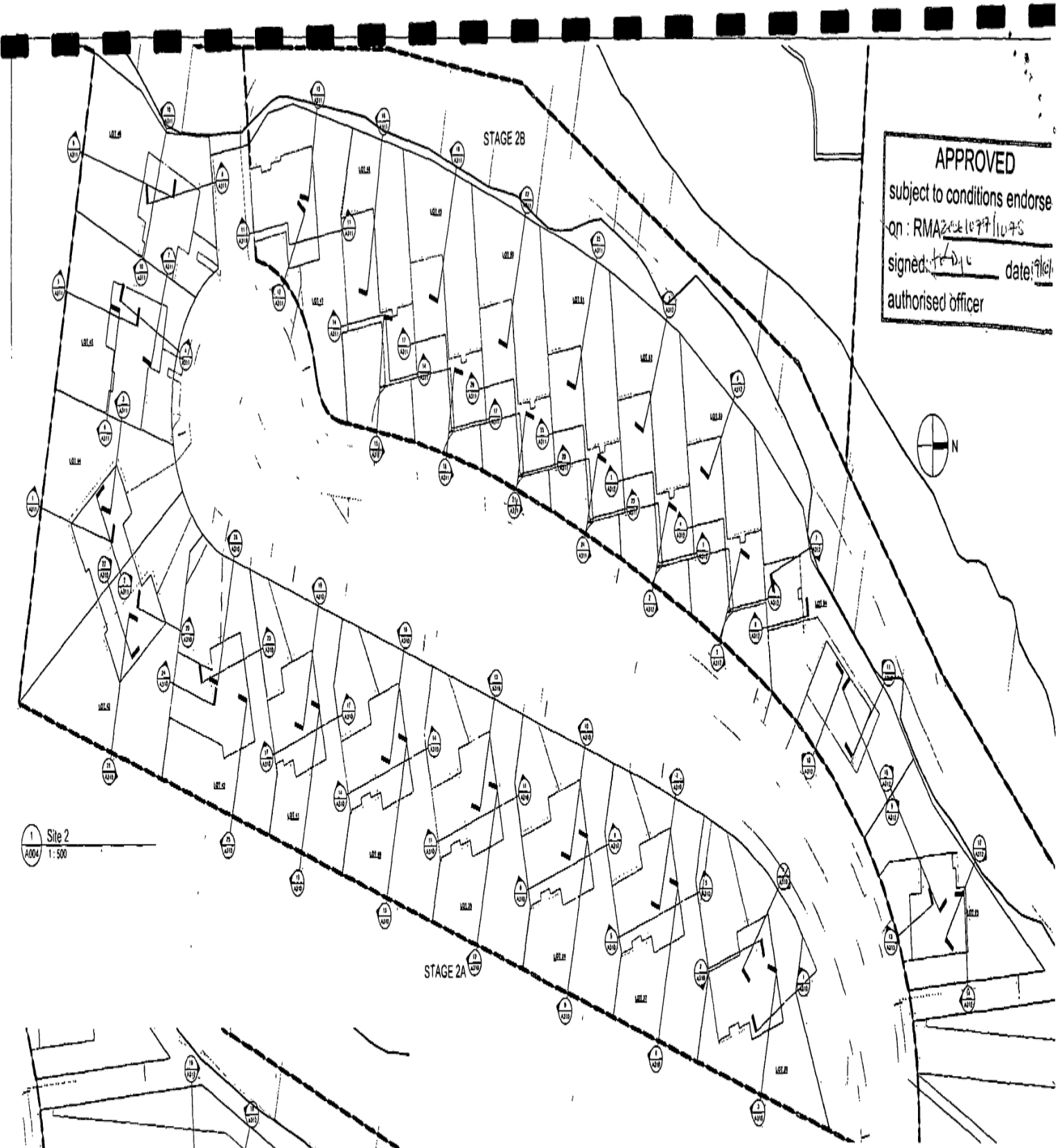


1 A005 Site 3
1 : 500

WEST COAST ROAD HOUSING DEVELOPMENT

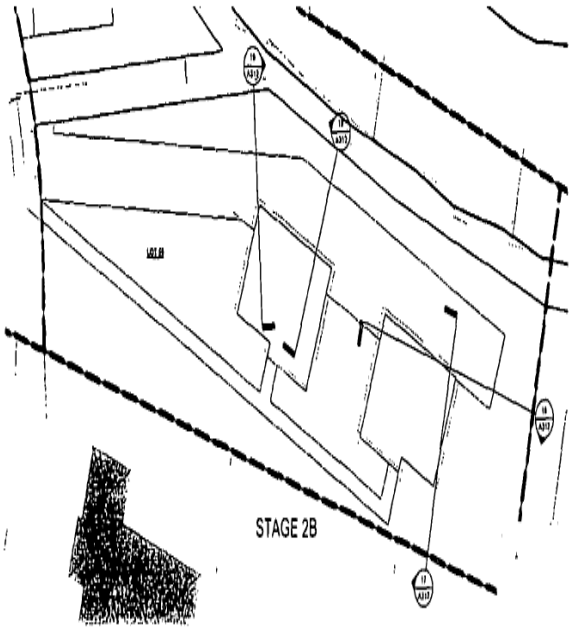
BULK & LOCATION PLAN

SITE PLAN STAGE 3



APPROVED
subject to conditions endorse
on : RMA
signed: date:
authorised officer

1 A004 Site 2
1 : 500

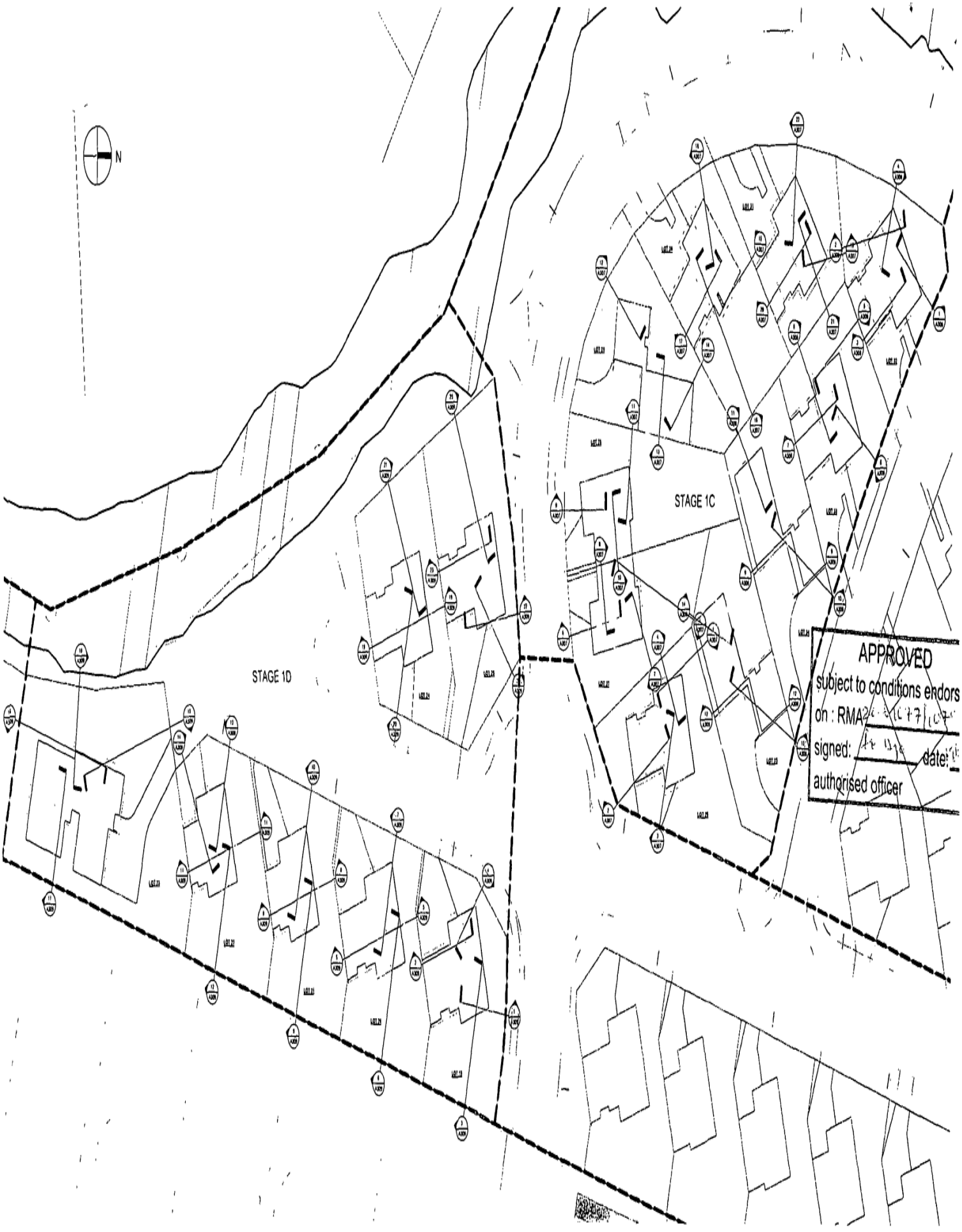


2 A004 Site 2 - Lot 56
1 : 500

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN STAGE 2A 2B

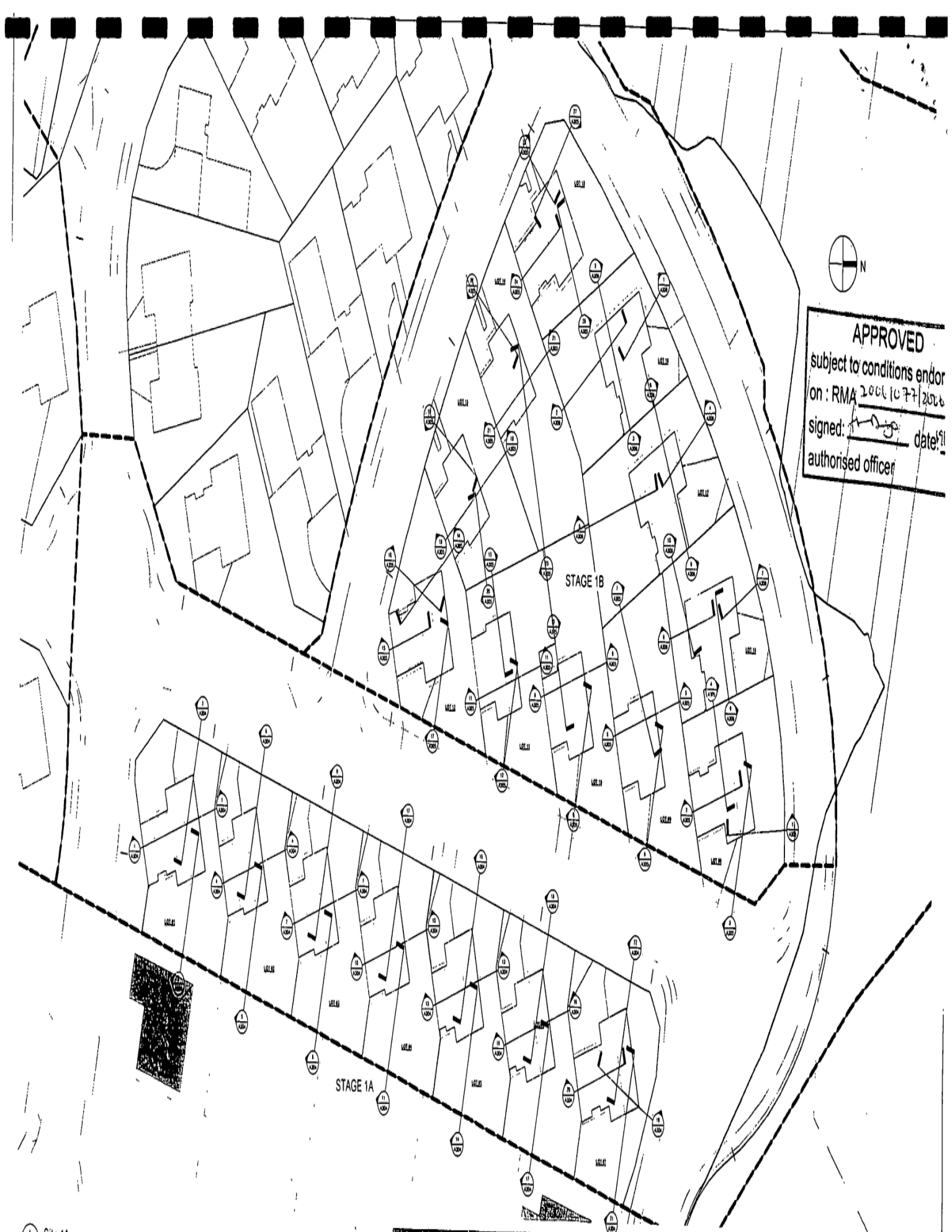


1 A003 Site 1B
1 : 500

WEST COAST ROAD HOUSING DEVELOPMENT

BUL[illegible] LOCA[illegible]N STUDY

STAGE 1B



APPROVED
subject to conditions endor
on : RMA 2001077 2016
signed: date:
authorised officer

1 Site 1A
A002 1 : 500

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SITE PLAN
STAGE 1A &
1B

RL 17500

1 A313 LOT 57 - North 1 : 500

RL 17500

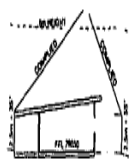
2 A313 LOT 57 - East 1 : 500

RL 17500

3 A313 LOT 57 - West 1 1 : 500

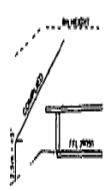
RL 17500

4 A313 LOT 57 - West 2 1 : 500



RL 17500

5 A313 LOT 58 - North & South 1 : 500

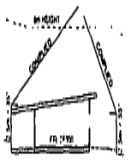


RL 17500

6 A313 LOT 58 - East 1 : 500

RL 17500

7 A313 LOT 58 - West 1 : 500



RL 17500

8 A313 LOT 59 - North & South 1 : 500

RL 17500

9 A313 LOT 59 - East 1 : 500

RL 17500

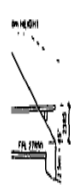
10 A313 LOT 59 - West 1 : 500

RL 17500

11 A313 LOT 60 - South 1 : 500

RL 17500

12 A313 LOT 60 - East 1 1 : 500

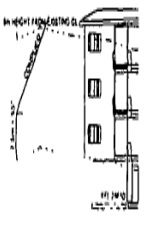


RL 17500

13 A313 LOT 60 - East 2 1 : 500

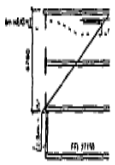
RL 17500

14 A313 LOT 60 - West 1 : 500



RL 17500

15 A313 LOT 61 - North 1 : 500



RL 17500

16 A313 LOT 61 - South 1 : 500

RL 17500

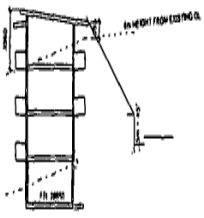
17 A313 LOT 61 - East 1 1 : 500

RL 17500

18 A313 LOT 61 - East 2 1 : 500

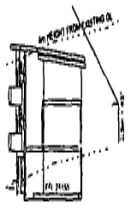
RL 17500

19 A313 LOT 61 - East 3 1 : 500



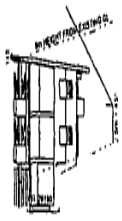
RL 17500

20 A313 LOT 61 - West 1 1 : 500



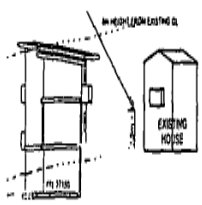
RL 17500

22 A313 LOT 61 - West 3 1 : 500



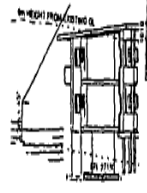
RL 17500

21 A313 LOT 61 - West 2 1 : 500



RL 17500

23 A313 LOT 61 - West 4 1 : 500



RL 17500

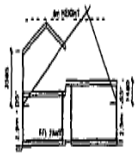
24 A313 LOT 61 - West 5 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 2 Oct 2017 [illegible]
signed: [illegible] date: [illegible]
authorised officer

WEST COAST ROAD HOUSING DEVELOPMENT

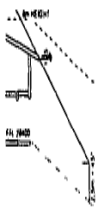
BULK & LOCATION STUDY

SECTION
STAGE 3

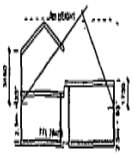


1 LOT 52 - North & South
A312 1 : 500

2 LOT 52 - East
A312 1 : 500

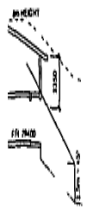


3 LOT 52 - West
A312 1 : 500

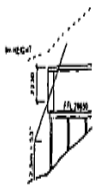


4 LOT 53 - North & South
A312 1 : 500

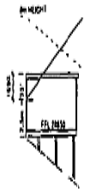
5 LOT 53 - East
A312 1 : 500



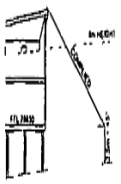
6 LOT 53 - West
A312 1 : 500



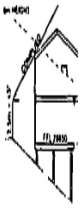
7 LOT 54 - North
A312 1 : 500



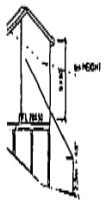
8 LOT 54 - South
A312 1 : 500



9 LOT 54 - East 1
A312 1 : 500



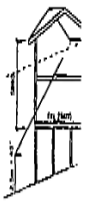
10 LOT 54 - East 2
A312 1 : 500



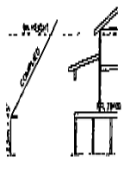
11 LOT 54 - West
A312 1 : 500

13 LOT 55 - South
A312 1 : 500

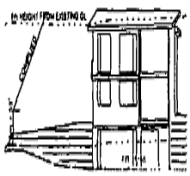
14 LOT 55 - East
A312 1 : 500



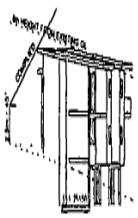
12 LOT 55 - West 1
A312 1 : 500



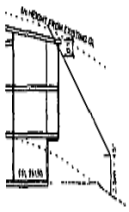
15 LOT 55 - West 2
A312 1 : 500



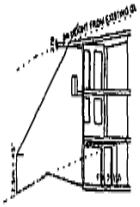
16 LOT 56 - North
A312 1 : 500



17 LOT 56 - East
A312 1 : 500



18 LOT 56 - West 1
A312 1 : 500



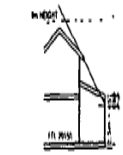
19 LOT 56 - West 2
A312 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061071 10F5
signed: [signature] date: 19/12/06
authorised officer

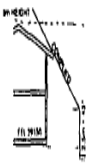
WEST COAST ROAD
HOUSING DEVELOPMENT
BULK & LOCATION STUDY

SECTIONS
STAGE 2B

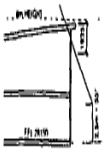
1 A311 LOT 44 - South 1:500



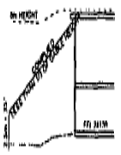
2 A311 LOT 44 - East 1:500



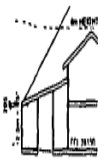
3 A311 LOT 44 - West 1:500



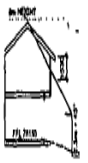
4 A311 LOT 45 - North 1:500



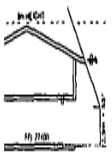
5 A311 LOT 45 - South 1:500



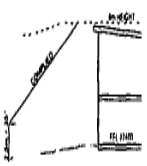
6 A311 LOT 45 - East 1:500



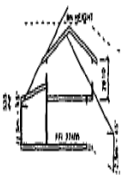
7 A311 LOT 45 - West 1:500



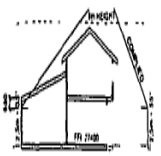
8 A311 LOT 46 - North 1:500



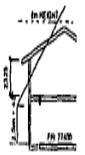
9 A311 LOT 46 - South 1:500



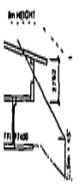
10 A311 LOT 46 - East & West 1:500



11 A311 LOT 47 - North & South 1:500

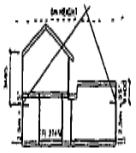


12 A311 LOT 47 - East 1:500



13 A311 LOT 47 - West 1:500

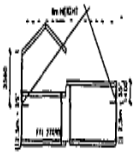
APPROVED
subject to conditions endors
on : RMA 2[illegible]1077 | 1075
signed: [illegible] date: [illegible]
authorised officer



14 A311 LOT 48 - North & South 1:500

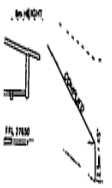
15 A311 LOT 48 - East 1:500

16 A311 LOT 48 - West 1:500

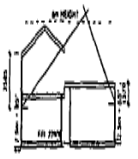


17 A311 LOT 49 - North & South 1:500

18 A311 LOT 49 - East 1:500

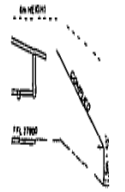


19 A311 LOT 49 - West 1:500

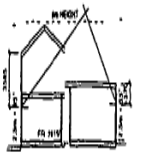


20 A311 LOT 50 - North & South 1:500

21 A311 LOT 50 - East 1:500



22 A311 LOT 50 - West 1:500



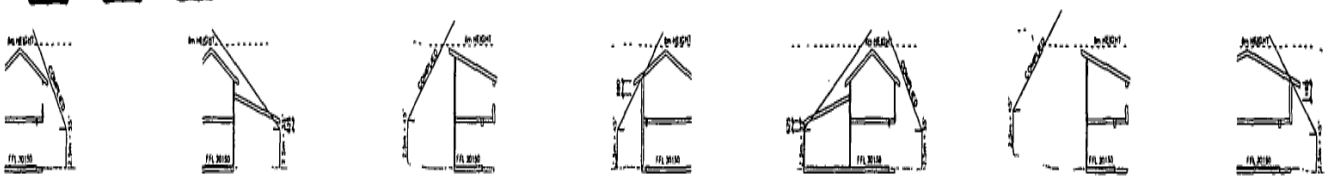
23 A311 LOT 51 - North & South 1:500

24 A311 LOT 51 - East 1:500

25 A311 LOT 51 - West 1:500

WEST [illegible] AST ROA[illegible]
H[illegible]USING [illegible]EVEL[illegible]PMENT
BU[illegible] LOC[illegible]ON S[illegible]

SECTIONS
STAGE 2A
2B



1 A310 LOT 36 - North 1:500

2 A310 LOT 36 - South 1:500

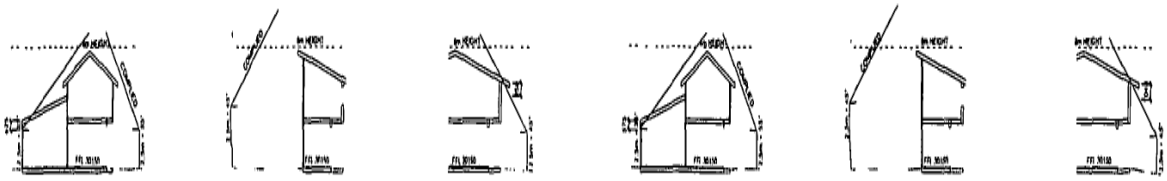
3 A310 LOT 36 - East 1:500

4 A310 LOT 36 - West 1:500

5 A310 LOT 37 - North & South 1:500

6 A310 LOT 37 - East 1:500

7 A310 LOT 37 - West 1:500



8 A310 LOT 38 - North & South 1:500

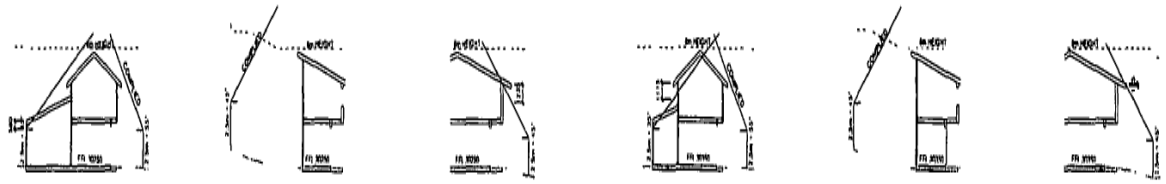
9 A310 LOT 38 - East 1:500

10 A310 LOT 38 - West 1:500

11 A310 LOT 39 - North & South 1:500

12 A310 LOT 39 - East 1:500

13 A310 LOT 39 - West 1:500



APPROVED
subject to conditions endorsed
on : RMA 2006[illegible]
signed: [illegible] date: [illegible]
authorised officer

14 A310 LOT 40 - North & South 1:500

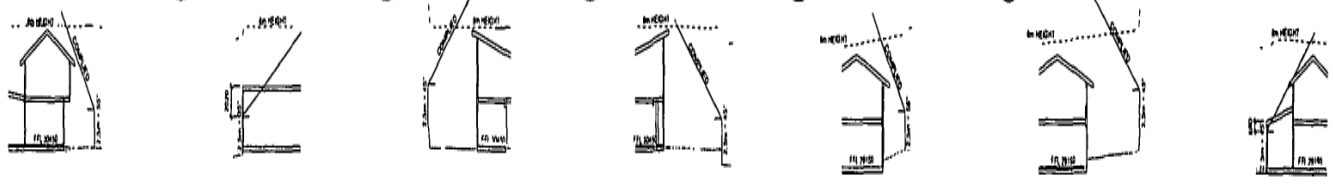
15 A310 LOT 40 - East 1:500

16 A310 LOT 40 - West 1:500

17 A310 LOT 41 - North & South 1:500

18 A310 LOT 41 - East 1:500

19 A310 LOT 41 - West 1:500



23 A310 LOT 42 - North 1:500

24 A310 LOT 42 - South 1:500

25 A310 LOT 42 - East 1:500

26 A310 LOT 42 - West 1:500

20 A310 LOT 43 - North 1:500

21 A310 LOT 43 - East 1:500

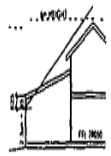
22 A310 LOT 43 - West 1:500

WEST COAST ROAD HOUSING DEVELOPMENT

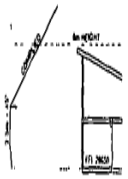
BULK & LOCATION STUDY

SECTIONS STAGE 2A

1 A309 LOT 19 - North 1 : 500

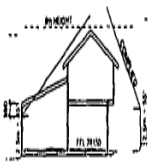


2 A309 LOT 19 - South 1 : 500

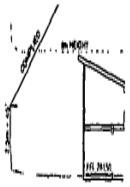


3 A309 LOT 19 - East 1 : 500

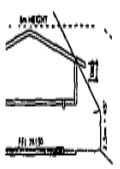
4 A309 LOT 19 -West 1 : 500



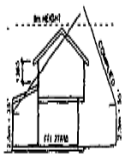
5 A309 LOT 20 - North & South 1 : 500



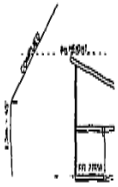
6 A309 LOT 20 - East 1 : 500



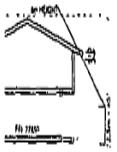
7 A309 LOT 20 - West 1 : 500



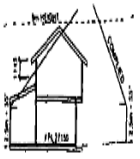
8 A309 LOT 21 - North & South 1 : 500



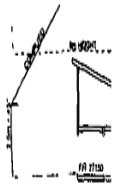
9 A309 LOT 21 - East 1 : 500



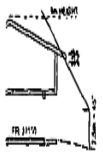
10 A309 LOT 21 - West 1 : 500



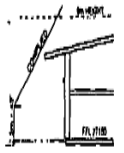
11 A309 LOT 22 - North & South 1 : 500



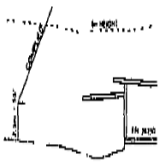
12 A309 LOT 22 - East 1 : 500



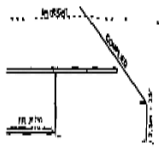
13 A309 LOT 22 - West 1 1 : 500



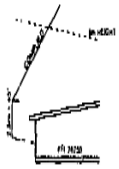
14 A309 LOT 22 - West 2 1 : 500



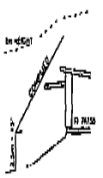
15 A309 LOT 23 - North 1 : 500



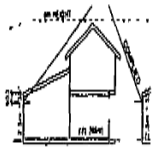
16 A309 LOT 23 - South 1 : 500



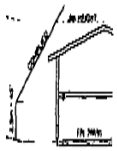
17 A309 LOT 23 - East 1 : 500



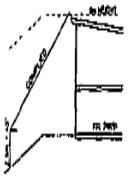
18 A309 LOT 23 - West 1 : 500



19 A309 LOT 24 - North & South 1 : 500

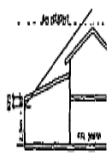


20 A309 LOT 24 - East 1 : 500

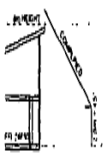


21 A309 LOT 24 - West 1 : 500

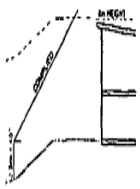
22 A309 LOT 25 - North 1 : 500



23 A309 LOT 25 - South 1 : 500



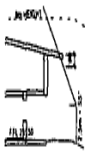
24 A309 LOT 25 - East 1 : 500



25 A309 LOT 25 - West 1 : 500

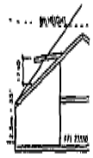
APPROVED
subject to conditions endorsed
on : RMA 20616177 | 10 of
signed: _____ date: 14/10/16
authorised officer

WEST C AST R A
H USING EVEL PMENT
BU OC N S
SECTIONS
STAGE 1D



1 LOT 32 - North
A308 1:500

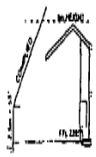
2 LOT 32 - South 1
A308 1:500



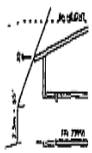
3 LOT 32 - South 2
A308 1:500

4 LOT 32 - West
A308 1:500

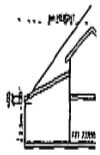
APPROVED
subject to conditions endorsed
on : RMA 20061077 | 1075
signed: _____ date: 15/10/06
authorised officer



5 LOT 33 - North 1
A308 1:500

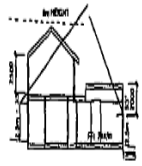


6 LOT 33 - North 2
A308 1:500

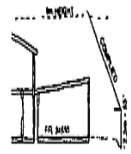


7 LOT 33 - South
A308 1:500

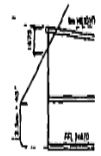
8 LOT 33 - West
A308 1:500



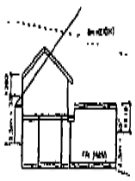
9 LOT 34 - North 1 & South
A308 1:500



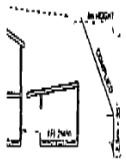
10 LOT 34 - North 2
A308 1:500



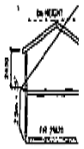
11 LOT 34 - West
A308 1:500



12 LOT 35 - North 1 & South 1
A308 1:500



13 LOT 35 - North 2
A308 1:500

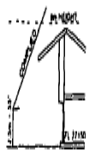


14 LOT 35 - South 2
A308 1:500

WEST COAST ROAD HOUSING DEVELOPMENT

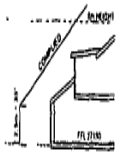
BULK & LOCATION STUDY

SECTIONS STAGE 1C



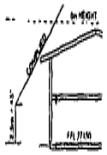
RL 17500

1 A307 LOT 26 - North 1 : 500



RL 17500

2 A307 LOT 26 - South 1 : 500



RL 17500

3 A307 LOT 26 - East 1 : 500

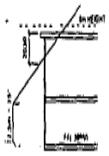
RL 17500

4 A307 LOT 26 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 2020/1077 | 1078
signed: [illegible] date: 19/10/20
authorised officer

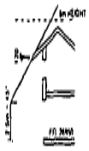
RL 17500

5 A307 LOT 27 - North 1 : 500



RL 17500

6 A307 LOT 27 - South 1 : 500

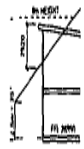


RL 17500

7 A307 LOT 27 - East 1 : 500

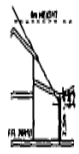
RL 17500

8 A307 LOT 27 - West 1 : 500



RL 17500

9 A307 LOT 28 - South 1 : 500



RL 17500

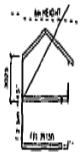
10 A307 LOT 28 - East 1 : 500

RL 17500

11 A307 LOT 28 - West 1 : 500

RL 17500

12 A307 LOT 29 - South 1 : 500

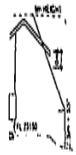


RL 17500

13 A307 LOT 29 - East 1 : 500

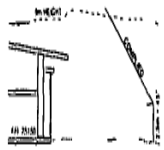
RL 17500

14 A307 LOT 29 - West 1 : 500



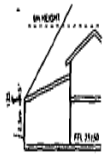
RL 17500

15 A307 LOT 30 - North 1 : 500



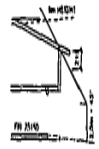
RL 17500

16 A307 LOT 30 - East 1 1 : 500



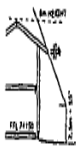
RL 17500

17 A307 LOT 30 - East 2 1 : 500



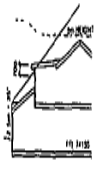
RL 17500

18 A307 LOT 30 - West 1 : 500



RL 17500

19 A307 LOT 31 - North 1 : 500

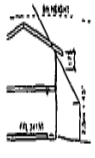


RL 17500

20 A307 LOT 31 - South 1 : 500

RL 17500

21 A307 LOT 31 - East 1 : 500

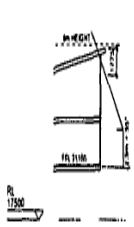


RL 17500

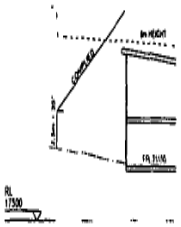
22 A307 LOT 31 - West 1 : 500

WEST COAST ROAD HOUSING DEVELOPMENT

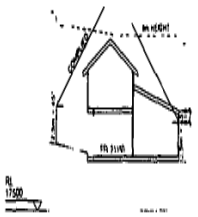
SECTIONS STAGE 1C



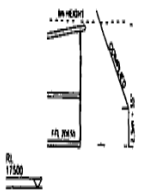
1 A306 LOT 16 - North 1 : 500



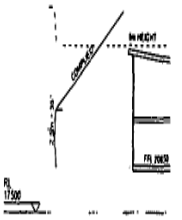
2 A306 LOT 16 - South 1 : 500



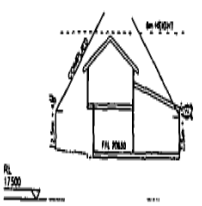
3 A306 LOT 16 - East & West 1 : 500



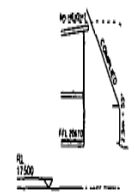
4 A306 LOT 17 - North 1 : 500



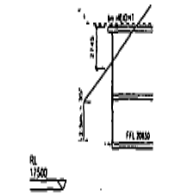
5 A306 LOT 17 - South 1 : 500



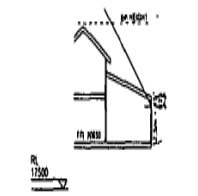
6 A306 LOT 17 - East & West 1 . 500



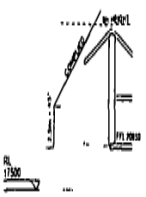
7 A306 LOT 18 - North 1 : 500



8 A306 LOT 18 - South 1 : 500



9 A306 LOT 18 - East 1 : 500



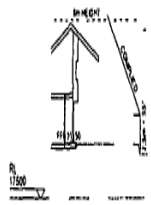
10 A306 LOT 18 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 2006 10 77 [1075
signed: [illegible] date: 19/10/07
authorised officer

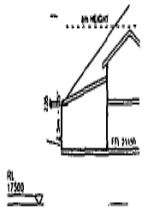
WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

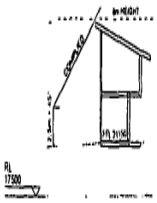
SECTIONS STAGE 1B



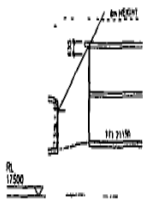
1 A305 LOT 08 - North 1 : 500



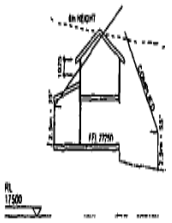
2 A305 LOT 08 - South 1 : 500



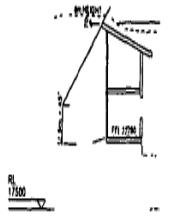
3 A305 LOT 08 - East 1 : 500



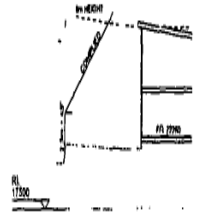
4 A305 LOT 08 - West 1 : 500



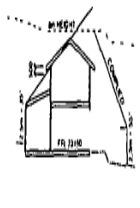
5 A305 LOT 09 - North & South 1 : 500



6 A305 LOT 09 - East 1 : 500



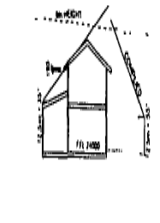
7 A305 LOT 09 - West 1 : 500



8 A305 LOT 10 - North & South 1 : 500

9 A305 LOT 10 - East 1 : 500

10 A305 LOT 10 - West 1 : 500

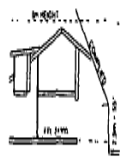


11 A305 LOT 11 - North & South 1 : 500

12 A305 LOT 11 - East 1 : 500

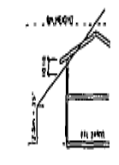
13 A305 LOT 11 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 2[illegible]
signed: [illegible] date: [illegible]
authorised officer

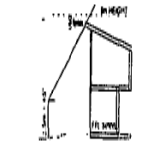


14 A305 LOT 12 - North 1 : 500

15 A305 LOT 12 - South 1 1 : 500



16 A305 LOT 12 - South 2 1 : 500



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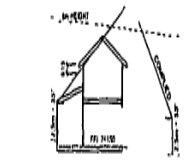

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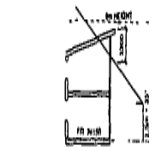

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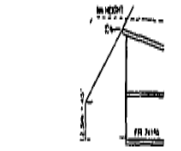

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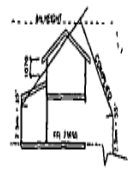
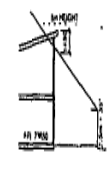


21 A305 LOT 14 - North & South 1 1 : 500



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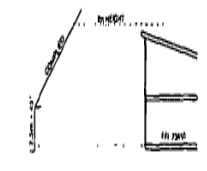
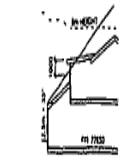
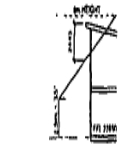


23 A305 LOT 14 - East 1 : 500



24 A305 LOT 15 - South 1 1 : 500



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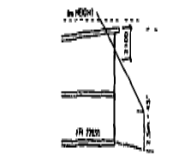
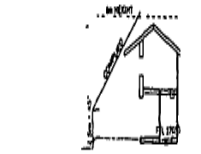


26 A305 LOT 15 - East 1 : 500



27 A305 LOT 15 - West 1 : 500

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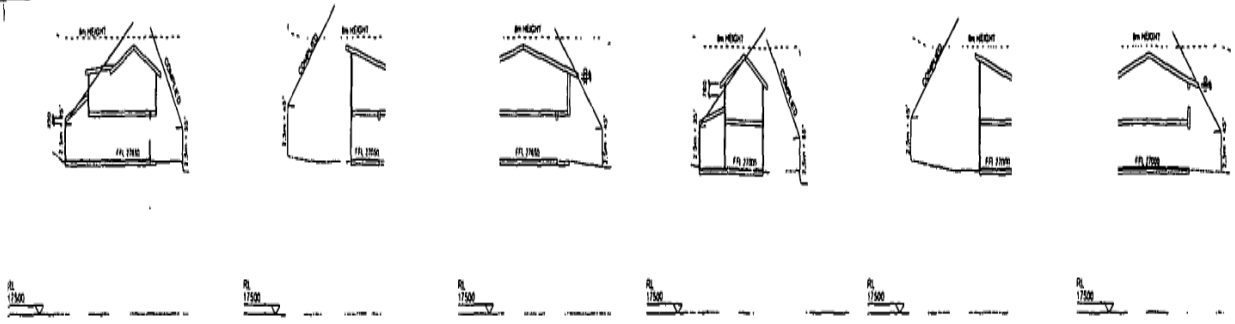
SECTIONS
STAGE 1B



1 A304 LOT 01 - North & South 1 : 500

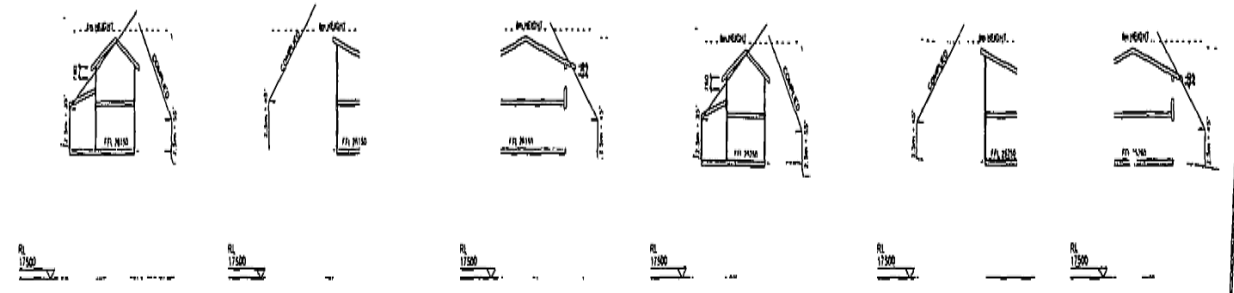
2 A304 LOT 01 - East 1 : 500

3 A304 LOT 01 - West 1 : 500

4 A304 LOT 02 - North & South 1 : 500

5 A304 LOT 02 - East 1 : 500

6 A304 LOT 02 - West 1 : 500



7 A304 LOT 03 - North & South 1 : 500

8 A304 LOT 03 - East 1 : 500

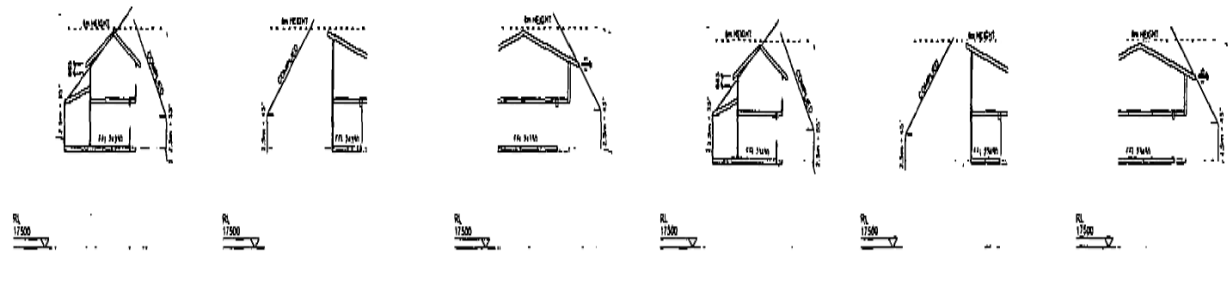
9 A304 LOT 03 - West 1 : 500

10 A304 LOT 04 - North & South 1 : 500

11 A304 LOT 04 - East 1 : 500

12 A304 LOT 04 - West 1 : 500

APPROVED
subject to conditions endorsed
on : RMA 20061077 | 107
signed: _____ date: 15/11/06
authorised officer



13 A304 LOT 05 - North & South 1 : 500

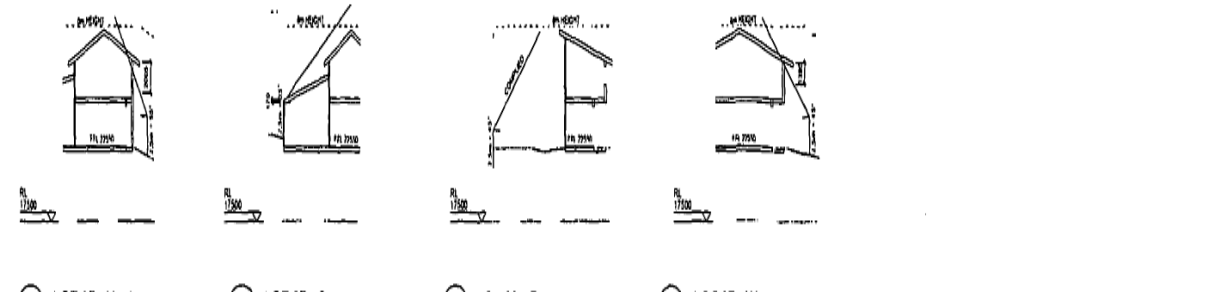
14 A304 LOT 05 - East 1 : 500

15 A304 LOT 05 - West 1 : 500

16 A304 LOT 06 - North & South 1 : 500

17 A304 LOT 06 - East 1 : 500

18 A304 LOT 06 - West 1 : 500



19 A304 LOT 07 - North 1 : 500

20 A304 LOT 07 - South 1 : 500

21 A304 LOT 07 - East 1 : 500

22 A304 LOT 07 - West 1 : 500

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

SECTIONS STAGE 1A

STAGE 1A

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 01	415 m²	109 m²	26.3%	209 m²	50.4%
LOT 02	380 m²	86 m²	22.6%	154 m²	40.5%
LOT 03	380 m²	86 m²	22.6%	154 m²	40.5%
LOT 04	380 m²	86 m²	30.5%	154 m²	40.5%
LOT 05	380 m²	92 m²	23.9%	164 m²	43.2%
LOT 06	380 m²	92 m²	24.2%	164 m²	43.2%
LOT 07	381 m²	109 m²	28.6%	199 m²	52.2%

STAGE 1B

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 08	403 m²	109 m²	27.0%	176 m²	43.7%
LOT 09	402 m²	86 m²	21.4%	143 m²	35.6%
LOT 10	388 m²	86 m²	22.2%	143 m²	36.9%
LOT 11	353 m²	86 m²	24.4%	143 m²	40.5%
LOT 12	374 m²	109 m²	29.1%	171 m²	45.7%
LOT 13	350 m²	86 m²	24.6%	140 m²	40.0%
LOT 14	433 m²	86 m²	19.9%	149 m²	34.4%
LOT 15	363 m²	109 m²	30.0%	176 m²	48.5%
LOT 16	395 m²	109 m²	27.6%	186 m²	47.1%
LOT 17	475 m²	109 m²	22.9%	203 m²	42.9%
LOT 18	353 m²	109 m²	30.9%	191 m²	54.1%

STAGE 1C

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 26	451 m²	109 m²	24.2%	172 m²	38.1%
LOT 27	354 m²	86 m²	24.3%	139 m²	39.3%
LOT 28	413 m²	86 m²	20.8%	139 m²	33.7%
LOT 29	412 m²	114 m²	27.7%	217 m²	52.7%
LOT 30	438 m²	109 m²	24.8%	203 m²	46.3%
LOT 31	371 m²	109 m²	29.4%	217 m²	58.5%
LOT 32	349 m²	109 m²	31.2%	193 m²	55.3%
LOT 33	383 m²	109 m²	28.5%	214 m²	55.9%
LOT 34	411 m²	114 m²	35.0%	239 m²	58.2%
LOT 35	415 m²	114 m²	27.5%	248 m²	59.0%

STAGE 1D

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 19	405 m²	109 m²	26.9%	201 m²	49.6%
LOT 20	434 m²	109 m²	25.1%	201 m²	46.3%
LOT 21	397 m²	92 m²	23.2%	165 m²	41.6%
LOT 22	405 m²	92 m²	22.7%	157 m²	38.8%
LOT 23	840 m²	191 m²	22.7%	313 m²	37.3%
LOT 24	404 m²	109 m²	27.0%	186 m²	46.0%
LOT 25	506 m²	109 m²	21.5%	209 m²	41.3%

STAGE 2A

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 36	457 m²	109 m²	23.9%	223 m²	48.8%
LOT 37	426 m²	109 m²	25.6%	205 m²	48.1%
LOT 38	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 39	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 40	439 m²	109 m²	24.8%	205 m²	46.7%
LOT 41	370 m²	92 m²	24.9%	173 m²	46.8%
LOT 42	431 m²	126 m²	29.2%	229 m²	53.1%
LOT 43	444 m²	86 m²	19.4%	165 m²	37.2%
LOT 44	459 m²	86 m²	18.7%	165 m²	35.9%
LOT 45	370 m²	109 m²	29.5%	188 m²	50.8%
LOT 46	377 m²	92 m²	24.4%	152 m²	40.3%

STAGE 2B

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 47	372 m²	109 m²	29.3%	168 m²	45.2%
LOT 48	361 m²	114 m²	31.6%	211 m²	58.4%
LOT 49	369 m²	114 m²	30.9%	199 m²	53.9%
LOT 50	363 m²	114 m²	31.4%	192 m²	52.9%
LOT 51	366 m²	114 m²	31.1%	190 m²	51.9%
LOT 52	364 m²	114 m²	31.3%	193 m²	53.0%
LOT 53	354 m²	114 m²	32.2%	199 m²	56.2%
LOT 54	469 m²	114 m²	24.3%	236 m²	50.3%
LOT 55	370 m²	92 m²	24.9%	166 m²	44.9%
LOT 56	1416 m²	177 m²	12.5%	603 m²	42.6%

STAGE 3

LOT NO	LOT AREA	BUILDING AREA	%	IMPERMEABLE AREA	%
LOT 57	268 m²	81 m²	30.2%	126 m²	47.0%
LOT 58	263 m²	81 m²	30.8%	129 m²	49.0%
LOT 59	273 m²	81 m²	29.7%	131 m²	48.0%
LOT 60	318 m²	81 m²	25.5%	124 m²	39.0%
LOT 61	3743 m²	632 m²	16.9%	2474 m²	66.1%

APPROVED
subject to conditions endorsed
on : RMA 20161171 1.7.
Signed: [illegible] date: 19
authorised officer

STAGE 1A, 1B, 1C, 1D, 2A & 2B

SITE AREA	49335 m²
SUM OFLOT AREA	23628 m²
SUM OFBUILDING AREA	5926 m²
SUM OF IMPERMEABLE AREA	10903 m²
TOTAL IMPERMEABLE AREA (BUILDING COVERAGE + PAVED AREA)	20688 m² = 41.9% OF SITE AREA

STAGE 3

SITE AREA	7870 m²
SUM OF LOT AREA	4865 m²
SUM OF BUILDING AREA	956 m²
SUM OF IMPERMEABLE AREA	2984 m²
TOTAL IMPERMEABLE AREA (BUILDING COVERAGE + PAVED AREA)	2984 m² = 37.9% OF SITE AREA

WEST COAST ROAD HOUSING DEVELOPMENT

BULK & LOCATION STUDY

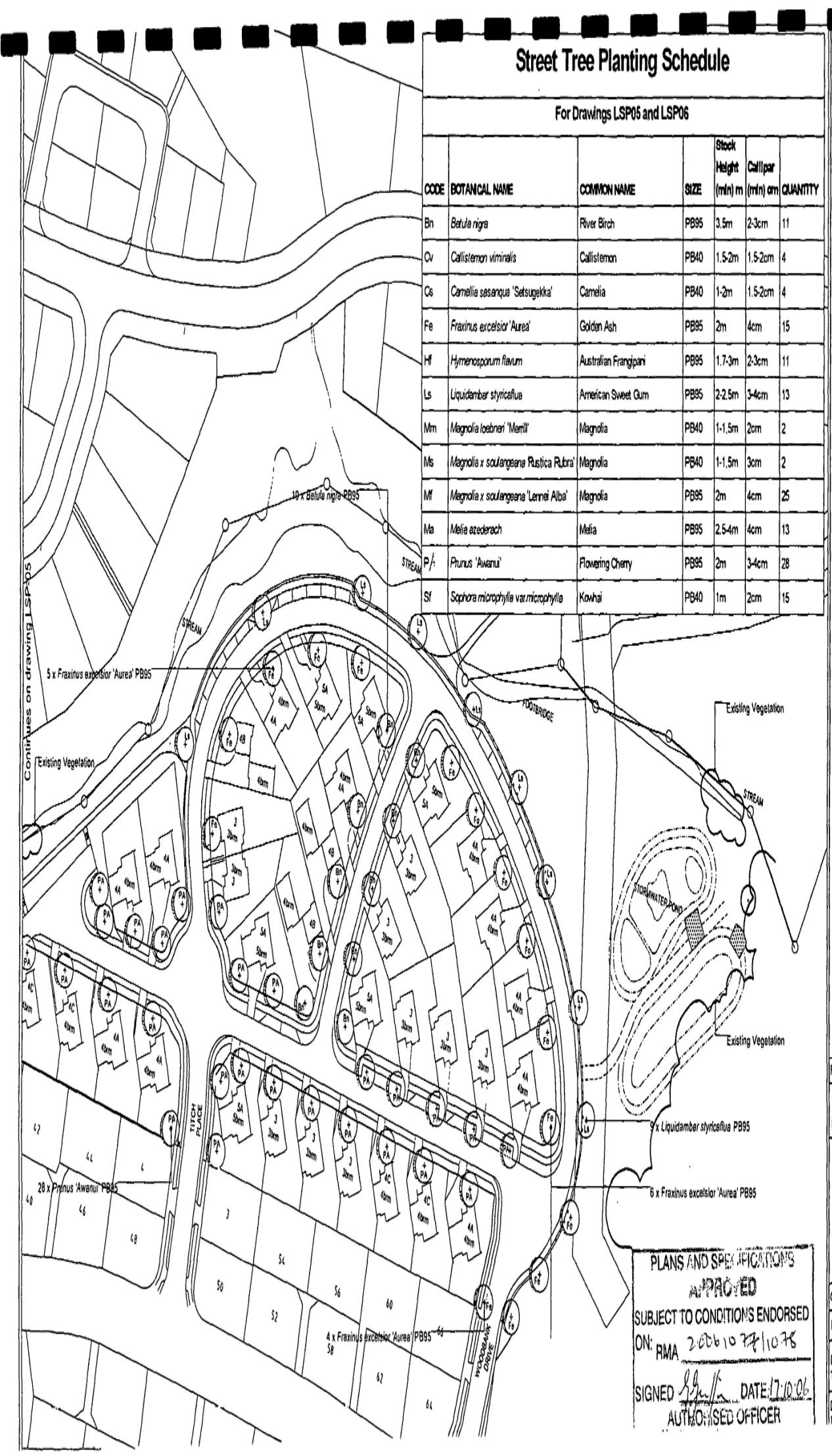
AREA SUMMARY

30 MAY 2006

Street Tree Planting Schedule

For Drawings LSP05 and LSP06

CODE	BOTANICAL NAME	COMMON NAME	SIZE	Stock Height (min) m	Caliper (min) cm	QUANTITY
Bn	*Betula nigra*	River Birch	PB95	3.5m	2-3cm	11
Cv	*Callistemon viminalis*	Callistemon	PB40	1.5-2m	1.5-2cm	4
Cs	*Camellia sasanqua 'Setsugekka'*	Camelia	PB40	1-2m	1.5-2cm	4
Fe	*Fraxinus excelsior 'Aurea'*	Golden Ash	PB95	2m	4cm	15
Hf	*Hymenosporum flavum*	Australian Frangipani	PB95	1.7-3m	2-3cm	11
Ls	*Liquidamber styriciflua*	American Sweet Gum	PB95	2-2.5m	3-4cm	13
Mm	*Magnolia loebneri 'Merrill'*	Magnolia	PB40	1-1.5m	2cm	2
Ms	*Magnolia x soulangeana Rustica Rubra'*	Magnolia	PB40	1-1.5m	3cm	2
Mf	*Magnolia x soulangeana 'Lennei Alba'*	Magnolia	PB95	2m	4cm	25
Ma	*Melia azederach*	Melia	PB95	2.5-4m	4cm	13
Pf	*Prunus 'Awanui'*	Flowering Cherry	PB95	2m	3-4cm	28
Sf	*Sophora microphylla var.microphylla*	Kowhai	PB40	1m	2cm	15



Key

Soft Landscape Elements

A - Proposed Ornamental Specimen Trees. Refer to schedule for sizes and quantities

NOTE:
Read this drawing in conjunction with LSP-05

All trees shall be planted in a minimum 600mm diameter weed free circle with 75mm woodchip mulch and shall be planted in a pit of 600x600x500 deep of good quality friable loamy topsoil or Living Earth Garden Mix.

Rev	Description	Date	Drawn	Chk
B	Minor changes	13/10/06	AH	CH
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

PLANS AND SPECIFICATIONS APPROVED
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 2.006 10 74 | 10 75
SIGNED [signature] DATE: 17/10/06
AUTHORISED OFFICER

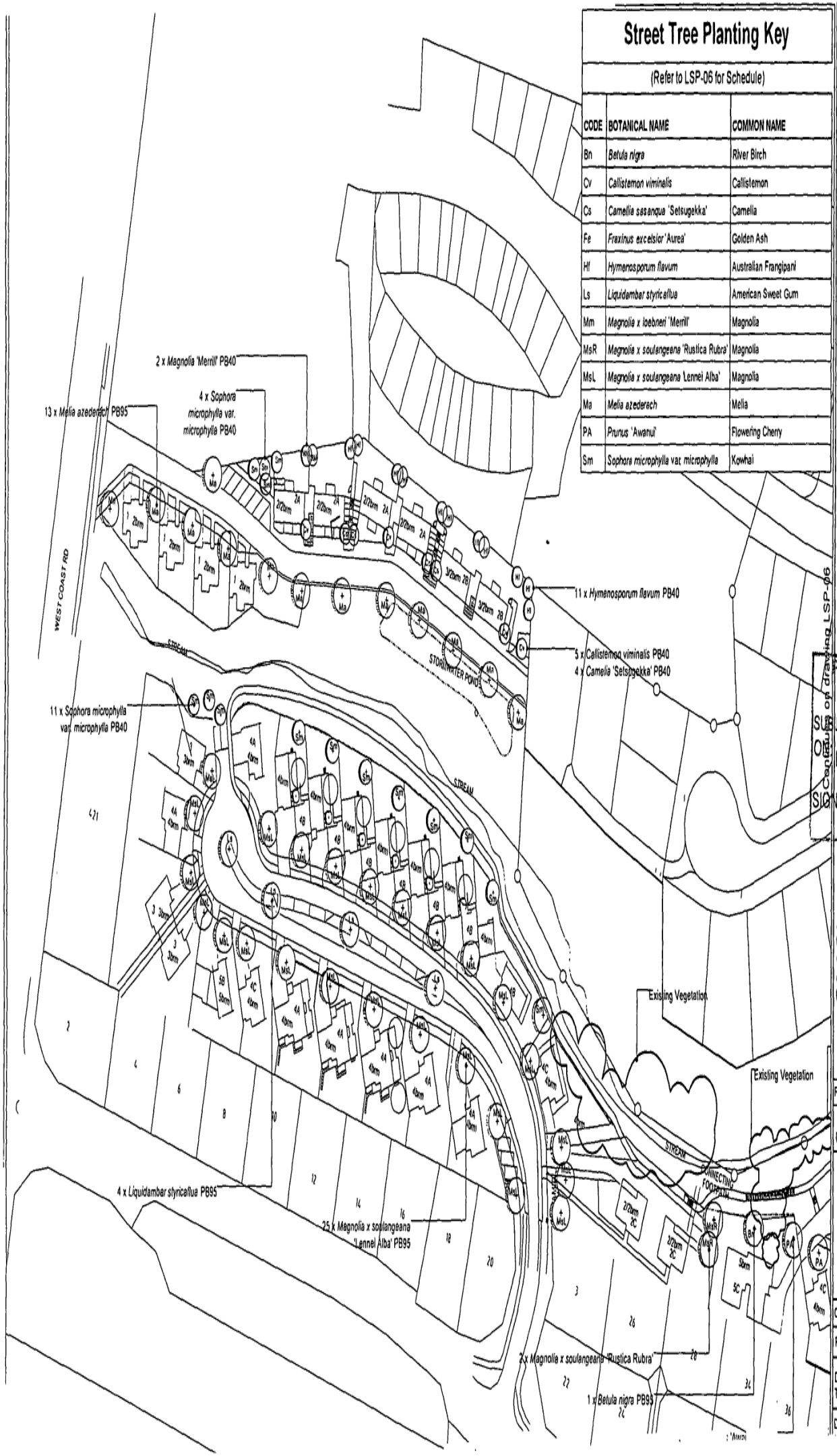
SOUL environments
PO Box 90211 Tbrangi | Auckland, New Zealand
phone 64 9 817 3784 | fax 64 9 817 3781
email admin@soulscapearchitecture.co.nz
www.landscapearchitecture.co.nz

Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Street Tree Planting Plan 2 of 2

Drawing Number: LSP-06 Rev B | Job Number: SOUL-05/060161



Street Tree Planting Key

(Refer to LSP-06 for Schedule)

CODE	BOTANICAL NAME	COMMON NAME
Bn	*Betula nigra*	River Birch
Cv	*Callistemon viminalis*	Callistemon
Cs	*Camellia sasanqua 'Setsugekka'*	Camelia
Fe	*Fraxinus excelsior 'Aurea'*	Golden Ash
Hf	*Hymenosporum flavum*	Australian Frangipani
Ls	*Liquidambar styriciflua*	American Sweet Gum
Mm	*Magnolia x loebneri 'Merrill'*	Magnolia
MsR	*Magnolia x soulangeana 'Rustica Rubra'*	Magnolia
MsL	*Magnolia x soulangeana 'Lennei Alba'*	Magnolia
Ma	*Melia azederach*	Melia
PA	*Prunus 'Awanui'*	Flowering Cherry
Sm	*Sophora microphylla var. microphylla*	Kowhai

Key

N

Soft Landscape Elements

(Bn) A - Proposed Ornamental Specimen Trees. Refer to schedule for sizes and quantities on LSP-06.

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO CONDITIONS OF RMA 20061077[illegible] SIGNED [signature] DATE 17.10.06 AUTHORISED OFFICER

Conditions of drawing LSP-06

NOTE:
Read this drawing in conjunction with LSP-06

All trees shall be planted in a minimum 600mm diameter weed free circle with 75mm woodchip mulch and shall be planted in a pit of 600x600x500 deep of good quality friable loamy topsoil or Living Earth Garden Mix.

Rev	Description	Date	Drawn	Chk
B	Minor changes	13/10/06	AH	CH
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

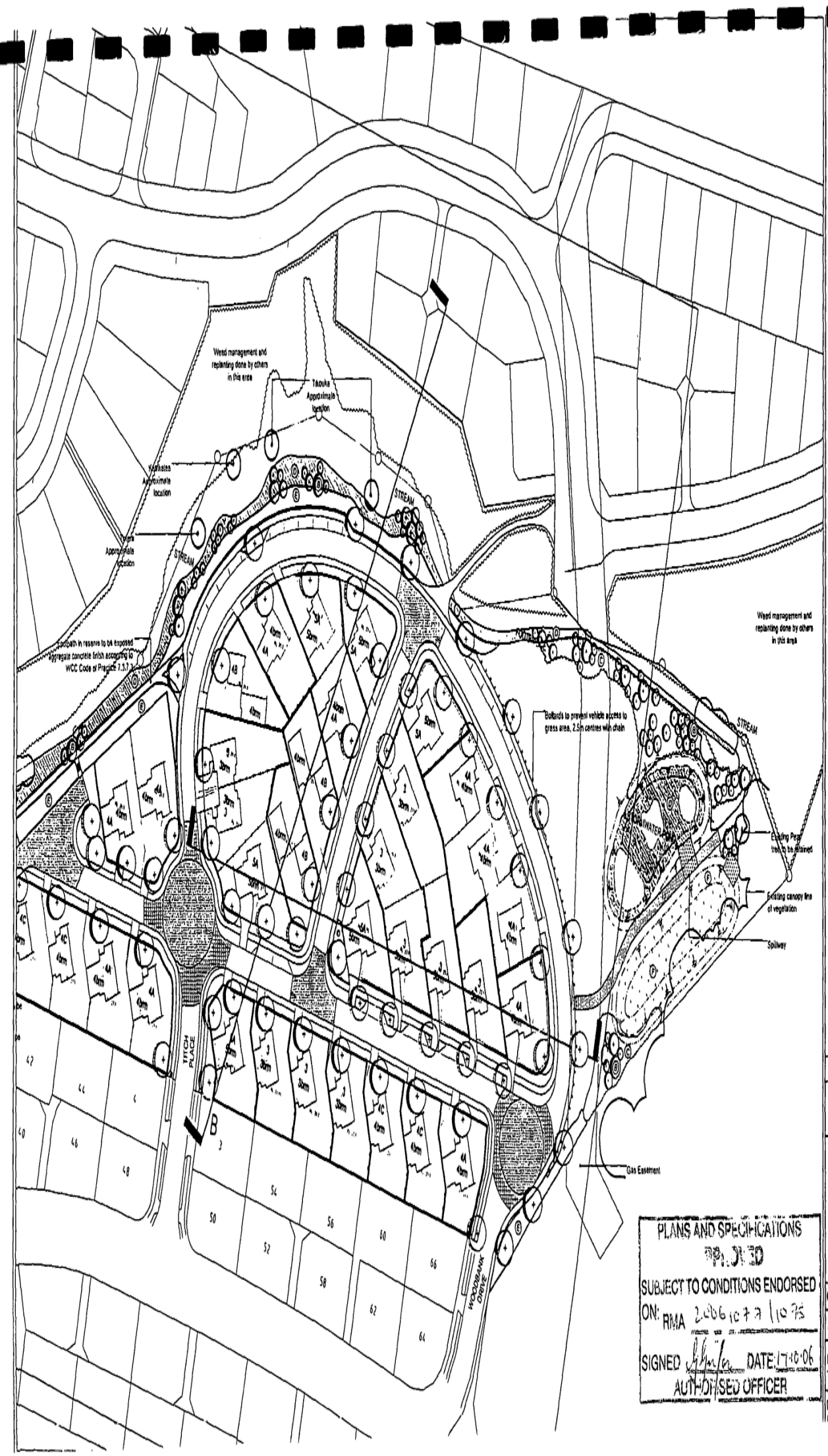
SOUL environments
PO Box 46211 Herne Bay | Auckland, New Zealand
phone 64 9 917 3768 | fax 64 9 917 3769
email contact@landscapearchitecture.co.nz
www.landscapearchitecture.co.nz

Client: NZ Housing Foundation & Babbage Consultants Ltd

Project: West Coast Road Housing Development

Drawing Title: Street Tree Planting Plan 1 of 2

Drawing No: LSP-05



Key

Soft Landscape Elements
For planting mixes refer to accompanying report

A - Proposed Ornamental Specimen Trees-mostly deciduous for streets, front yards & rear property boundaries

B - Proposed native, medium to large trees for stream edge and other re-vegetation areas

C - Proposed re-vegetation of native shrubs and small tree pioneer mix

D - Proposed grass like, flax and herbaceous plants for wetland re-vegetation; for emergents, marginals and stream banks, wet ground.

D - Proposed grass like, flax and herbaceous plants for wetland re-vegetation; for emergents, marginals and stream banks, wet ground.

E - Proposed low to medium height shrub planting for reserve and garden areas including ground covers.

F - Proposed sedges for ground cover in attenuation ponds

Boundary of existing vegetation (refer to arborist report)

Hard Landscape Elements

Proposed fence 0.6m high for front of properties

Proposed fence 1.35m high for between properties

Proposed fence 1.8m high for rear of properties

Proposed pool type fence 1.2m high between properties and stream reserve and around storm water ponds

Proposed retaining wall (variable heights)

Proposed concrete footpath

Proposed decks/patio adjacent to houses

Proposed stepping stones

Proposed paving at entrance to houses

Proposed clothesline/outdoor utilities area

Proposed concrete driveway and paths

Proposed paving for traffic calming areas and round abouts

Kerbing: All kerbing shall be in accordance with WCC standard detailing to the satisfaction of the parks consents planner.

NOTE: This landscape master plan is indicative only in relation to the layout of the typical house garden designs. Please refer to sheets LPS-03 and LPS-04 for typical house landscape designs.

Revision	Description	Date	Drawn	Chk
C	Minor changes	13/10/06	AH	CH
B	Retaining walls	31/8/06	AH	NR
A	Trees and bollards	30/8/06	AH	NR

Drawing Statust:

PLANS AND SPECIFICATIONS
P.D.P.
SUBJECT TO CONDITIONS ENDORSED
ON: RMA 20061079 | 10 75
SIGNED [signature] DATE: 17-10-06
AUTHORISED OFFICER

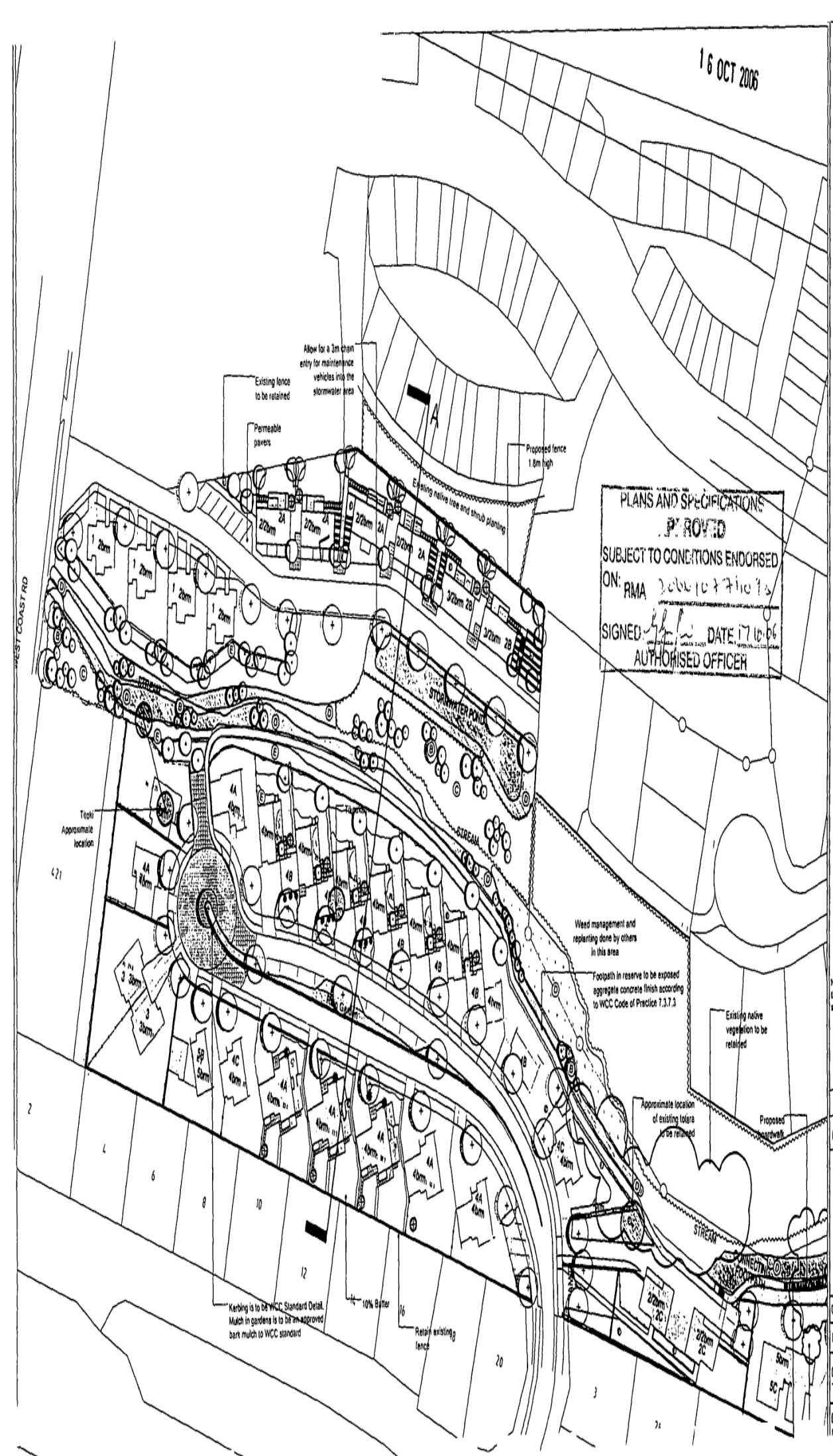
SOUL environments
PO Box 6011 Wesley | Auckland, New Zealand
phone 64 9 817 3788 | fax 64 9 817 3799
email contact@soulspacesthatwork.co.nz
www.landscapearchitecture.co.nz

Client: NZ Housing Foundation & Babbage

Project: West Coast Road Housing Development

Drawing Title: Landscape Master Plan

Drawing Number: LSP-02 | Job Number: SOUL-05/06/061



Key

N

Soft Landscape Elements
For planting mixes refer to accompanying report

- A - Proposed Ornamental Specimen Trees-mostly deciduous for streets, front yards & rear property boundaries
- B - Proposed native, medium to large trees for stream edge and other re-vegetation areas
- C - Proposed re-vegetation of native shrubs and small tree pioneer mix
- D - Proposed grass like, flax and herbaceous plants for wetland re-vegetation: for emergents, marginals and stream banks, wet ground.
- D - Proposed grass like, flax and herbaceous plants for wetland re-vegetation: for emergents, marginals and stream banks, wet ground.
- E - Proposed low to medium height shrub planting for reserve and garden areas including ground covers.
- F - Proposed sedges for ground cover in attenuation ponds
- Boundary of existing vegetation (refer to arborist report)

Hard Landscape Elements

- Proposed fence 0.6m high for front of properties
- Proposed fence 1.35m high for between properties
- Proposed fence 1.8m high for rear of properties
- Proposed pool type fence 1.2m high between properties and stream reserve and around storm water ponds
- Proposed retaining wall (variable heights)
- Proposed concrete footpath
- Proposed decks/patio adjacent to houses
- Proposed stepping stones
- Proposed paving at entrance to houses
- Proposed clothesline/outdoor utilities area
- Proposed concrete driveway and paths
- Proposed paving for traffic calming areas and round abouts

Kerbing: All kerbing shall be in accordance with WCC standard detailing to the satisfaction of the parks consents planner.

NOTE: This landscape master plan is indicative only in relation to the layout of the typical house garden designs. Please refer to sheets LPS-03 and LPS-04 for typical house landscape designs.

Revision	Description	Date	Drawn	Chk
C	Minor changes	13/10/06	AH	CH
B	Retaining walls	31/8/06	AH	NR
A	Trees and bollards	30/8/06	AH	NR

Drawing Status:

SOUL
environments
urban design landscape architecture environmental planning
PO Box 68011 Titirangi | Auckland, New Zealand
phone 64 9 817 5768 | fax 64 9 817 5769
e-mail contact@thesoulproject.co.nz
www.landscapearchitecture.co.nz

Client: NZ Housing Foundation & Babbage

Project: West Coast Road Housing Development

Drawing Title: Landscape Master Plan and Typical Garden Layout

Drawing No: LSD-01 | Rev: OUL-1 1

Appendix B

Sub-Division Consent

(Application No.)

(To be appended when received)

Appendix C
Earthworks Consent
(Permit No. 32791)

Auckland
Regional Council
TE RAUHĪTANGA TAIAO

21 Pitt Street
Private Bag 92 012, Auckland
New Zealand
DX CP 28 008 Pitt St
Telephone +64 9 366 2000
Facsimile +64 9 366 2155
www.arc.govt.nz

File Ref: 19169

2 November 2006

COPY FOR YOUR INFORMATION

06 NOV 2006
Dylan.

New Zealand Housing Foundation
PO Box 36027
North Shore 0748

Attention: Brian Donnelly

Dear Brian

RESOURCE CONSENT - DECISION ON APPLICATION

Application Details:

Application Number:	32791, 33187
Applicant:	New Zealand Housing Foundation
Activity Type:	Earthwork, River/Stream Diversion
Location:	423-429 West Coast Road, Glen Eden, Waitakere City

The Auckland Regional Council has assessed and resolved to **grant** the above Resource Consent application. A report detailing the decision is enclosed. Included with the report are the Resource Consent permits, which contain the conditions that must be met when undertaking the activities.

Under Section 37A(2)(a) of the Resource Management Act 1991, the decision date for the granting of this/these consent(s) has been extended, but not more than doubled.

For information about your right to object or appeal this decision, please refer to the 'Objections and Appeals' information sheet enclosed. Also enclosed is a booklet entitled 'Now That You Have Your Resource Consent', which provides important information relating to the on-going exercise of your Resource Consent. Please take time to read this material.

The above Resource Consent will commence on 02 November 2006, in accordance with Section 116 of the Resource Management Act (1991).

If you have any queries regarding the decision on the consent application, please contact John Earley on 366 2000 ext. 8006 or Graeme Ridley on 810 9181.

Yours sincerely

Debbie Petaia

Debbie Petaia
Client Services
Consents & Consents Compliance

Encl.

cc:
Babbage Consultants Ltd
PO Box 2027
Auckland 1015

Waitakere City Council

Objection and Appeal Information Sheet

RIGHT OF OBJECTION (Applicant only)

Unless a Resource Consent application has been declined by a meeting of the Environmental Management Committee of the Auckland Regional Council, the Applicant has the right to object to the Council in respect of the decision on an application if:

a) the application was not notified; or
b) the application was notified, but any submissions received have subsequently been withdrawn.

The reasons for the objection under Section 357 of the Resource Management Act 1991 must be set out in writing and received by the Manager, Consent Services, Auckland Regional Council within 15 working days of you receiving this letter.

The Council will consider the objection, and if a resolution cannot be reached, a hearing on the objection will be held. If a hearing is necessary you (the Applicant) will be contacted regarding the arrangements for this. If you are dissatisfied with the decision on your objection, you can appeal to the Environment Court under Section 358 of the Resource Management Act 1991, as outlined below.

RIGHT OF APPEAL

The Applicant and/or Submitters may appeal the Council decision under Sections 120 and 358 of the Resource Management Act 1991, as outlined below.

LODGING AN APPEAL

If you decide to lodge an appeal with the Environment Court under sections 120 or 358 of the Resource Management Act you must do so:

- within 15 working days of receiving the Auckland Regional Council's decision ; or
- within 15 working days of receiving the Council's decision on a Section 357 objection (Applicant only).

All appeals should be lodged with the Registrar of the Environment Court, Tribunals Division, P O Box 7147, Wellesley Street, Auckland, together with a filing fee of $55.00. The format of your appeal must follow that prescribed by Regulations 2003 (Form 34)[1] of the Resource Management Act (Forms) Regulations 1991. A copy of the format can be obtained by calling (09) 366 2000 or 0800 80 60 40 if calling from outside the Auckland area.

[1] Regulation 10 (Form 7) if the application was accepted before the 1 August 2003

AUCKLAND REGIONAL COUNCIL

SUBJECT: Application Number 32791 and 33187 and by New Zealand Housing Foundation for consent to undertake earthworks and for the diversion of surface water at 423 - 429 West Coast Road, Glen Eden.

FROM: Sediment Management Specialist **FILE:** 19169

TO: Group Manager
Consents & Compliance **DATE:** 16 October 2006

(This report is confidential until it has been considered and is not to be construed as Council policy until adopted).

1. APPLICATION

1.1 APPLICANT: New Zealand Housing Foundation

(Kenneth George, Alfred Campbell, Anthony Gerard, John Alexander, David Kennedy)

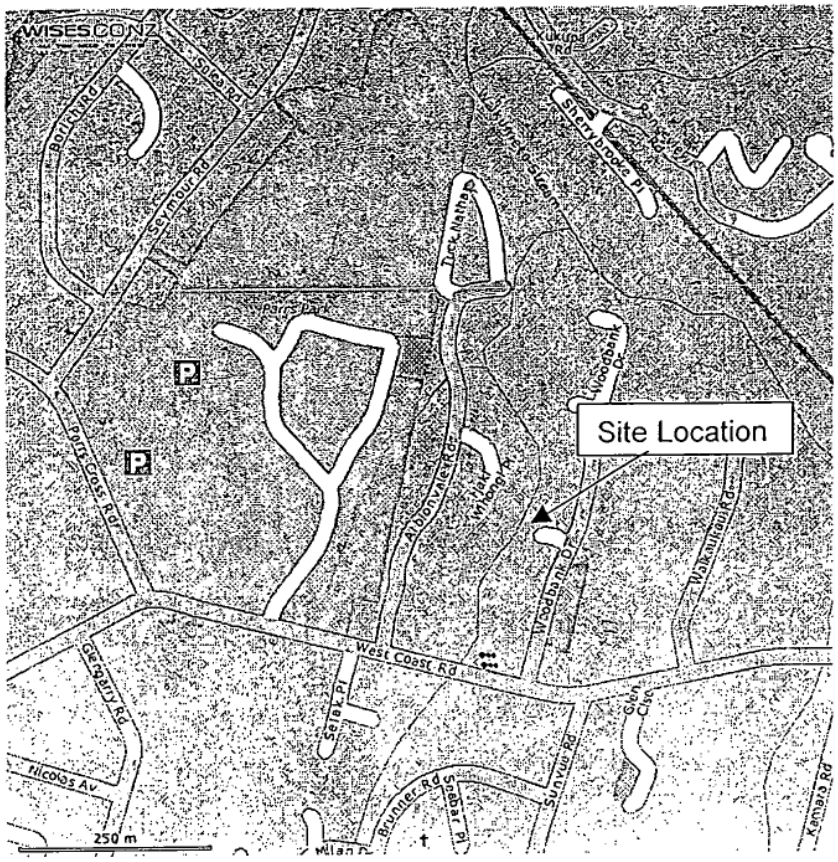
1.2 LOCATION: 423 - 429 West Coast Road, Waitakere City

Map Reference NZTMP 5914479.55 N 1745577.74 E

1.3 PROPOSAL: A land use consent: sediment control is sought to undertake approximately 5.7 hectares of earthworks associated with the construction of a residential development in accordance with the Auckland Regional Plan: Sediment Control and Section 9(3) of the Resource Management Act 1991.

A consent is sought to divert surface water within a flood plain associated with the construction of stormwater pond embankments in accordance with section 14 of the Resource Management Act 1991.

1.4 **LOCATION MAP:**



1.5 **PLANS:**

Title:	NZ Housing Foundation Earthworks Plan Sheet 1
Plan No:	42608 C03 Revision B
Author:	Babbage Consultants
Date:	June 2006
Title:	NZ Housing Foundation Earthworks Plan Sheet 2
Plan No:	42608 C04 Revision B
Author:	Babbage Consultants
Date:	June 2006
Title:	NZ Housing Foundation Erosion and Sediment Control Sheet 1
Plan No:	42608 C05 Revision A
Author:	Babbage Consultants
Date:	June 2006
Title:	NZ Housing Foundation Erosion and Sediment Control Sheet 2
Plan No:	42608 C06 Revision A
Author:	Babbage Consultants
Date:	June 2006

Title:	NZ Housing Foundation Sediment Control Details
Plan No:	42608 C07 Revision A
Author:	Babbage Consultants
Date:	June 2006
Title:	NZ Housing Foundation Stormwater Catchment Plan Sheet 1
Plan No:	42608 C45 Revision A
Author:	Babbage Consultants
Date:	June 2006
Title:	NZ Housing Foundation Stormwater Catchment Plan Sheet 2
Plan No:	42608 C46 Revision A
Author:	Babbage Consultants
Date:	June 2006
Title:	NZ Housing Foundation Wetland and Detention Basin Layout
Plan No:	42608 C17 Revision A
Author:	Babbage Consultants
Date:	June 2006
Title:	NZ Housing Foundation Pond Details Plan
Plan No:	42608 C18 Revision B
Author:	Babbage Consultants
Date:	June 2006

1.6 DOCUMENTATION:

Reports:	Resource Consent Application and Assessment of Effects on the Environment for New Zealand Housing Foundation 423 – 429 West Coast Road, Waitakere City, June 2006 - Tony Poninghaus Environmental Consultant Resource Consent Application for the diversion of surface water – Babbage Consultants accepted for processing 10 October 2006.
Letters:	Response for requests for further information from Babbage Consultants dated 16 August 2006 and 2 October 2006.

2. ACTIVITY STATUS

The proposed earthworks are a restricted discretionary activity in accordance with Rule 5.4.3.1 of the Auckland Regional Plan: Sediment Control (ARPSC. November 2001) because the proposed earthworks extend over an area of greater than 0.25 hectares on land within a Sediment Control Protection Area, as detailed in Table C of the ARPSC.

The proposed diversion of surface water is innominate and is therefore considered as a discretionary activity in accordance with Section 14 of the Resource Management Act 1991.

The proposed diversion and discharge of stormwater is covered by an existing comprehensive stormwater discharge consent (Consent No. 23006) held by Waitakere City Council for the Parrs Stream Catchment.

3. NOTIFICATION

The application has been processed without public notification as the overall application is a discretionary activity and in accordance with Section 93(1) of the RMA, the ARC is satisfied that the adverse effects of the activity on the environment will be no more than minor.

Furthermore, in accordance with Section 94B(3) of the RMA, no parties will be adversely affected by the aspects of this proposal that may be considered through this consent application.

In addition, in accordance with Section 94C no special circumstances exist.

4. CONSULTATION

The Applicant has consulted with the following parties prior to lodging the application:

- Waitakere City Council (WCC) including Ecowater
- Auckland Regional Council

No response expressing any concerns has been received from either of these parties. Discussions with WCC have confirmed that there are no major issues outstanding with these consents.

In addition through the WCC consent process iwi consultation was undertaken, with WCC confirming that no issues have been raised by iwi with respect to the nature of the proposed works.

5. PROPOSAL

5.1 OVERVIEW OF WORKS PROPOSAL

The New Zealand Housing Foundation, which is a Charitable Trust, seeks to develop the property at 423-429 West Coast Road, Waitakere City for 77 house units. The project involves the construction of a range of building types comprising:

- Four 2-bed units, in a detached form, with single carports
- Eighteen 2-bed apartment units

- Thirteen 3-bedroom detached houses with single garages
- Twenty-nine 4-bedroom detached houses with double garages
- Five 4-bedroom houses with single garages
- Eight 5-bedroom houses with double garages

The development will be undertaken in a comprehensive manner involving integrated civil and site development works, the development of reserve areas and landscaping, stormwater management and the development of stormwater detention structures. It has been designed so as to minimise the extent of works necessary to provide sites suitable for the housing development.

There are four access connections to the site – via West Coast Road, Pyramid Place, Titch Place and Woodbank Drive with cul-de-sacs proposed off West Coast Road and Pyramid Place. The accessways coming off Titch Place and Woodbank Drive are connected allowing for traffic circulation around the northern portions of the development. The application states that overall the roading has been designed to work "with" the contours rather than "against" the contours and thus minimise the extent of earthworks.

The site is covered by an existing Comprehensive Stormwater Discharge Consent (Consent No 23006) held by the WCC for the Parrs Stream catchment. The development will treat stormwater to a standard outlined in the Auckland Regional Council's Technical Publication No 10 (TP10). The treatment devices consist of a permanent stormwater treatment wetland, detention basins and two swales. ARC has held some concern over the proposed stormwater treatment in particular the location of stormwater devices within the 1% AEP area. The stormwater proposal has however been accepted as in accordance with the Comprehensive Stormwater Discharge Consent provided that the forebay of the stormwater quality device is protected and that operation and maintenance procedures are considered appropriate for the location. These aspects have been confirmed by the applicant and it is considered that the proposed stormwater management for this proposal meets the recommendations of the Comprehensive Consent. An operation and maintenance plan has also been provided by the applicant for information purposes. WCC have confirmed their acceptance of the proposed stormwater treatment:

In addition to the proposed earthworks a footbridge is proposed to be constructed over the unnamed tributary flowing through the site close to the northern boundary. The bridge is based on a WCC preferred design with treated supporting beams and galvanised steel handrails. This is designed for foot traffic only and has been assessed under rule 7.5.2 of the PARP:ALW as a permitted activity. No other stream crossings are proposed.

5.2 SITE DESCRIPTION / CATCHMENT AND RECEIVING ENVIRONMENT DETAILS

The site is located on the northern side of the West Coast Road, about 1 kilometre west of the Glen Eden commercial centre. It has an area of 5.73 hectares and is an irregular shape with a depth from West Coast Road of about 570 metres to the north boundary and widths that vary from 50 to about 160 metres. It has legal frontage to West Coast Road, Pyramid Place, Titch Place and Woodbank Drive. There are no structures currently on the site.

An unnamed watercourse flows through the property from the south for approximately 700m before discharging into the Waikumete Stream immediately north of the site. A drainage easement is held over the site for the stream alignment and encompasses a required riparian margin of an average of 20m either side of the stream centreline.

The land contour varies from relatively flat to moderately steep. The large area of land at the north end of the site is relatively flat with a gentle slope down to the stream. In the southern portions of the site the land is gently sloping downwards from east to west, towards the stream channel before sloping upwards from the stream to the western site boundary. The land to the north of Pyramid Place on the site becomes steeper as part of the site drops into a gully towards the stream. The west side of the site is moderately steep.

The site is presently covered in overgrown grass, weeds, gorse and trees. There is a mixture of native and exotic trees, predominantly located around the edge of the stream and at the northern boundary.

An ecological survey of the watercourse through the applicant's site was undertaken by Bioresearches in September 2006. This recorded a moderate sized, predominantly mud based channel of moderate to low gradient. Riparian cover is considered variable with numerous stands of native vegetation retained. The stream supports a fairly diverse range of native fish species including shortfin and longfin eels, common and Cran's bullies and banded kokopu. Macroinvertebrate communities were also considered moderately diverse. In contrast, the soft-bottomed MCI scores were indicative of poor instream habitat quality. This was determined by the lack of any moderately sensitive EPT taxa and the common presence of caddisfly larvae.

The wider receiving environment of the Henderson Creek is identified in the PRPC as a '*Coastal Protection Area* 2'. The PRPC describes the area as

"...an area of salt marsh, mangroves, shellbanks, and estuarine and harbour intertidal banks forming a complex habitat for a variety of animal and plant communities. Saline vegetation also grows in the shelter of Henderson Creek. Here the edges of the creek are lined with mature mangroves which grow in association with areas of saltmarsh at the mouth of the creek and sedges and eelgrass further up the creek. In one place there is an important gradation between saline vegetation in the intertidal area and native towai forest on the slopes above."

In addition the Henderson Creek Reserves Management Plan describes the natural environment of the creek as follows:

"Henderson Creek is part of an intertidal estuary, comprising the zone where freshwater meets the tidal cycles and saline conditions of the sea.

The Creek and its surrounding estuaries perform a valuable function as a catchment for land-derived sediments, preventing them from being carried out into the Waitemata Harbour.

Despite the degraded sediment quality, the mudflats contain a sizeable invertebrate population that is an important food source for fish and birds. Nutrient-rich tidal flats provide organic material for deposit feeding invertebrates and in turn for juvenile fish, thus playing an important role in the wider ecology of the Waitemata Harbour"

A detailed site investigation has revealed some minor contamination areas within the area of works which will be removed and disposed of in accordance with the recommendations of the Site Investigation. A Remedial Action Plan will be provided to the ARC prior to commencement of the proposed works with a Site Validation Report produced on completion of the remediation.

5.3 ENVIRONMENTAL MANAGEMENT

The Applicant advises that all erosion and sediment control measures are to be installed and maintained, as a minimum standard, in accordance with Auckland Regional Council (ARC) Technical Publication No. 90 *'Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region'*, March 1999 (TP90).

5.3.1 Site Earthworks

The earthworks are proposed over an area of approximately 5.7 ha for a cut to fill volume of approximately 40,000m^3. The works will be carried out in three stages with stage 1 involving the northern portion of the site, stage 2 the southern half and stage 3 located on the west side of the stream adjacent to stage 2.

The construction sequence will comprise:

- earthworks to form roadways and create site building platforms
- formation of roadways
- stormwater disposal and management
- stormwater detention ponds at north of property
- relocation of existing stormwater detention pond at north of property
- services – sanitary sewers, water supply, power and telecommunications
- construction of footbridge across stream at north of property
- restoration of riparian margins to stream
- landscaping of property

5.3.2 Erosion and Sediment Control

Earthworks operations have the potential to cause large amounts of sediment run-off during storm events. The proposed earthworks will include both erosion and sediment control facilities in accordance with ARC's TP 90.

Sediment control facilities proposed will include a Sediment Retention Pond which will treat the majority of stage 1. This will have dirty water directed to it via runoff diversion channels which will be further supported by a Silt Fence along the stream margin. Runoff diversion channels have been calculated to be a minimum of 0.6m high to convey the 5% AEP storm event with the necessary freeboard. The location of the Sediment Retention Pond is the same as the permanent stormwater detention facility to be constructed so will enable the earthworks in this area to be minimised. On the southern part of the development and also the western area known as stage 3, Super Silt Fences and Decanting Earth Bunds will be utilised. In addition clean water diversions will be required. All of these above measures are shown on the associated Erosion and Sediment Control Plans 42608 C05 and C06 Revision A.

The application acknowledges the potential for use of further Decanting Earth Bunds and states that these should be determined on site once the contractor for the proposed works has been confirmed.

The works in this location also require the removal of an existing stormwater pond facility. This will require removal off site of any accumulated contaminated material and control of sediment discharge through the provision of a further Silt Fence. Detailed methodologies will need to be provided for this activity.

The treated runoff from the sediment control devices will be discharged into the existing stream system. The application states that it is expected that no effects will result from the discharge of sediment. The fresh water ecological report provided with the application also states that provided the earthworks are undertaken during the summer period effects are likely to be minor only with respect to the freshwater environment.

Due to the sensitivity and location of the receiving environment, chemical flocculation will be used in the proposed Sediment Retention Pond. This is proposed to be a rainfall activated polyaluminium chloride (PAC) dosing system. The application states that a flocculation management plan will be produced prior to works commencing on site.

The application contains no specific details with respect to stabilisation of the site however discussions with the applicant has confirmed that this will be achieved in a staged approach with the use of topsoil and seed and fertiliser mix with straw mulch also utilised as required.

The application states that prior to any construction works commencing an outline of the construction sequence and the proposed measures will be prepared within an overall Environmental and Construction Management Plan. This is designed to ensure that all works are undertaken in accordance with the best practice.

5.3.3 Diversion of Surface Water

The application involves the filling of some material within the floodplain area. Calculations provided with the application indicate that the volume of the floodplain within the site to be in the order 10,000 m^3. The earthworks associated with the creation of the stormwater facilities, including detention basins require a fill volume of approximately 550 m^3 which is predominantly associated with the construction of the pond embankments. The cut material to be excavated from the floodplain is approximately 1800m^3 which is also associated with stormwater facility construction. Overall a net gain in storage is expected to result.

5.3.4 Maintenance and Monitoring

Sediment control measures will be constructed prior to topsoil stripping and will be monitored during works with inspections during periods of rainfall. The application states that any damage to the facilities will be immediately rectified.

5.4 OTHER RESOURCE CONSENTS REQUIRED

A land Use application has concurrently been lodged with Waitakere City Council (WCC). No issues have been raised in this regard. As detailed above the proposed footbridge is considered a Permitted Activity according to the PARP:ALW.

The above aside, no other consent requirements have been identified from either ARC or WCC.

6. EVALUATION

6.1 STATUTORY

Subject to Part II of the RMA, Section 104(1) of the Resource Management Act 1991 (RMA) must have regard to:

(a) any actual and potential effects on the environment of allowing the activity; and

(b) any relevant provisions of—
  (i) a national policy statement:
  (ii) a New Zealand coastal policy statement:
  (iii) a regional policy statement or proposed regional policy statement:
  (iv) a plan or proposed plan; and

(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

The following statutory instruments and policy documents have been considered in the evaluation of this application:

- Resource Management Act (1991) (RMA);
- Auckland Regional Policy Statement (August 1999) (ARPS);
- Transitional Regional Plan (TRP),
- Proposed Auckland Regional Plan: Air, Land & Water (PARP: ALW);
- New Zealand Coastal Policy Statement (NZCPS);
- Hauraki Gulf Marine Park Act (2000) (HGMPA); and
- Auckland Regional Plan: Coastal (2004) (ARPC).

The proposal also meets Sub-sections 5(2)(a), (b) and (c) of the RMA which relate to the sustainable management of natural and physical resources. Similarly, it is considered that the proposal would not contravene any of the matters of national importance (Section 6), and "other matters" (Section 7), including taking into account the principles of the Treaty of Waitangi (Section 8).

Due consideration has been given to Section 104 and 105 of the RMA, the ARPS, TRP, PARP: ALW, NZCPS, HGMPA, ARPC and the sensitivity of the receiving environment with respect to the discharge of stormwater from this site. The actual and potential effects have been discussed in the sections below along with measures being taken to avoid, remedy or mitigate these effects.

7. ASSESSMENT OF EFFECTS

7.1 EARTHWORKS

Under Section 104C of the RMA when considering an application for a resource consent for a restricted discretionary activity a consent authority must consider only those matters to which it has restricted the exercise of its discretion. The application comprises a proposal to develop a residential development. While the earthworks application is assessed as a full discretionary activity under this consent, under the Auckland Regional Plan: Sediment Control, the ARC has restricted, amongst other things, its discretion to the following matters:

(a) Techniques used to restrict or control sediment being transported from the site and the effects or impacts of sediment on water quality from the techniques chosen, including the practicality and efficiency of the proposed control measures.

7.1.1 Effects of Sediment Discharge on Environment

The Applicant has provided an estimate of the sediment yield likely to be discharged from the site during earthworks. The site has been considered in 4 sub catchments with a total sediment yield of approximately 5.6 tonnes calculated during the earthworks construction period. This is noted to be significantly reduced during the stabilisation phase.

The primary purpose of calculating a USLE assessment is for the identification of higher risk areas associated with an earthworks proposal. The USLE calculations were based on 4 separate sub catchments and this exercise has confirmed that catchments A and B, as identified on Drawing 42608 C05 and C06 Revision A, as the highest risk areas. It is indicated that the Sediment Retention Pond will be chemically treated to further reduce any sediment discharges from the site. These areas will require particular attention with respect to maintenance of control measures and will also require more regular monitoring.

The erosion and sediment control plans for the site show an indicative location for the control measures. It is envisaged however that these may require change once a contractor has been selected. It is important however that the design for these measures remains robust and to ensure that this occurs a consent condition is recommended which requires further specific design of the Sediment Retention Pond and the Decanting Earth Bunds to be supplied prior to works commencing. ARC requires all Decanting Earth Bunds to be installed as per the revised ARC TP90 design criteria dated 2005. This essentially requires the structures to be constructed to a 2% volume and have a length to width ratio of between 3:1 and 5:1. A consent condition requires that these Decanting Earth Bunds are installed to this required specification. It is however assessed that these devices will also need to be chemically treated to ensure that appropriate discharge standards are achieved. The methodology associated with this will be based upon a batch dosing system with the details also required to be provided within the Flocculation Management Plan as detailed in a condition of consent.

The proposed works involves not only the bulk earthworks phase but also earthworks associated with retaining walls, drainage and ongoing utility service installation. It is unclear from the application exactly how these will be managed and therefore a consent condition has been recommended which requires a secondary erosion and sediment control plan to be produced to outline these requirements. This is also designed to outline proposed control measures during house construction.

It is not clear from within the application if the use of contour drains will be promoted. A condition of consent has been included requiring that contour drains be installed at the end of each days works or when rain is forecast. This will assist further in reducing sediment generation from the development.

The application refers to the producing of an Environmental and Construction Management Plan prior to works commencing. This is further supported through a condition of consent with particular emphasis placed on the sequencing and staging of the earthworks required.

While the main stream system through the site is not proposed to be worked in any way, it is recognised through this application that this environment is a critical component of the site. To ensure that this protection is provided the applicant has proposed Silt Fences and Super Silt Fences to provide further treatment. It is recommended that this area be closely monitored and if it is found to be subject to potential sediment discharge then the Super Silt Fence requirement will be extended for the entire length of the stream system.

With the inclusion of the above control measures it is determined that the erosion and sediment controls are considered appropriate for the site

7.1.2 Effects of Diversion of Surface Water

It is acknowledged that the diversion of surface water may affect the morphology of a stream system, the flow characteristics and habitat values. Water users may also be affected by changes in hydrology. The application for the diversion of surface water is assessed under Section 14 of the Resource Management Act 1991 and the key effects such as the loss of flood storage, constriction of flows and therefore increased erosion and any back water effects have been considered. The filling proposed is relatively minor and is located in a position on the site where the potential impacts are considered minor. This is in particular reference to the following issues.

- No erosion, deposition or flooding is expected on adjacent land. The filling is associated with provision of stormwater facilities and is located significantly far enough away from neighbouring properties such that no issues are expected. The stormwater facilities have been designed to achieve the requirements and objectives of the Parrs Stream Catchment Management Plan in this regard and have approval from WCC.

- The location of the filling is outside of the stream bed environment and will not result in any permanent loss of rare or endangered species. Similarly no effects are expected on flora or fauna in this location. The stormwater devices require a planting and landscaping component and will be required to implement this through the Parrs Stream Catchment Management Plan.

- No lawful users of surface water will be impacted by this proposed surface water diversion.

Overall it is considered that the effects of the proposed surface water diversion are no more than minor.

7.1.3 Effects on the Receiving Environment

The discharge of any sediment laden runoff from the proposed activity will discharge into the unnamed tributary which in turn discharges into the Waiukemete Stream before ultimately discharging into the Henderson Creek. This is an area identified as having an important gradation between saline vegetation in the intertidal area and native towai forest on the slopes above. This is an area of saltmarsh, mangroves, shellbanks, and estuarine and harbour intertidal banks forming a complex habitat for a variety of animal and plant communities. The intertidal area to the east of the Te Atatu Peninsula is a major wading bird feeding ground. Also within the Henderson Creek and adjacent to the Rarawaru inlet is a special activity area, which is likely to have recreational contact through various activities such as water-skiing.

The sediment that is likely to discharge from the sediment control measures proposed is expected to be fine particulate and colloidal material arising from clays and very fine silts. Natural flocculation of sediment particles will likely occur in the saline environment of the Henderson Creek and the resulting material should be dispersed over a wide area as a result of tidal movement.

With the levels of erosion and sediment control to be employed on the site, the minor levels of sediment particles that are expected to discharge from the sediment control measures are considered unlikely to have any significant detrimental effect on either the immediate or the wider receiving environments. The extent of benthic zone smothering and minor discolouration of the water column that may occur as a direct result of the proposed earthworks is expected to be minor and temporary only in duration.

As detailed above it is also expected that the effects from the proposed filling in the flood plain will be no more than minor.

It is however critical that the receiving environment values are protected and that potential effects are minimised. Effects can also include amenity and visual impacts which may result. It is important that the erosion and sediment control measures are therefore implemented and maintained in an appropriate fashion. A number of conditions have been included in the consent which will ensure that this is the case.

When considering the proposal and methodologies to be employed it is considered that the sediment yield that may result from the activity will not have any significant adverse effect on the immediate receiving environment or the Henderson Creek. It is considered that, provided the Applicant meets the requirements set out in the Specific Conditions proposed for the resource consent, the operation will have employed the best practicable option (BPO) to minimise sediment discharge from the site.

While earthworks are expected to be completed earlier, to allow for contingencies the applicant has requested a term of consent to 30 May 2012. A term of consent to 30 May 2010 is considered more appropriate and provides adequate time for full completion of the subdivision. An expiry date of 30 May 2040 is recommended for the diversion of surface water.

7.2 EFFECTS ON CULTURAL AND ARCHAEOLOGICAL VALUES

The ARC Archaeologist has not assessed the application for actual or potential adverse effects on historic places or areas. Although this area has not been systematically surveyed for archaeological sites, it is unlikely that the proposed earthworks will impact on a significant historic place.

It is however, recommended as a condition of consent that in the event of archaeological remains being uncovered (e.g. shell, middens, hangi or ovens, pit depressions, defensive ditches, artifactual material or human bones,) that work is to cease in the vicinity of the discovery and the ARC archaeologist is to be contacted so that the appropriate action can be taken before any work may recommence there.

8. CONCLUSION

Having assessed the proposal in terms of the relevant matters detailed in Section 104 of the RMA, it is considered that the operation will employ the best practicable option to minimise sediment discharge from the site and to divert surface water.

It is considered that subject to imposing the recommended conditions of consent, any adverse effects of the proposed activities on the environment will be minor, or will be adequately remedied or mitigated. Furthermore, it is considered that the effects are not contrary to the objectives and policies of the ARPS, NZCPS, ARPC PARP: ALW, HGMPA, TRP or the RMA.

9. RECOMMENDATIONS

It is recommended that:

(a) Consents be granted subject to the conditions stated in the consent documents appended to this report.

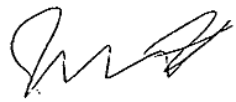
(b) The Land Use Consent: Sediment Control should expire on 30 May 2010.

(c) That the Diversion of Surface Water Consent should expire on 30 May 2040.

Report Prepared by:

Graeme Ridley
Sediment Management Consultant

Report Reviewed by:



John Earley
Soil and Water Specialist
Consents and Compliance

AUCKLAND REGIONAL COUNCIL

RESOURCE CONSENT

Granted pursuant to the Resource Management Act 1991

PERMIT NO. 32791

CONSENT HOLDER:	**New Zealand Housing Foundation (Kenneth George, Alfred Campbell, Anthony Gerard, John Alexander, David Kennedy)**
FILE REFERENCE:	**19169**

CONDITIONS OF CONSENT

Duration of Consent:	This consent shall expire on 30 May 2010 unless it has lapsed or been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991.
Purpose of Consent:	To authorise approximately 5.7 hectares of earthworks associated with a residential development in accordance with Section 9(3) of the Resource Management Act 1991.
Site Location:	423 - 429 West Coast Road, Waitakere City Map Reference NZTMP 5914479.55N 1745577.74E
Legal Description of Land:	Lots 2 & 3 DP 339810
Territorial Authority:	Waitakere City Council

DEFINITIONS:

ARC:	means the Auckland Regional Council.
Manager:	means the Group Manager, Consents and Compliance, ARC, or nominated ARC staff acting on the Manager's behalf.
TP90:	means ARC Technical Publication No. 90 *Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region*, March 1999.
Stabilised:	means an area inherently resistant to erosion such as rock (excluding Sedimentary Rocks), or rendered resistant by the application of aggregate, geotextile, vegetation or mulch. Where vegetation is to be used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once an 80% vegetation cover has been established.

Commencement of works: means the time when the Consent Holder informs the Manager in writing that earthworks are about to commence.

Bulk earthworks: means major cut/fill/waste works

ARC MONITORING:

1. The consent holder shall permit the servants or agents of ARC to have access to relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements and/or to take samples.

SPECIFIC CONDITIONS:

Pre- Works Requirements

2. The consent holder shall ensure that all personnel working on the site shall be made aware of and have access to the contents of this consent document and the associated erosion and sediment plan and methodology.

3. Prior to commencement of works the Manager shall be informed in writing at least 7 days prior to the start date of the works authorised by this Resource Consent.

4. Prior to commencement of works, in each period between October 1 and April 30 that this consent is exercised, the consent holder or their agent shall arrange and conduct a pre-construction site meeting between ARC and all relevant parties, including the primary contractor.

Erosion and Sediment Control

5 Erosion and sediment control measures shall be carried out in accordance with those described in Land Use Consent: Sediment Control Application No. 32791 and the accompanying Erosion and Sediment Control Plan 42608 C05 Revision A and 42608 C06 Revision A by Babbage Consultants Limited dated June 2006 , supporting documents and specifications and further information received by ARC , with the application details on 16 August 2006 and 2 October 2006 and as identified in the Resource Consent conditions below.

6. Any amendments to the Erosion and Sediment Control methodology must be approved by the Manager in writing prior to any amendment being implemented.

7. Erosion and sediment control measures shall be constructed and maintained in accordance with TP90 and any amendments to this document, except where a higher standard is detailed in the documents referred to in Conditions 5, 6 and 8 of this consent in which case this higher standard shall apply.

8. All Decanting Earth Bunds implemented on the site, shall be sized to provide $2m^3$ of storage for every $100m^2$ of contributing catchment. These bunds shall have a minimum length to width ratio of 3:1 and have a level impoundment area, a single perforated novacoil upstand outlet and a stabilised emergency spillway with minimum width of 2m.

9. That the consent holder shall ensure that Decanting Earth Bunds are inspected regularly and accumulated sediment is removed as necessary to ensure their effective functioning.

10 That prior to any earthworks commencing specific design details for the Sediment Retention Pond and the Decanting Earth Bunds, as outlined in condition 8 above, shall be supplied to the Manager. Written approval of the Manager for this design shall be obtained prior to any earthworks commencing.

11. All 'cleanwater' runoff from stabilised surfaces including catchment areas above the site shall be diverted away from earthwork areas via a stabilised system, so as to prevent surface erosion.

12. Contour drains shall be installed at 30m intervals in accordance with TP90 across the site at the end of each day's work or when inclement weather is forecast.

13. That prior to the construction of the Sediment Retention Pond, a Super Silt Fence shall be constructed below this area of works. If during earthworks activity, sediment discharge to the stream environment is noted a Super Silt Fence shall be extended for the entire length of the stream along the stream boundary.

14. That prior to any earthworks commencing on the site a Stabilised Construction Entrance Way be established at any ingress and egress locations for the site. These shall be designed, as a minimum, to TP 90 standards and specifications.

15. Prior to bulk earthworks commencing, the consent holder shall submit to ARC a certificate signed by an appropriately qualified and experienced person to certify that the erosion and sediment controls have been constructed in accordance with the erosion and sediment control plans as specified in Condition 5 of this consent. Certified controls shall include the Sediment Retention Pond, any Decanting Earth Bunds and any other structures required under this consent. The certification for these subsequent measures shall be supplied immediately upon completion of construction of those measures.
Information supplied shall include:

    a) Contributing catchment area;

    b) Retention volume of structure (dead storage and live storage measured to the top of the primary spillway);

    c) Shape of structure (dimensions of structure);

    d) Position of inlets/outlets; and

    e) Stabilisation of the structure.

    f) Confirmation of maintenance expectations and provision of access for this purpose.

16. That prior to any earthworks commencing an Environmental and Construction Management Plan shall be submitted for written approval of the Manager. This shall include, but not be limited to, details of construction sequencing and staging of works associated with earthworks activity and how this will be achieved. Written approval of the Manager for this design shall be obtained prior to any earthworks commencing. This Plan shall also provide detailed methodologies for the removal of the existing stormwater treatment pond facility within the stage 3 earthworks area.

17. Flocculation of the Sediment Retention Pond, and any Decanting Earth Bunds, shall be required as a component of the erosion and sediment control methodology. Prior to the commissioning of flocculation associated with the Sediment Retention Pond

the consent holder shall provide ARC with a Flocculation Management Plan, for the written approval of the Manager. This plan shall outline the procedure and methodologies for both the Sediment Retention Pond and the Decanting Earth Bunds and shall include as a minimum:

i. Specific design details of flocculation system;

ii. Monitoring, maintenance (including post-storm) and contingency programme (including a Record Sheet);

iii. Details of optimum dosage (including assumptions);

iv. Results of the initial flocculation trial;

v. A spill contingency plan;

vi. Details of the person or bodies that will hold responsibility for long-term maintenance of the flocculation treatment system and the organisational structure which will support this structure.

18. Any amendments to the Flocculation Plan shall be approved by the Manager, in writing, prior to implementation.

19. That the consent holder shall ensure that the flocculation treatment system is managed in accordance with the Flocculation Management Plan which has been approved by the Manager, and as specified in Condition 17 and 18 above.

Stabilisation and Seasonal Restriction

20. That no vegetation removal or earthworks on the site be undertaken between 30 April and 1 October in any year, without the written approval of the Manager. Earthworks in this regard refers to both major earthworks (cut/fill/waste) associated with the site as well as those associated with laying of utility services.

21. That the site shall be stabilised against erosion as soon as practicable and in a progressive manner as earthworks are finished over various areas of the site. Revegetation/stabilisation is to be completed by 30 April in the year of earthworks construction in accordance with measures detailed in TP90 and any amendments to this document, unless a later date is approved in writing by the Manager at least two weeks before 30 April.

GENERAL CONDITIONS:

22. If the consent holder shall abandon work on-site, it shall first take adequate preventative and remedial measures to control sediment discharge, and shall thereafter maintain those measures for so long as necessary to prevent sediment discharge from the site. All such measures shall be of a type, and to a standard, which are to the satisfaction of the Manager.

23. That the granting of this consent does not absolve the consent holder from obtaining any further consent required to undertake the proposed development nor does it pre determine any outcomes of any further consents or approvals required.

24. Should any artefacts, bones or any other sites of archaeological or cultural significance be discovered within the area affected by this proposal, the consent holder shall cease works within the vicinity of the discovered site immediately. The consent holder shall advise the ARC and the NZ Historic Places trust regarding the appropriate action to be taken. Works shall not commence in the vicinity of the

discovered site until any necessary approvals of the Historic Places Trust has been obtained.

25. A Site Remediation Action Plan (RAP) shall be prepared and submitted to ARC within 3 months of granting this consent. The RAP shall be prepared in accordance with the Ministry for the Environment Guideline ' Site Investigation and Analysis of Soils' Contaminated Land Management Guideline No. 5 (2004).

26. A Site Validation Report shall be prepared with 3 months of completion of earthworks. The SVR shall be prepared in accordance with the Ministry for the Environment Guideline ' Guidelines for Reporting on Contaminated Sites in New Zealand' Contaminated Land Management Guideline No. 1 (2001)

27. The Consent Holder shall prepare and submit for the Managers approval, a secondary Erosion & Sediment Control Plan that shall address the generation and discharge of sediment-laden water following completion of bulk earthworks. No earthworks associated with dwelling construction, retaining wall construction or utility installation shall commence until this plan has been approved. This plan shall include, but not be limited to:

a) Use and timing of rapid stabilisation techniques such as mulching;
b) Details of staging and sequencing of dwelling construction related earthworks;
c) Details of the material to be used for stabilised construction entrances and timing of their installation;
d) Location and design of silt fences;
e) Location and design of decanting topsoil bunds and outfalls; and
f) Location and design of cesspit protection

REVIEW CONDITION:

28. The conditions of this consent may be reviewed by the Manager pursuant to Section 128 of the Resource Management Act 1991, by the giving of notice pursuant to Section 129 of the Act, in June 2007 and every two years thereafter.

i. To deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or

ii. To require a consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment; or

iii. To deal with any other adverse effect on the environment on which the exercise of the Consent may have an influence.

ADVICE NOTES:

1. That the expiry date of this consent is 30 May 2010 to allow for contingencies. It is expected however, as stated in the application, that the earthworks activity will be completed by April 2007.

2. That the consent holder make the Contractor/Consultant associated with the proposed works aware of the Industry Education Programme for Plan Implementers/Preparers available through ARC.

3. That the Land Use Consent: Sediment Control and associated conditions should be included with the Contract Documents.

4. The consent holder is advised that they will be required to pay to ARC any administrative charge fixed in accordance with Section 36(1) of the Resource Management Act 1991, or any additional charge required pursuant to Section 36(3) of the Resource Management Act 1991 in respect of this consent.

5. The consent holder is advised that the date of the commencement of this consent will be as determined by Section 116 of the Resource Management Act 1991, unless a later date is stated as a condition of consent.

6. The consent holder is advised that, pursuant to Section 125 of the Resource Management Act 1991, this resource consent lapses on the expiry of five years after the date of commencement of this consent unless the consent is given effect to or other criteria contained within Section 125 are met.

7. The consent holder is referred to Section 124 of the Resource Management Act 1991, which provides for the exercising of a consent while applying for a new consent for the same activity.

This consent has been granted by the Auckland Regional Council pursuant to the Resource Management Act 1991.

Roger Bannister
Manager – Sediment Team
Consents and Compliance
Auckland Regional Council

Date: 29/10/06

Appendix D

Diversion of Surface Water Consent
(Permit No. 33187)

AUCKLAND REGIONAL COUNCIL

RESOURCE CONSENT

Granted pursuant to the Resource Management Act 1991

PERMIT NO. 33187

CONSENT HOLDER:	New Zealand Housing Foundation (Kenneth George, Alfred Campbell, Anthony Gerard, John Alexander, David Kennedy)
FILE REFERENCE:	19169

CONDITIONS OF CONSENT

Duration of Consent:	This consent shall expire on 30 May 2040 unless it has lapsed or been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991.
Purpose of Consent:	To authorise the diversion of surface water associated with the placement of fill within a flood plain area in accordance with Section 14 of the Resource Management Act 1991.
Site Location:	423 - 429 West Coast Road, Waitakere City Map Reference NZTMP 5914479.55N 1745577.74E
Legal Description of Land:	Lots 2 & 3 DP 339810
Territorial Authority:	Waitakere City Council

DEFINITIONS:

ARC:	means the Auckland Regional Council.
Manager:	means the Group Manager, Consents and Compliance, ARC, or nominated ARC staff acting on the Manager's behalf.
Commencement of works:	means the time when the Consent Holder informs the Manager in writing that works associated with the diversion of surface water are about to commence.

ARC MONITORING:

1. The consent holder shall permit the servants or agents of ARC to have access to relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements and/or to take samples.

SPECIFIC CONDITIONS:

Pre- Works Requirements

2. The consent holder shall ensure that all personnel working on the site shall be made aware of and have access to the contents of this consent document and the associated plans.

3. Prior to commencement of works the Manager shall be informed in writing at least 7 days prior to the commencement of the works authorised by this Resource Consent.

Erosion and Sediment Control

4. Surface water diversion shall only be undertake in accordance with that described in Land Use Consent: Sediment Control Application No. 32791 and Surface water Diversion Application No. 33187 and the accompanying Earthworks Plan Sheet 1 and Sheet 2 42608 C03 Revision B and C04 Revision B dated June 2006, Wetland and Detention Basin 1 Layout 42608 C17 Revision A dated June 2006, Pond Details Plan 42608 C18 Revision B dated June 2006 by Babbage Consultants Limited.

5. On completion of the diversion of surface water the applicant shall provide to the Manager as certificate signed by an appropriately qualified and experienced person to certify that the fill has been undertaken in accordance with the plans as detailed in condition 4 above and the associated consent documentation.

6. That the location of the proposed diversion of surface water be the subject of a specific site inspection in May of every year to ensure that no effects are resulting on neighbouring properties with respect to deposition, erosion and or flooding issues. The outcomes of this site inspection shall be recorded and submitted annually to the Manager on the 30th May of that same year. Any resultant remedial actions shall be recorded within this report with the details of remedial actions and requirements clearly noted and timeframes provided.

REVIEW CONDITION:

7. The conditions of this consent may be reviewed by the Manager pursuant to Section 128 of the Resource Management Act 1991, by the giving of notice pursuant to Section 129 of the Act, in June 2007 and every five years thereafter.

    iv. To deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or

    v. To require a consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment; or

    vi. To deal with any other adverse effect on the environment on which the exercise of the Consent may have an influence.

ADVICE NOTES:

1 The consent holder is advised that they will be required to pay to ARC any administrative charge fixed in accordance with Section 36(1) of the Resource Management Act 1991, or any additional charge required pursuant to Section 36(3) of the Resource Management Act 1991 in respect of this consent.

2 The consent holder is advised that the date of the commencement of this consent will be as determined by Section 116 of the Resource Management Act 1991, unless a later date is stated as a condition of consent.

3 The consent holder is advised that, pursuant to Section 125 of the Resource Management Act 1991, this resource consent lapses on the expiry of five years after the date of commencement of this consent unless the consent is given effect to or other criteria contained within Section 125 are met.

4. The consent holder is referred to Section 124 of the Resource Management Act 1991, which provides for the exercising of a consent while applying for a new consent for the same activity.

This consent has been granted by the Auckland Regional Council pursuant to the Resource Management Act 1991.

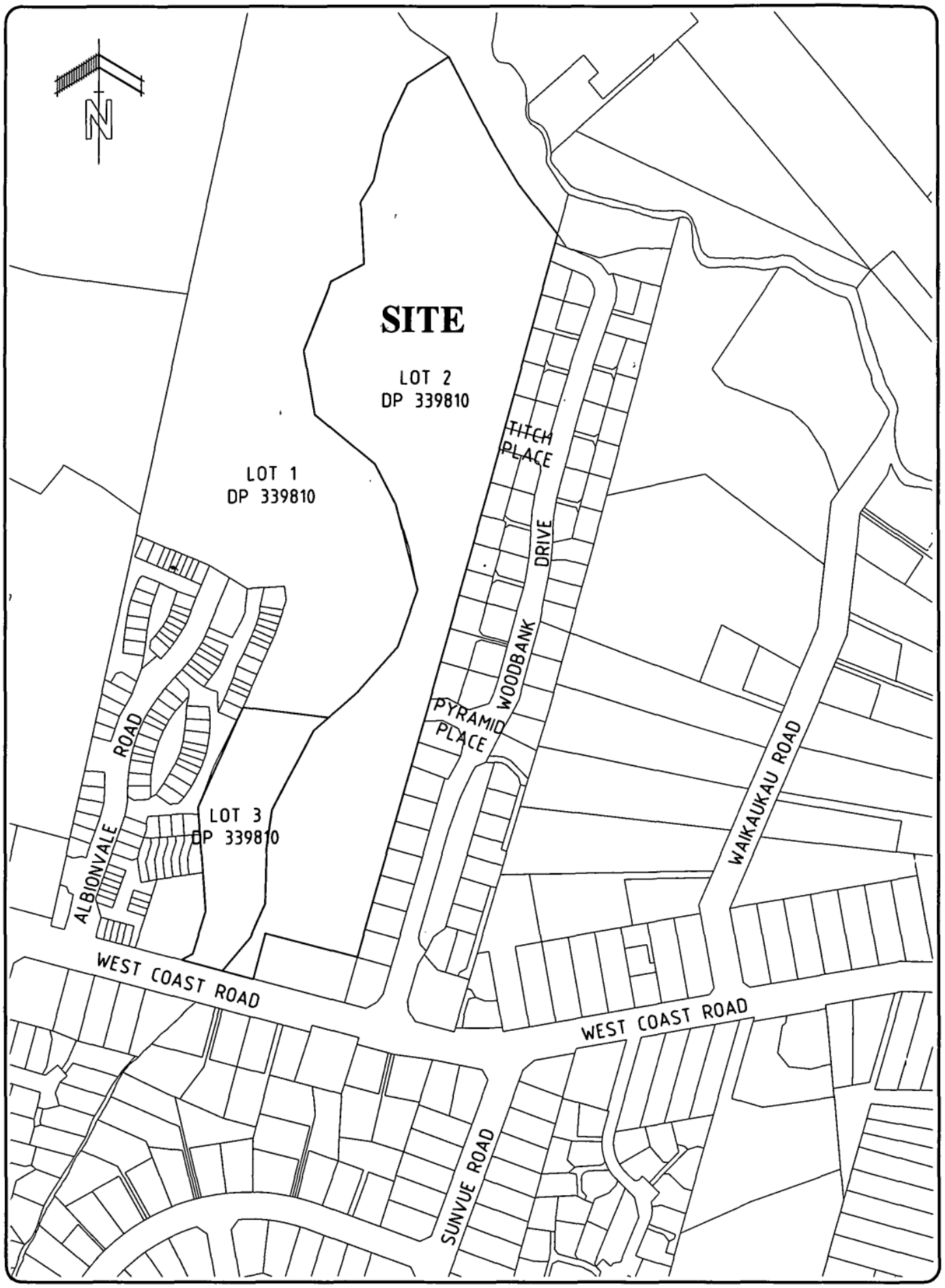
Roger Bannister
Manager – Sediment Team
Consents and Compliance
Auckland Regional Council

Date: 29.10.06

Appendix E

Approval of Environmental & Construction Plan from ARC and WCC

Appendix F
Drawings



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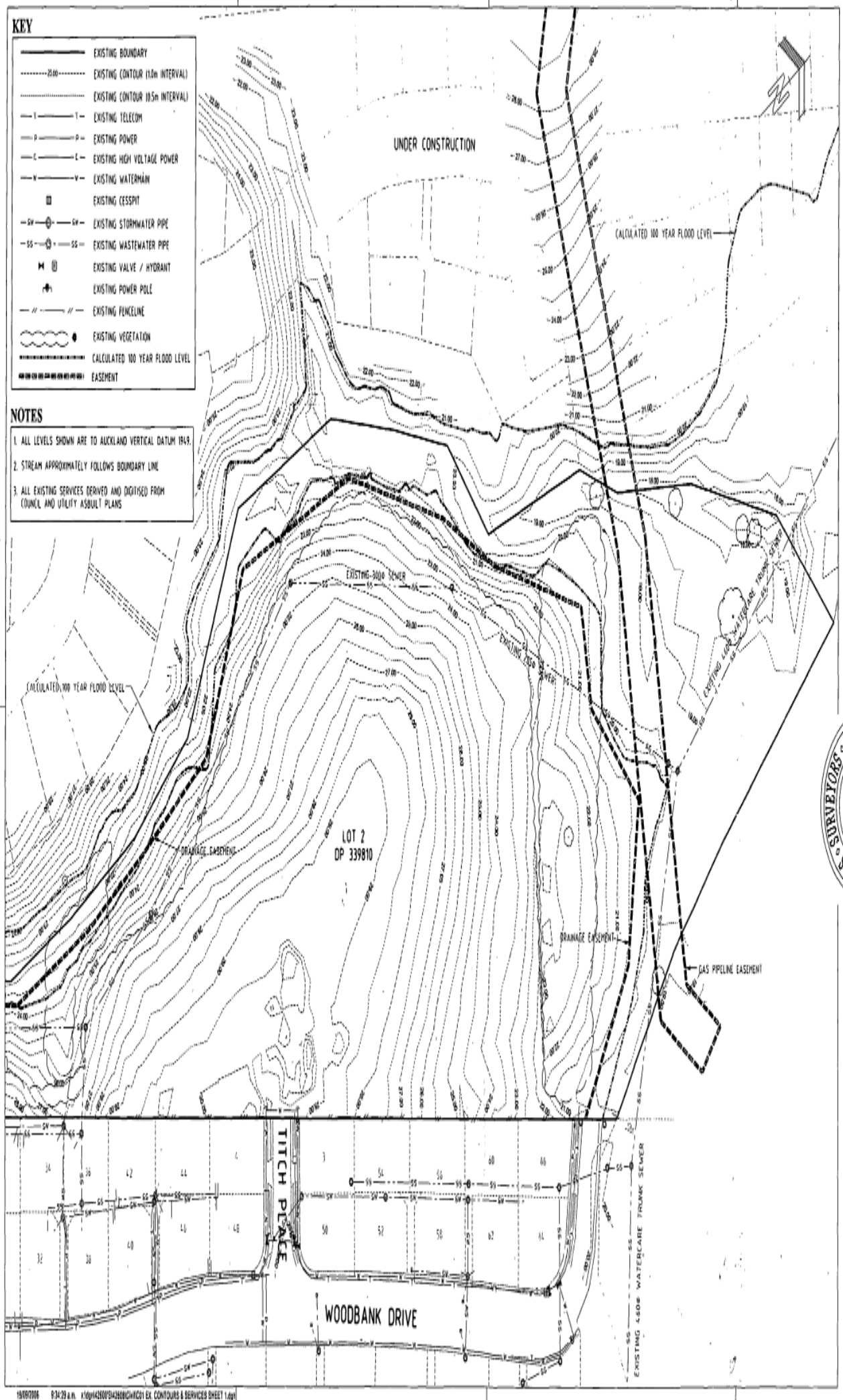
PHONE 09 379 9980, FAX 09 377 1170

WEST COAST ROAD HOUSING DEVELOPMENT FOR NZ HOUSING FOUNDATION

JOB NO:	42608
TITLE:	SITE LOCALITY PLAN
SCALE:	NOT TO SCALE
DRAWING:	G01



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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	7.06.06	CONTOURS AMENDED	PK	DAR

DRAWING REVISIONS

SURVEYORS • ARCHITECTS • ENGINEERS
Babbage CONSULTANTS
159 PANSHANGE STREET
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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

TOPOGRAPHICAL PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	PK
CHECKED	Sept 06	DAR
APPROVED	Sept 06	DAR

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C01	A

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DRAWING NOTES

KEY

- EXISTING BOUNDARY
- EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- EXISTING TELECOM
- EXISTING POWER
- EXISTING HIGH VOLTAGE POWER
- EXISTING WATERMAIN
- EXISTING GAS PIPE
- EXISTING CESSPIT
- EXISTING STORMWATER PIPE
- EXISTING WASTEWATER PIPE
- EXISTING VALVE / HYDRANT
- EXISTING POWER POLE
- EXISTING FENCELINE
- EXISTING VEGETATION
- CALCULATED 100 YEAR FLOOD LEVEL
- EXISTING EASEMENT

NOTES

1. ALL LEVELS SHOWN ARE TO AUCKLAND VERTICAL DATUM 1949.
2. STREAM APPROXIMATELY FOLLOWS BOUNDARY LINE
3. ALL EXISTING SERVICES DERIVED AND DIGITISED FROM COUNCIL AND UTILITY ASBUILT PLANS

ALBION VALE DRIVE
LOT 3 DP 339810
EXISTING WETLAND POND
EXISTING 1800Ø SEWER
EXISTING 1800Ø CULVERT
EXISTING 1800Ø CULVERT
UNDER CONSTRUCTION
CALCULATED 100YEAR FLOOD LEVEL
CALCULATED 100YEAR FLOOD LEVEL
LOT 2 DP 339810
EXISTING 300Ø SEWER
WEST COAST RD
PYRAMID PLACE
WOODBANK DRIVE

A	13.07.06	GENERAL AMENDMENTS	DMR	DMR
REV	DATE	DESCRIPTION	DRAWN	CHECK

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

TOPOGRAPHICAL PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED	Sept 06	DMR
APPROVED	Sept 06	DMR

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C02	A

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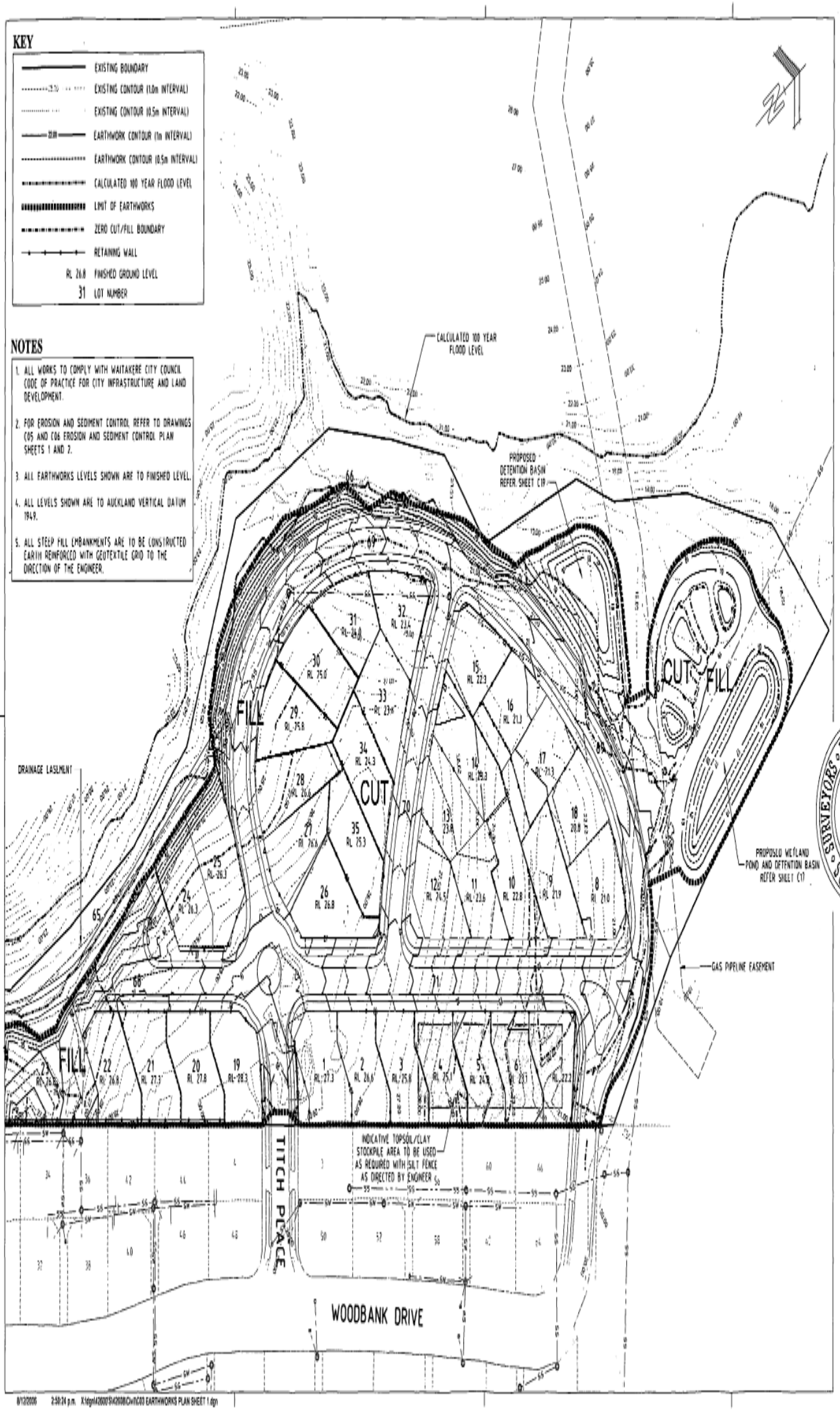

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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	07.07.06	POND AND WALLS AMENDED	FK	DH
A	130606	VARIOUS AMENDMENTS	FK	DH

DRAWING REVISIONS

SURVEYORS · ARCHITECTS · ENGINEERS
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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EARTHWORKS PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C03	B

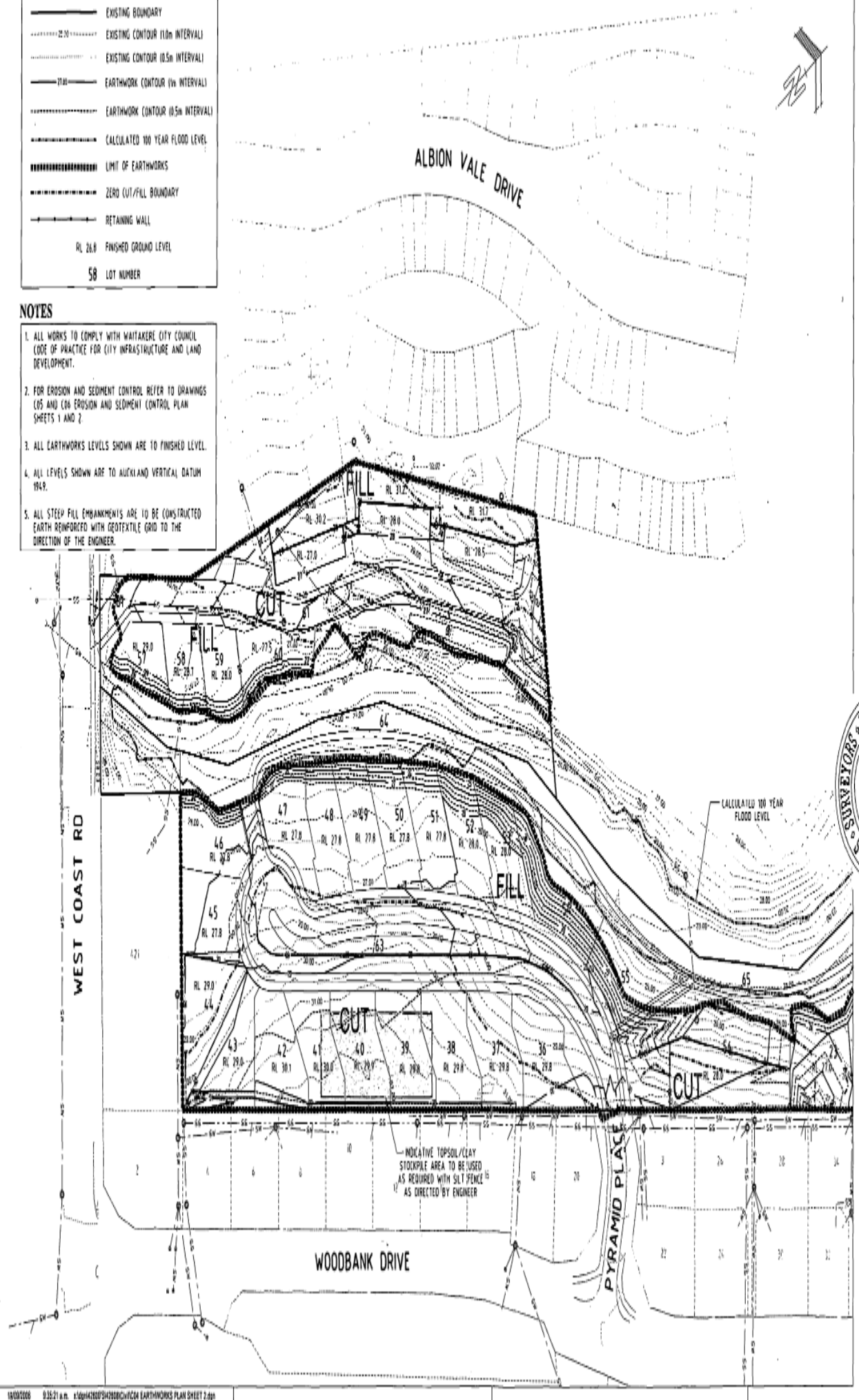
8/12/2006 2:58:24 p.m. X:\dgn\42600\SI\42608Civil\C03 EARTHWORKS PLAN SHEET 1.dgn

KEY

- EXISTING BOUNDARY
- 22.20 EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- 27.00 EARTHWORK CONTOUR (1m INTERVAL)
- EARTHWORK CONTOUR (0.5m INTERVAL)
- CALCULATED 100 YEAR FLOOD LEVEL
- LIMIT OF EARTHWORKS
- ZERO CUT/FILL BOUNDARY
- RETAINING WALL
- RL 26.8 FINISHED GROUND LEVEL
- 58 LOT NUMBER

NOTES

1. ALL WORKS TO COMPLY WITH WAITAKERE CITY COUNCIL CODE OF PRACTICE FOR CITY INFRASTRUCTURE AND LAND DEVELOPMENT.
2. FOR EROSION AND SEDIMENT CONTROL REFER TO DRAWINGS C05 AND C06 EROSION AND SEDIMENT CONTROL PLAN SHEETS 1 AND 2.
3. ALL EARTHWORKS LEVELS SHOWN ARE TO FINISHED LEVEL.
4. ALL LEVELS SHOWN ARE TO AUCKLAND VERTICAL DATUM 1949.
5. ALL STEEP FILL EMBANKMENTS ARE TO BE CONSTRUCTED EARTH REINFORCED WITH GEOTEXTILE GRID TO THE DIRECTION OF THE ENGINEER.



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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHKD
B	07.06.06	ROAD AND VALLEY ALIGNMENTS	FK	CB
A	14.03.06	VARIOUS AMENDMENTS	FK	CB

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EARTHWORKS PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED	Sept 06	DWL
APPROVED	Sept 06	IP

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C04	B

10/10/2006 9:35:21 a.m. s:\dgn\42600\04260BCwl\C04 EARTHWORKS PLAN SHEET 2.dgn

KEY

- EXISTING BOUNDARY
- EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- EARTHWORK CONTOUR (1.0m INTERVAL)
- DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION. TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EMOSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.

SILT FENCE

SILT FENCE

SILT FENCE

DIRTY WATER RUNOFF DIVERSION BUND

SILT FENCE

SUPER SILT FENCE

AREA A (1.96 Ha)

INDICATIVE LOCATION FOR CHEMICAL TREATMENT SHED

SEDIMENT POND

AREA : 1053m²
VOL. CAPACITY = 1306m³
VOL. REQUIRED : 588m³
RAIN ACTIVATED CHEMICAL TREATMENT (PAC) REQUIRED FOR POND DURING EARTHWORKS. BATCH DOSING AS REQUIRED.

SEDIMENT POND FOREBAY (SEE DWG. C08 FOR DETAILS)

SILT FENCE

DIRTY WATER RUNOFF DIVERSION BUND

AREA B (0.98 Ha)

TITCH PLACE

WOODBANK DRIVE

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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK
C	07.12.06	POND FOREBAY AREA AMENDED	PK	DR
B	09.08.06	POND & LEVELS AMENDED	PK	DR
A	130806	VARIOUS AMENDMENTS	PK	DR

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED	JUNE 2006	GW
DRAWN	JUNE 2006	GW
CHECKED	Nov 2006	DR
APPROVED	NOV 2006	

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C05	C

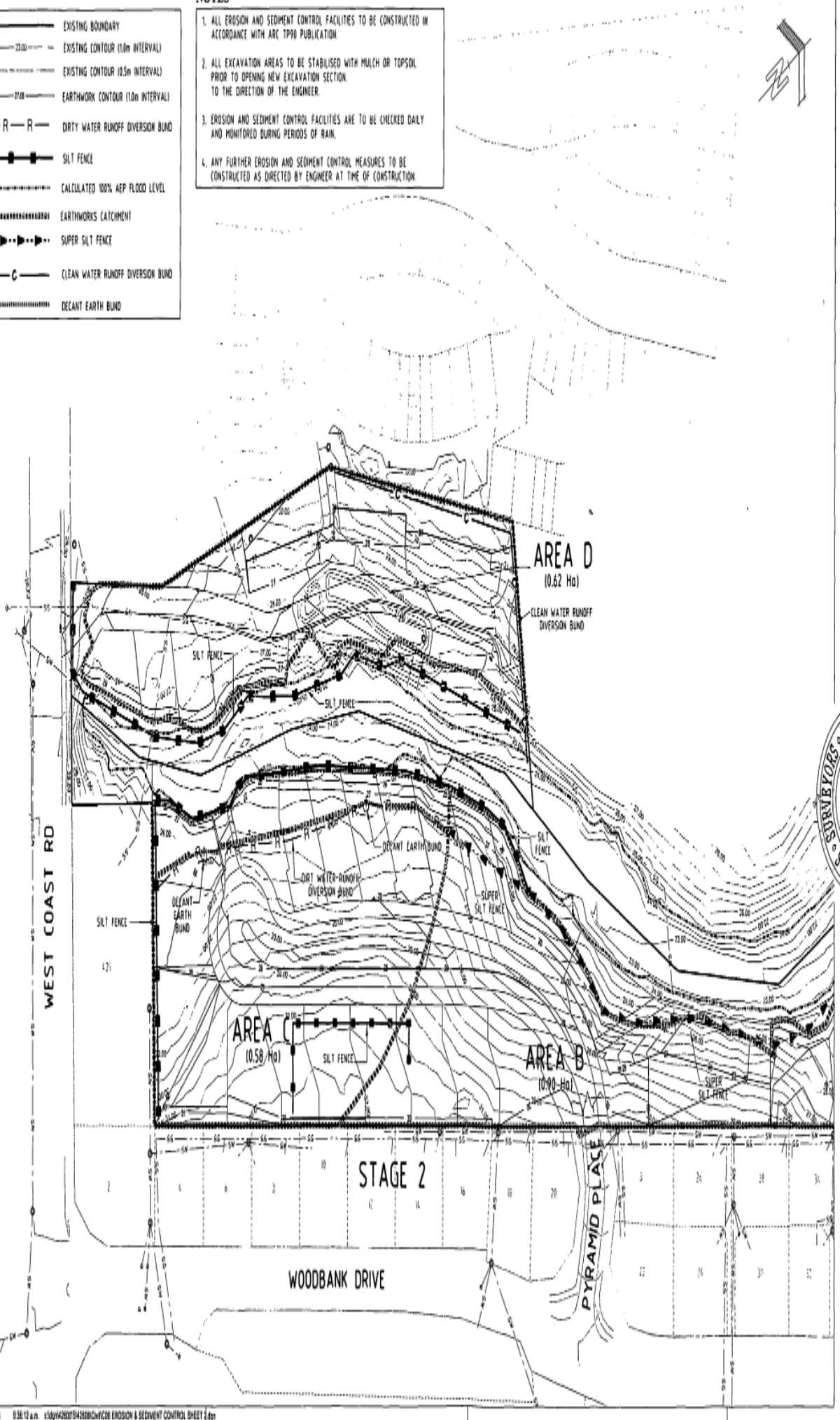
8/12/2006 1:53:05 p.m. X:\dgn\42600\SHA2006\CIVIL\C05 EROSION & SEDIMENT CONTROL SHEET 1.dgn

KEY

- EXISTING BOUNDARY
- EXISTING CONTOUR (1.0m INTERVAL)
- EXISTING CONTOUR (0.5m INTERVAL)
- EARTHWORK CONTOUR (1.0m INTERVAL)
- DIRTY WATER RUNOFF DIVERSION BUND
- SILT FENCE
- CALCULATED 100% AEP FLOOD LEVEL
- EARTHWORKS CATCHMENT
- SUPER SILT FENCE
- CLEAN WATER RUNOFF DIVERSION BUND
- DECANT EARTH BUND

NOTES

1. ALL EROSION AND SEDIMENT CONTROL FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH ARC TP90 PUBLICATION.
2. ALL EXCAVATION AREAS TO BE STABILISED WITH MULCH OR TOPSOIL PRIOR TO OPENING NEW EXCAVATION SECTION. TO THE DIRECTION OF THE ENGINEER.
3. EROSION AND SEDIMENT CONTROL FACILITIES ARE TO BE CHECKED DAILY AND MONITORED DURING PERIODS OF RAIN.
4. ANY FURTHER EROSION AND SEDIMENT CONTROL MEASURES TO BE CONSTRUCTED AS DIRECTED BY ENGINEER AT TIME OF CONSTRUCTION.



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DRAWING NOTES

REV	DATE	DESCRIPTION	DRAWN	CHECK
B	07.09.06	LEVELS AMENDED	PR	DH
A	180806	VARIOUS AMENDMENTS	PR	DH

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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

EROSION & SEDIMENT CONTROL PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	GW
CHECKED	JUNE 2006	GW
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C06	B

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DRAWING NOTES

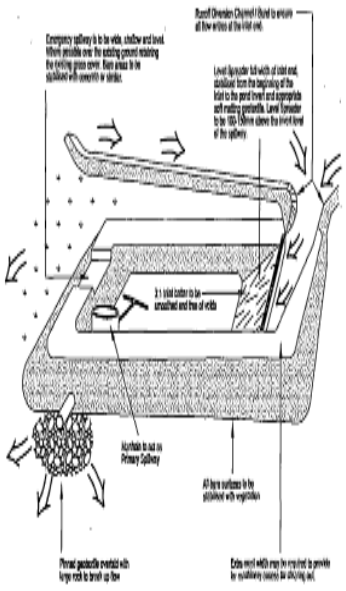
1. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE OPERATIONAL PRIOR TO ANY OTHER WORKS COMMENCING ON SITE. THE CONTRACTOR SHALL ARRANGE AND ATTEND A PRELIMINARY SEDIMENT CONTROL MEETING WITH THE ENGINEER AND COUNCIL.

2. A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE ON SITE DURING WORK HOURS AND ALL PERSONNEL INVOLVED IN THE EARTHWORKS ACTIVITIES ON SITE INCLUSIVE OF SUB-CONTRACTORS SHALL BE FAMILIAR WITH THE CONSENT AND PLAN REQUIREMENTS AS THE RELATE TO EROSION AND SEDIMENT CONTROL.

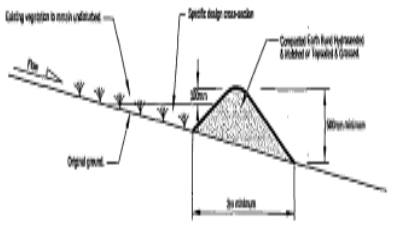
3. ALL "CLEAN WATER" RUNOFF FROM THE STABILISED SURFACES, INCLUDING CATCHMENT AREAS ABOVE THE SITE, SHALL BE DIVERTED AWAY FROM THE EARTHWORKS AREAS VIA A STABILISED SYSTEM SO AS TO PREVENT EROSION.

4. ALL EROSION AND SEDIMENT CONTROL SHALL COMPLY WITH "EROSION AND SEDIMENT GUIDELINES FOR LAND DISTURBING ACTIVITIES; ARC TECHNICAL PUBLICATION NO.90, UPDATED MARCH 1999 AND ANY AMENDMENTS TO THIS DOCUMENT. DIVERSION OF "CLEAN WATER" FROM THE UPSTREAM CATCHMENTS AROUND THE EARTHWORKS AREA SHALL BE BY MEANS OF DIVERSION DRAINS AND / OR OTHER APPROVED METHODS.

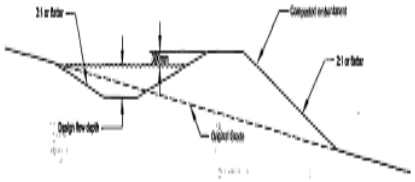
5. FURTHER SEDIMENT CONTROL WORKS MAY BE REQUIRED BY THE ENGINEER AS THE PROJECT ADVANCES. THESE WILL BE INSTALLED AS AND WHERE REQUIRED BY THE ENGINEER. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT THE SITE HAS EFFECTIVE SILT DETENTION FACILITIES OPERATING AT ALL TIMES.



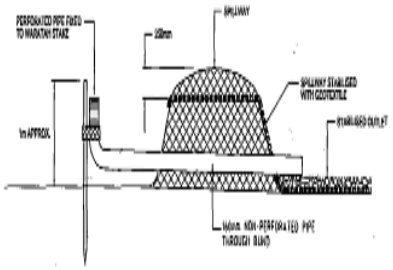
LAYOUT



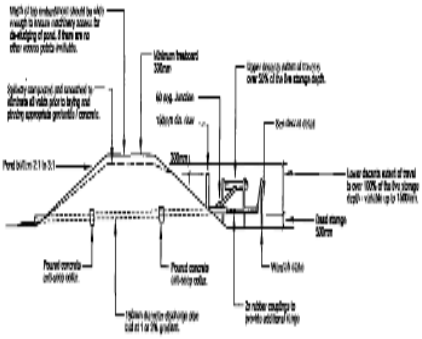
CLEANWATER RUNOFF DIVERSION BUND CROSS-SECTION



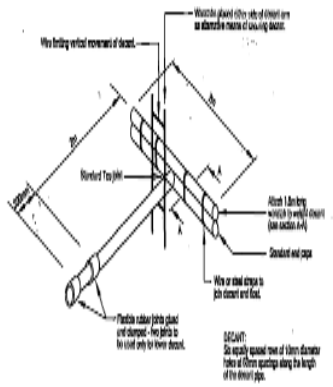
DIRTY WATER DIVERSION BUND CROSS-SECTION



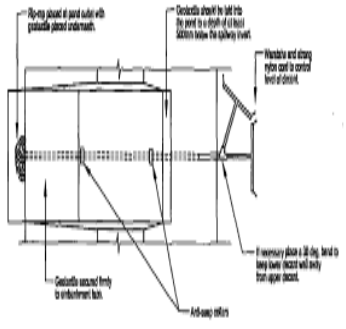
CROSS SECTION OF DECANT EARTH BUND



CROSS SECTION

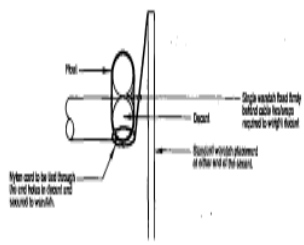


PERSPECTIVE VIEW



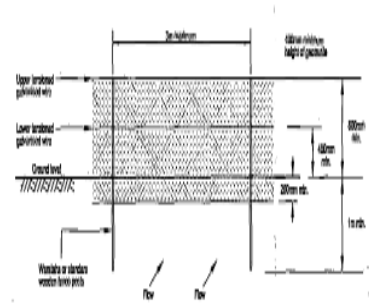
PLAN

SEDIMENT RETENTION POND

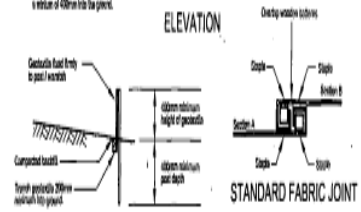


SECTION A - A

DECANT DETAIL

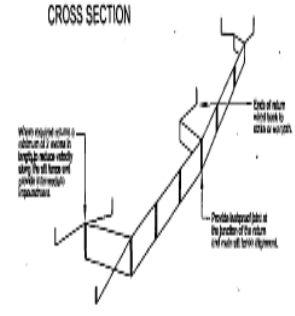


ELEVATION



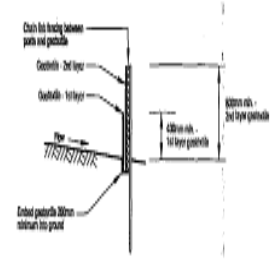
CROSS SECTION

STANDARD FABRIC JOINT



PERSPECTIVE VIEW

SILT FENCE DETAIL



CROSS SECTION

SUPER SILT FENCE DETAIL

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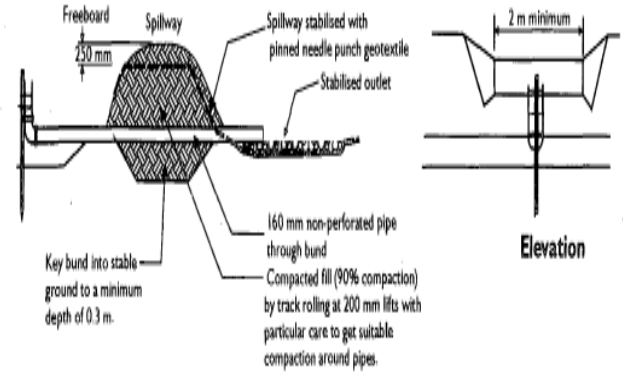
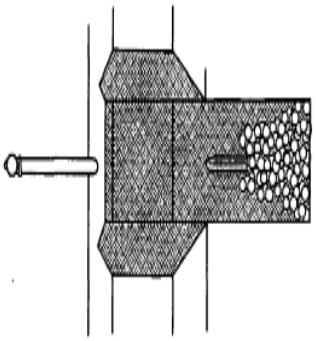
DRAWING NOTES

Cross Section

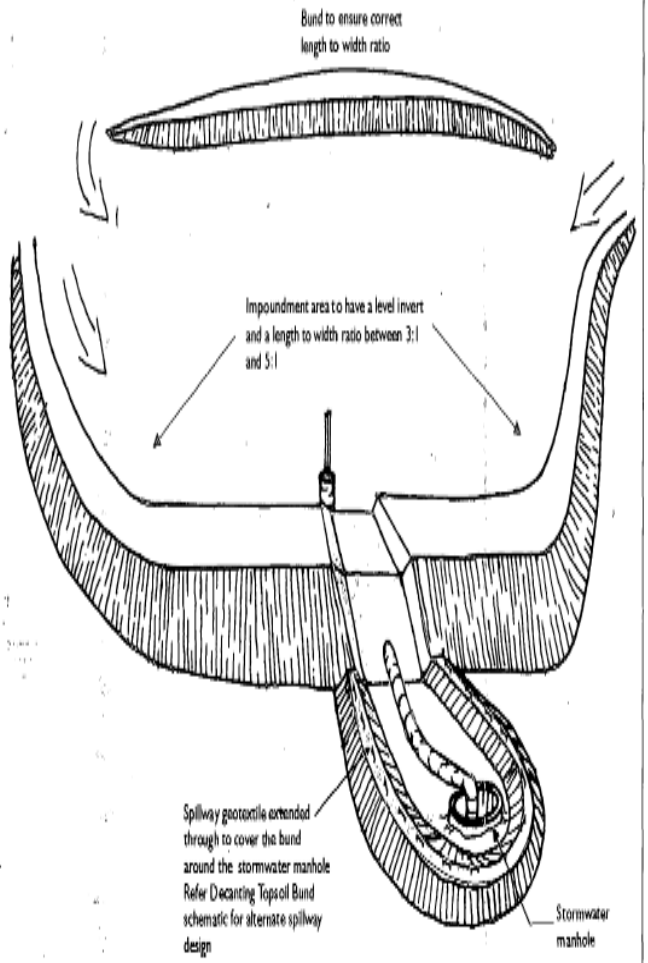


Elevation

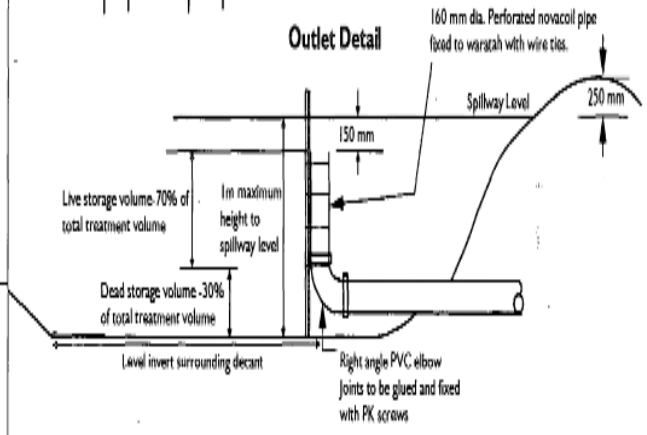


Plan

Decanting Earth Bund
Maximum Catchment 0.3 ha
2% volume
(60m³ per 0.3 ha catchment)

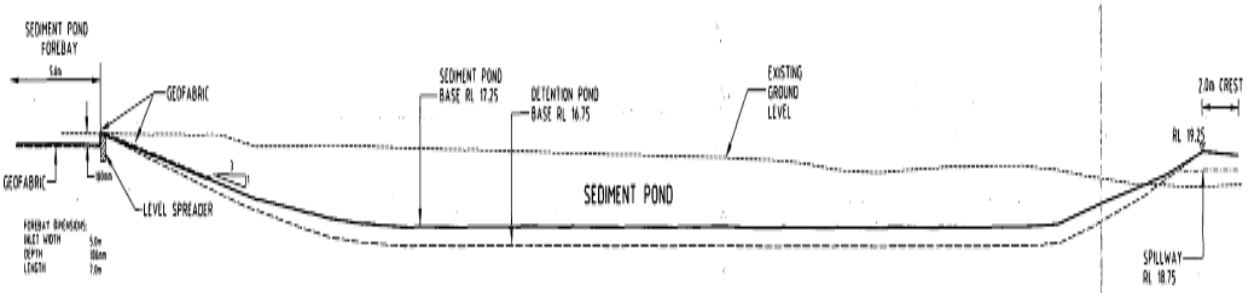


Outlet Detail



STAGE 2 DECANTING EARTH BUND DETAILS

	CATCHMENT AREA	STORAGE VOLUME REQUIRED	HEIGHT OF LIVE & DEAD STORAGE	DECANT DETAILS		
				WIDTH	LENGTH	VOLUME
NORTHERN DECANT EARTH BUND	220m²	4.4m³	300mm	2.0m	7.5m	4.5m³
SOUTHERN DECANT EARTH BUND	210m²	4.2m³	300mm	2.0m	7.5m	4.5m³



NOTE:

1. SEDIMENT POND AND FOREBAY TO BE CONSTRUCTED TO TP90 SPECIFICATIONS.

SECTION THROUGH LENGTH OF SEDIMENT POND

SCALE 1:100

REV	DATE	DESCRIPTION	DRAWN	CHECK
A	1206	DRAWING TITLE CHANGED FROM DECANTING BUND DETAILS. ROAD TABLE AND IMPERVIOUS POND SECTION ADDED.	FK	DAL

DRAWING REVISIONS

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AUCKLAND 1 - NEW ZEALAND
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admin@babbage.co.nz

CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

SEDIMENT CONTROL DETAILS (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	NOV 2006	FK
CHECKED	Nov 2006	
APPROVED	Nov 2006	

SCALE (A1)

1:250

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C08	A

8/12/2006 1:53:58 p.m. X:\dgn\42600'S\42608\CIVIL\C08 DECANTING BUND DETAILS.dgn

Appendix G
Contractor's Site Management Structure

Site Management Structure - Head Office

Managing Director – Bruce Whittaker

Construction Manager – David Husband

On Site

Project Manager – Alistair Baker

Health & Safety Consultant – Jim Lycett

Leading Hand/Foreman – Fabian Wineera

Earthworks Foreman – Bevan Cossey (Warwick Smith Contracting)

Alistair Baker will be in overall charge of all matters pertaining to the project. From head office he will be assisted by David Husband (CM). We have appointed Fabian Wineera Drainage Foreman and Bevan Cossey (Earthworks Foreman).

The site rules and risk assessments are as per the attached hazard Identification and the General Rules

- Silt ponds and deep trenches
- Oil pipeline and gas main
- Heavy machinery operating onsite
- Truck Sewer Main (Watercare and Waitakere Lines)
- Stream/Native Trees
- Hazards to the general public especially children associated with unauthorized public access around the site in unmanned periods.

Earthco Civil Ltd will be erecting a site office complete with phone and fax machine and this will be where site meeting and inductions will be held. Several hazards have been identified and risk assessments have been carried out. Steps have been taken to eliminate and minimize certain hazards. The hazards and risks will be displayed on a site notice board at the entrance to the site together with important contact numbers.

Earthco Civil Ltd will be adhering to the contract programme as outlined in 3.4.2. This sequencing of construction will help to reduce risks associated with the project.

Appendix H

Contractor's Health & Safety & Environmental Care Operations Guide

EARTHCO CIVIL LTD

HEALTH & SAFETY
& ENVIRONMENTAL CARE

OPERATIONS GUIDE -
HANDBOOK
FOR
NEW EMPLOYEES

EARTHCO CIVIL

CONTENTS

Health & Safety Policy ..... Page 1

General Rules..... Page 2
- Introduction

General Safety Rules ..... Page 3
- Protective Equipment & Clothing
- Protection from the weather
- Use of Protective Clothing & Equipment

Environmental Care – Pollution Control..... Page 6

Emergency Procedures ..... Page 7
- Fire Protection & 1st Aid

Accident Recording..... Page 8

Earthmoving Plant ..... Page 8

HEALTH & SAFETY POLICY

Earthco Civil Ltd is committed to

- Providing and maintaining a safe working environment including work conditions and procedures for all employees and persons who come into contact with the company.
- The prevention of injury / harm to all persons and accidental damage to property.
- Developing safety awareness throughout the company through effective training and supervision.
- Take all practicable steps to eliminate hazards within the workplace through risk identification, assessment, control and monitoring to ensure continuing effectiveness.
- Comply with all applicable Health & Safety statutory requirements as a minimum.
- Strive to continuously improve Occupational Health & Safety (OHS) management by setting OHS objectives, plans and performance measures and regularly review progress against the targets set.
- Ensure that subcontractors fully understand and support the safety requirements for our sites.

In return employees are required to

- Follow all company rules and regulations.
- Ensure all safety equipment provided is used at the appropriate times.
- Maintain a safe and tidy work area.
- Report any hazards and contribute ideas on how to improve safety to their supervisors.
- Ensure that they know how to do their tasks safely before starting.
- Report all accidents and incidents to the supervisor immediately.

GENERAL RULES

INTRODUCTION

This booklet is to assist you understand what is required from you when your begin work at an EARTHCO CIVIL controlled site.

The normal work activities of Earthco Civil Ltd create hazards and incur risk.

These hazards, unless effectively controlled, will result in accidents, causing injury to employees and subcontractors, damage to equipment and property, and damage to the environment.

One of Earthco's main aims is to prevent accidents occurring.

The core activities of Earthco Civil Ltd are:

- Earthworks
- Road construction and drainage
- Related construction work
- Land development

The activities are carried out in various environments.

- Additional support activities are carried out to ensure the efficiency of the operations.

In order to control hazards, general rules and operating procedures have been developed for all normal work activities.

All staff are expected to work in a responsible manner with due consideration for other people and equipment on the site. Don't indulge in horseplay or silly antics. Don't take foolish risks. Be aware of what is happening around you at all times.

All staff are expected to take care of the site environment. Don't' pollute the sites. Collect and properly dispose of all rubbish. Don't spill fuel or oils.

You are responsible to look after your own safety, and the safety of those around you who may be affected by your actions.
You must know what the safety rules and procedures require.

Wilful disregard for safety rules and procedures will result in serious disciplinary actions being taken. Wilful damage to machinery will result in serious disciplinary action being taken.

Some sites may have additional safety rules in force which must be obeyed. Your Project Manager will arrange that you are properly informed concerning special site rules.

The Project Manager is the person responsible to organize, co-ordinate and supervise Earthco Civil Ltd activities on a site. He is aware of what should be

happening. If you are not sure how to do something, or what you are to do, discuss it with him. *Don't take chances.*

The Project Manager has the responsibility on sites for ensuring the safety of Earthco Civil Ltd activities. You must follow his instructions.

Safety is dependant on people being aware of hazards that exist and taking notice of, and complying with the safety rules and procedures.

Where you consider a safety measure to be wrong or inadequate, raise the matter with your Project Manager. If you identify a way to work more safely, raise that issue with the Project Manager also.

Where appropriate the Project Manager will raise the issues for approval.

If new hazards arise that are not adequately controlled by these rules and procedures, please do whatever you can do safely to prevent the hazard becoming the cause of an accident or harm to anyone, and then report it to the Project Manager so that appropriate actions to eliminate or control it can be taken.

GENERAL SAFETY RULES FOR ALL EMPLOYEES.

Provision of protective clothing and safety equipment. Employees are required to supply their own normal work clothing. All protective clothing and safety equipment is supplied by the Company.

Employees are not allowed on worksites if they are not wearing safety footwear. Earthco Civil Ltd also requires all employees on their sites to wear a Hi Visibility vest.

Protective equipment / safety equipment
The company supplies all safety equipment for employees as necessary for the type of work being carried out. (e.g. safety hats, eye protection, hearing protection, hi visibility vests, protective gloves, respiratory protective equipment.)

Protection from the Weather
Employees are required to protect themselves from the ill effects of exposure to the weather and to dress in accordance with the weather and site conditions.

Protection from the sun
WARNING: *Prolonged exposure of the skin to the sun in New Zealand can cause skin cancer.*
Employees working outdoors are recommended to wear work clothing that covers their arms and legs to reduce their exposure to the sun during the middle of the day (between 11.00 am and 3.00 pm). They should wear suitable head protection and use sunscreen crèmes.
Project Manager s may insist that the employees protect themselves against the effects of sunburn where conditions are severe.

IMPORTANT

YOU CANNOT CARRY ON WITH YOUR WORK WITHOUT THE NECESSARY PROTECTIVE CLOTHING OR SAFETY EQUIPMENT IN AN AREA OR ON A JOB WHERE IT IS REQUIRED

Use of protective clothing and equipment
All employees are required to have their protective clothing and safety equipment readily available at works to enable them to carry out their work safely. Look after it. Use it where required.

Remember – each person is responsible to look after his/her clothing and equipment.

If it gets lost or damaged, don't just carry on without it. This may result in injury to yourself. **REPLACE IT.**

If equipment supplied by the Company becomes worn out or becomes unserviceable, advise the Project Manager in good time and have it replaced.

SAFETY HAT

- You must wear a safety hat (protective helmet or hard hat) on all sites that are designated as hard hat or protective helmet areas.
- You must wear a safety hat at work in area or place where there is a risk of falling material or equipment striking you, or where there is a risk of you striking your head against an object.
- The Project Managers may instruct persons to wear hard-hats where they consider it to be necessary.

EYE PROTECTION

- You must use approved safety glasses or other suitable eye protection wherever there is the foreseeable risk of injury to your eyes.
- You must use safety glasses or other effective eye protection where there is an "eye protection necessary" sign.

HEARING PROTECTION

- You should use hearing protection wherever you are exposed to a noise level such that it is necessary to raise your voice to be heard 1m away. [Approx 85dB(A) and higher.]
- You must wear hearing protection where there is a "hearing protection necessary" sign.
- You must wear hearing protection where instructed by your Project Manager.

The Health and Safety in Employment Regulations require the general noise exposure (with hearing protection) not to exceed the equivalent of 85dBA over 8 hours. For every 3 dBA increase in measured sound level, the personal exposure time must be halved.

Noise level (dBA) Actual without hearing protection	Maximum daily exposure
82	16 hours
85	8 hours
88	4 hours
91	2 hours
94	1 hour
97	30 mins
100	15 mins
103	8 mins
106	4 mins

Machine operators working in non-noise proofed machine cabs must have hearing protection graded Class 5.
Heavy Earthmoving equipment can generate in excess of 100db(A)
You need protection for a 10 hour work day.
Class 5 protective against levels between 105 to 110 db(A).

HAND PROTECTION

- You must wear suitable gloves to protect your hands and fingers where you are handling or using materials, substances, tool, and equipment of such a type or in such a manner that your hands may be injured, or the substance may be absorbed by the skin.

Injury to hands may be directly from impact, abrasion, cutting, puncture, crushing. Injury may be due to direct contact with chemicals, resulting in irritation, burn (corrosive action) dermatitis, sensitising of the skin, absorption of chemical through the skin into the bloodstream.

There are many different types of protective gloves, each type suitable for protection against specific types of hazards. MAKE SURE YOUR GLOVES ARE SUITABLE FOR PROTECTING YOUR HANDS FROM THE HAZARDS THEY ARE EXPOSED TO!

The Project Managers may instruct persons to wear safety gloves where they consider it to be necessary.

REFLECTIVE VEST OR JACKET

- You are required to wear a Hi-visibility vest or jacket at all times when on Earthco sites (except when inside the cab of a machine or inside a vehicle)
- People on foot on a site where heavy earthmoving equipment is operating, or on sites where there is other heavy traffic must wear a Hi-Vis vest or jacket. This will make them more visible to the operators.
- You must wear a Hi-visibility vest or jacket at all times when working on road works sites that are open to normal traffic.

Loose clothing, long hair and jewellery
Don't wear loose fitting clothing at work. It may get caught in a machine or hook onto something and result in an accident.
It is wise not to wear clothes made from nylon or other man made fibres which can easily catch alight and burn in the event of a fire. Rather wear clothes made from cotton or from wool, which are much safer.

If you have long hair, tie it back so that it is not loose and a possible hazard when working near plant or equipment.

Wearing jewellery can also be a hazard. Leave it at home.

Alcohol and Drugs
You are not allowed on a worksite under the influence of excessive alcohol or under the influence of drugs. If you are found to be under the influence of excessive alcohol or drugs at work, severe disciplinary action may be taken. This may mean your dismissal.

Alcoholic drink may not be brought onto a site or workplace without the prior permission of the Project Manager.
Where such permission is granted, the Project Manager is responsible for controlling alcohol on sites.
Non-prescribed drugs other than a recognised component of a first aid kit, may not be brought onto a site or a workplace by employees at any time.
Disregard of these rules will result in severe disciplinary action being taken, and may mean your dismissal.

Site Facilities (Smoko Sheds)
Please keep the site facilities clean and tidy. They are there for your and everyone else's benefit.
Always keep the site area clean and tidy. Park vehicles and equipment in a designated area, store materials in their proper places. Stack it properly. Store tools and small equipment in their proper places. Don't leave them lying around. Rubbish must be kept in a suitable rubbish bin, regularly removed from site and properly disposed of. Don't burn rubbish on the site. Don't just bury it without permission. Dispose of it properly.

ENVIRONMENTAL CARE – Pollution Control

Any spillage of fuel, oils, or coolant that may occur on site must be cleaned up immediately and properly disposed of to prevent pollution of the environment.
There will be a supply of suitable absorbent material (clean sawdust, dry pumice sand, rags, and special sorbent materials) readily available on site to absorb spillage immediately and to clean up.

There will be measures in place on the site to prevent silt being carried into streams and rivers by rainfall and stormwater run-off.
Do not damage these precautionary measures.
Excessive silt in water bodies is a significant pollutant.

All rubbish on site must be disposed of properly.

DO NOT BURY FUEL OR OIL SPILLS.

REMOVE THE CONTAMINATED SOIL FOR DISPOSAL AT A CONTROLLED TIP. IF IT IS BURIED ON SITE, IT WILL LEACH OUT OVER A PERIOD OF TIME AND CONTAMINATE THE STREAMS AND WATER BODIES.

EMERGENCY PROCEDURES

When you start work at a new site, you will be instructed regarding the emergency procedures that should be taken in the event of an accident occurring where somebody is seriously harmed, or where a fire, or other emergency situation occurs.

A copy of the emergency procedures will be readily available on site to all employees and to all subcontractors.

Prepare yourself
Know what the arrangement is for summoning assistance:

- Know where the telephone is
- Know where the first aid kit is kept
- Know who has a first aid certificate
- Know where the fire extinguishers and other fire fighting equipment is kept.

Remember that where someone is seriously injured immediate proper first aid may well save their life, and will certainly help with their recovery.

Fire protection
Each site office/smoko hut area has at least one fire extinguisher.
Know where other fire fighting equipment is kept.
Know what the emergency procedures for the site are in the event of a fire.

First Aid
Every Earthco Civil Ltd worksite is equipped with a first aid kit.
All employees are encouraged to take first aid lessons and to obtain a first aid certificate.
Know what the emergency procedures for the site are in the event of an accident.
Know what the method of communication is for the site so you can call for assistance if necessary.

[illegible] at [illegible] telephone [illegible].

Driving Company Vehicles on the Public Road
Only employees with the correct drivers license may drive Company Vehicles.
The Project Manager must authorise employees to drive Company Vehicles.
The vehicle driver is in full charge of the vehicle and its passengers.
When driving always make sure your safety belt and the passengers safety belts are fastened.

Make sure loose tools and equipment are stowed away securely so they cannot interfere with the vehicle control pedals or strike somebody in the event of an accident. Make sure tool lockers are properly fastened.
Make sure your load is properly secured.

Drive with due care and attention. Don't allow yourself to become involved in incidents with other road users. If you are involved in a road accident of any kind, immediately inform the office of the situation. Don't admit liability.

Safety equipment
Do not remove or interfere with safety equipment of guards. If you are using machinery or plant make sure that all of guards and other safety devices are in place and are effective. If the guards are not right, don't use the equipment. *Have it fixed first.*
Don't remove safety barriers without authority from the Project Manager. Always make sure they are replaced properly.

ACCIDENT RECORDING

All accidents are to be recorded
(Injury accidents and near miss incidents)
All accidents or injuries occurring to an employee or to a subcontractor at work are to be reported to the Project Manager and recorded no matter how minor the accident or injury is. (This also includes near miss accidents where someone could easily have been injured.)

All serious incidents are to be recorded.
All incidents at work where machinery or property is damaged, and all incidents where company vehicles or earthmoving machines are involved in accidents or damaged in any way, must be reported immediately to the Project Manager and recorded.

Improvements
All employees are invited to make suggestions to improve the safety or the efficiency of the Company's operations. Where you see an opportunity to make improvements, discuss it with your Project Manager. All improvement suggestions are welcome and will be given due consideration.

EARTHMOVING PLANT

Only authorised company employees may operate earthmoving equipment. Authorised employees are those that have gained satisfactory experience or have been trained to operate a particular machine, *and who are registered with the Company as authorised to operate specific machinery.*

Machine operators are responsible to carry out the routine checks, cleaning, daily lubrication and fuelling of their machines as part of their normal duty. They are

responsible for safety while carrying out this work and are responsible to check that the machine is safe to operate.
Where a machine requires maintenance or repair work, the operator must arrange for this through the Project Manager and note it in his daily log.

Machine operators are responsible for their own safety as well as for the safety of all people in the vicinity who may be affected by the operation of their machine.

NO PASSENGERS ON MACHINES

Passengers are not allowed on a machine unless they are seated in a proper passenger seat with their seat belt fastened, and are fully protected.

Discuss with the Project Manager the work you are going to do. Make sure you know exactly what is required. Discuss any potential hazards with him. Agree on how they are to be controlled. Before starting work check out the work area. Look for additional hazards that may occur while you are working.

Have you got your safety gear?
Safety boots, gloves, hearing protection, safety glasses, reflective vest and safety hat.

- If necessary put up signs and safety barriers to direct site traffic away from your work area.
- If necessary put up signs warning other site traffic that work is in progress and to restrict their speed.
- Tape off hazards with DANGER TAPE to warn and to prevent people being exposed to the hazard.

- Don't operate too close to power lines. Stay at least 4m clear unless your Project Manager has received written permission from the electrical supply authority to work closer, and given you a copy. If you are fairly close to power lines have somebody assist you to check your clearances.

- Be aware of any existing services that are buried in the ground before you start work. Make sure the Project Manager clearly marks off where they might be. If necessary expose them by hand to ensure their exact position. Don't damage them.

The Project Manager may arrange for a *clearance or permit to work* from the service supply authority in some cases.
The authorities' representative will assist to accurately locate the underground pipes or cables and ensure that all necessary safety precautions are taken before issuing the permit and specifying conditions for the work.
Make sure you properly understand and abide by all the stipulated conditions.

If you damage any services, take action immediately. Know what your emergency procedures are.

NOTE: A damaged gas main can very quickly become an extreme explosion hazard.
A damaged cable may still be live.
Damaged water pipes can quickly change the stability of the ground where you are working.
Damaged sewer pipes are a health hazard.

Earthmoving Machinery – Safe Operating Procedure

Check your machine carefully everyday before starting it up. If your machine is not safe to operate, you must not operate it. Arrange to have it repaired or made safe before you continue to use it.

Pre – Start Check

1. Check all guards, ROPS, seat belts, fire extinguisher and all other protective devices installed on your machine. Everyone should be in place and be secure.
2. Inspect your equipment for visual defects, e.g. fuel leaks, lubrication and hydraulic system leaks and any broken or missing parts.
3. Inspect tyres for damage and proper inflation pressures.
4. Avoid fire hazards when fuelling – replace the filler cap securely.
5. Ensure that all windows are clean and you have good visibility through them. If your machine has mirrors, make sure these are clean and properly set for you.
6. Ensure all necessary tools and other items are stored in the tool box – not left loose in the cab.
7. See that the air pressure is correct and there are no leaks.
8. Check the engine and operator compartments for build up of clay or other material which can effect the proper operation of controls, remove rubbish, spilled oil or loose objects that could cause fire or jam controls.
9. Check the machine's fluid levels.

- Check the coolant when the engine is cold.
- Check the engine oil level is correct.

TAKE CARE WHEN GETTING ON OR INTO MOBILE PLANT

Always use the available ladders, hand rails, or steps when mounting or dismounting your machine. Be careful. Maintain three points of contact with the steps and rails, such as both hands one foot or both feet one hand. Don't jump down, use the steps.

Always fasten the machine's seat belt.

NOTE: Machine fitted with Roll Over Protection Structures (ROPS) must have a seat belt. The ROPS is not effective, and can be hazardous if the seat belt is unfastened.

If your machine has a "hearing protection necessary" sign on it, you must use your hearing protection when operating.

OPERATE FROM THE SEAT – The operator's seat is a safe position.

Only operate your machine when you are in the approved operator's position.
Only start a machine from the approved operator's position.
Only operate attachments from the approved operator's position.

SAFE START

Before starting the machine check for WARNING TAGS. If there is a warning tag on the starting switch or the controls, DO NOT START OR OPERATE the machine until the tag has been removed by the person who placed it there.

Place all directional controls in neutral, disengage clutch on manual transmission machines or apply the brake on power shift or automatic transmission machines.

Make sure nobody is in a place where they could be harmed if something goes wrong when the machine starts up.

Start the engine.

POST START – TEST PROCEDURE

Before moving the machine, test all the controls for proper functioning:

- Service and parking brakes
- Governor control, accelerator, decelerator
- Steering
- Attachment controls
- Check lights, back up alarms, horn and other warning devices.
- Check gauges for correct readings

If you machine is faulty, advise the Project Manager

SAFE MACHINE OPERATING

In particular –

- Be especially careful when operating any machine on moderate/steep slopes.
- If your machine has a ROPS, always fasten your seat belt.
- Particularly if driving a motorscraper:
- Always keep the bowl as close to the ground as possible, whether traveling or unloading on a stockpile and

- Always STOP if in a difficult position, and get assistance.

DO NOT OPERATE AN UNSAFE MACHINE!

STOP WORK AND CORRECT SHUT DOWN

Select a safe area for parking the machine:

- Level and firm ground
- Non operating area
- Designated parking area

Follow the manufacturer's instructions regarding shutdown:

- Lower all attachments to the ground
- Place direction controls in neutral
- Apply the park brake

- Stop the engine (following elapse of the recommended idling time) and remove the keys
- Climb down carefully – maintain the 3 points of contact
- Grease your machine at the appropriate time
- Keep the machine clean and lock the cab
- Report any defects or problems to the Project Manager

If any information in this booklet is unclear please discuss with your Project Manager.

Appendix I

Contractor's Hazard Identification Form

EARTHCO CIVIL

HAZARD IDENTIFICATION *Site Inspection*

Contract *WEST COAST ROAD SUBDIVISION* **Date** *###############*

Carried Out By *DAVE HUSBAND & ALISTAIR BAKER*

1 SITE ACCESS

Single Access ☐ Rural Area ☐
Multiple Access ☒ Urban Area ☐

Access Roadway

Trunk Road ☐ Minor Road ☒ Bus Route ☒
Main Road ☐ Close to shops ☐ West Coast Rd
Residential Road ☒ Close to public amenity ☐

Expected Traffic Conditions

Light ☒ Medium ☐ Heavy ☐

Access obstructions *Nil*

2 SITE TOPOGRAPHY

Ground Conditions

Level ☐ Minor Slopes ☐ Vertical/Near ☐
Undulating ☒ Moderate Slopes ☐ vertical faces
Severe ☐ Steep Slopes ☐

Drainage

Well drained ☒ Wet Spots ☐ Marshy ☐
Creek ☒ Stream/river/lake ☐

Vegetation *Nil in Built Up Area*

Paddocks ☒ Bush ☐ Trees ☐
Scrub ☒

Trees to be removed

3 SITE FOR FACILITIES ESTABLISHMENT

Adequate area for diesel refueling ☒ Close to site access ☐
Adequate area for equipment servicing ☒ Adequate area for ☐
Adequate area for site building / facilities ☒ parking

4 EXISTING BUILDINGS

Old Shedding

5 EXISTING SERVICES ONSITE

Power Supplies ☐ Water Supply ☐ Sewerage System ☒
Gas Services/Oil Pipeline ☒ Main Pipelines ☐ Telecom Services ☐

6 FENCES

- Chains to be provided across entrance

Site adequately fenced for conditions No Fences Secure ☐

SIGNIFICANT HAZARD IDENTIFIED

1 *SILT PONDS AND DEEP TRENCHES*

2 *OIL PIPELINE AND GAS MAIN*

3 *HEAVY MACHINERY OPERATING ON SITE*

4 *TRUNK SEWER MAIN (WATERCARE & WAITAKERE LINES)*

4A *STREAM / NATIVE TREES*

5 *HAZARDS TO THE GENERAL PUBLIC ESPECIALLY CHILDREN ASSOCIATED WITH UNAUTHORISED PUBLIC ACCESS AROUND THE SITE IN UNMANNED PERIODS*

Babbage®
CONSULTANTS

West Coast Road (No. 423-429)
Henderson

for

New Zealand Housing Foundation

Site Validation Report

Ref: 42608/GE
March 2007

Architects ▫ Consulting Engineers ▫ Surveyors ▫ Project Managers

BDOC03434211

Client: **NZ Housing Foundation**

Project: **West Coast Road Housing Development**

Job Number: **42608**

Report Title: **Site Validation Report**

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Report Date: **March 2007**

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CONTENTS

EXECUTIVE SUMMARY

1.0 INTRODUCTION 2

1.1 PURPOSE OF THIS REPORT 2

2.0 PROPOSED DEVELOPMENT 2

3.0 SITE DESCRIPTION 3

3.1 LOCATION 3

3.2 TOPOGRAPHY 3

3.3 VEGETATION 3

3.4 SURROUNDING LAND USE 4

3.5 GEOLOGY AND STRATIGRAPHY 4

3.6 HYDROGEOLOGY 4

3.7 HYDROLOGY 5

4.0 CONTAMINATION ASSESSMENT 5

4.1 INTRODUCTION 5

4.2 ASSESSMENT OF RESULTS 5

5.0 REMEDIATION WORKS 6

5.1 INTRODUCTION 6

5.2 HEALTH AND SAFETY 6

5.3 CLEAN UP CRITERIA 7

5.4 REMOVAL OF IDENTIFIED CONTAMINATION 7

5.5 OFF-SITE DISPOSAL 12

6.0 CONCLUSIONS 12

7.0 LIMITATIONS 13

7.1 RESTRICTION OF INTENDED PURPOSE 13

7.2 LEGAL INTERPRETATION 13

7.3 RELIABILITY OF INFORMATION 13

7.4 RELIABILITY ON CONTAMINATION INVESTIGATION 13

LIST OF TABLES

Table 5.1 Clean up Criteria 7
Table 5.2 Phase 1 Validation Samples 8
Table 5.3 Phase 1 Samples Exceeding ATV and Action to be Taken 8
Table 5.4 Phase 2 Validation and Handauger Samples 9
Table 5.5 Phase 2 Samples Exceeding ATV and Action to be Taken 10
Table 5.6 Phase 3 Validation Samples 10
Table 5.7 Phase 3 Samples Exceeding ATV and Action to be Taken 11
Table 5.8 Estimated Hotspot Volumes 12

LIST OF APPENDICES

Appendix A – Drawings

42608/G01 - Site Location Plan
42608/E01 - Proposed Housing Development (Sheet 1)
42608/E02 - Proposed Housing Development (Sheet 2)
42608/C01 Rev A - Topographical Plan (Sheet 1)
42608/C02 Rev A - Topographical Plan (Sheet 2)
42608/GE02 - Remediation Plan
42608/GE03 - Validation Sample Plan
42608/C51 Rev C - Retaining Wall Plan (Sheet 2)

Appendix B – Exploratory Hole Logs

Appendix C – Chemical Analysis Results Summary Tables

Appendix D – Regulatory Approval

Appendix E – Site Diary

Appendix F – Photographs

Appendix G – Laboratory Analysis Reports (Validation Results)

Appendix H – Landfill Disposal Dockets

EXECUTIVE SUMMARY

A site investigation was undertaken at 423-429 West Coast Road by Babbage Consultants Ltd in August and September 2006 as part of a Preliminary Site Inspection. The investigation results indicated exceedance of the selected ATV for copper in three samples, and for DDX (DDT and its isomers) in two of the same samples.

A Remedial Action Plan (RAP) for the removal of the three hotspots was prepared by BCL in November 2006 and was approved by ARC and WCC. Site works in accordance with the RAP were undertaken in three phases during February and March 2007. The works were carried out by Earthco Civil Limited and were observed by BCL.

The remediation works resulted in the removal of the identified hotspots from the site or limited them to areas which will not be accessible to sensitive receptors. The remediation of the site in accordance with the RAP is, therefore, considered to be complete.

1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

Babbage Consultants Ltd (BCL) was engaged by Brian Donnelly of New Zealand Housing Foundation (NZHF) in November 2006 to prepare a Remedial Action Plan (RAP) (BDOC03223013) for their land-holding at 423-429 West Coast Road, Glen Eden. The RAP was prepared to satisfy Condition 26 of the Resource Consent authorising earthworks at the site (Permit No. 32791). Following approval of the RAP by both ARC and WCC in December 2006, site works were undertaken at the site between 1 February and 2 March, 2007.

This Site Validation Report (SVR) has been prepared to satisfy Condition 26 the Resource Consent authorising earthworks (Permit No. 32791) at the site.

The purpose of this SVR is to:

- describe the site works undertaken;
- to present the chemical results of the validation samples recovered following the completion of the site works; and
- to provide a statement demonstrating that remediation of the site has been undertaken in accordance with the RAP.

This report should be read in conjunction with the Preliminary Site Investigation (PSI) report (BDOC03073428), prepared by BCL on behalf of NZHF, dated September 2006 and the Remedial Action Plan (BDOC03223013) prepared by BCL on behalf of NZHF, dated November 2006.

2.0 PROPOSED DEVELOPMENT

The site is being redeveloped as an Integrated Community Housing Development involving the construction of 77 units containing 2, 3, 4 and 5-bedroomed houses (individual Lot sizes vary between 263 m^2 and 840 m^2) and 2-bedroomed apartments (proposed Lot 56, which has an area of 1416 m^2, will contain 4 apartments and proposed Lot 61, which has an area of 3743 m^2, will contain 14 apartments). This is in accordance with the Operative Waitakere City District Plan in which the site is zoned:

- Living Environment
- General Natural Area
- Restoration Natural Area
- Riparian Margin Natural Area
- Non-Riparian Stream.

Stage 1 of the development programme includes the northern part of the site, Stage 2 the southeastern part and Stage 3 the southwestern part of the site. The majority of the proposed residential dwellings are understood to comprise two storey structures, although Stage 3 is understood to comprise two and three storey structures with basement level parking.

In addition, it is proposed to infill the existing stormwater pond in the southwestern part of the site and to construct a replacement stormwater pond in the northwestern corner of the site. A footbridge is also proposed to link the

Stage 1 area to the land to the west of Parrs Stream. A preliminary development layout is shown on Drawing Nos. 42608/E01 and 42608/E02 in Appendix A.

3.0 SITE DESCRIPTION

3.1 LOCATION

The site, which has an area of approximately 5.7 ha, comprises Lots 2 & 3 DP 339810 and is located at 423-429 West Coast Road, Glen Eden. A site location plan is included as Drawing No. 42608/G01 in Appendix A.

The site is currently owned by the NZHF.

Certificates of Title for the site have been provided as part of the Resource Consent application.

3.2 TOPOGRAPHY

The site is irregularly shaped largely as a result of the topographical characteristics of the area. In particular, the shape of the site is affected by the location and route of the watercourse (Parrs Stream) running through the southwestern part of the site and forming the northwestern boundary. In the southern portions of the site the land slopes gently downwards from the east, towards the Parrs Stream channel and associated riparian margins, before sloping upwards from the stream channel to the western site boundary. To the north of Pyramid Place the slope of the site becomes steeper and this part of the site drops quite steeply towards the Parrs Stream. The larger area at the northern end of the site is relatively flat with a gentle slope towards the stream. The site layout, prior to commencement of earthworks, is shown on Drawing Nos. 42608/C01 Rev A and 42608/C02 Rev A in Appendix A.

From the walkover survey, undertaken as part of the geotechnical assessment of the site, and subsequent visits to the site following removal of the vegetation, no apparent signs of significant previous slope instability were noted.

3.3 VEGETATION

Prior to the commencement of the redevelopment works, the site generally comprised rough grassland, with areas of scrubby bush and a mixture of native and exotic trees in the vicinity of the stream. Small localised areas of thicker bush were present in the southern and northern parts of the site. A line of mature pine trees trending east to west was present in the southern part of the site. No physical evidence of former horticultural activities, which were indicated in some parts of the site from aerial photographs, was visible on site.

3.4 SURROUNDING LAND USE

The site is surrounded by the following uses:

North:	Open land beyond which is the Waikumete Stream.
East:	Woodbank Drive, Titch Place, Pyramid Place and associated residential developments.
South:	West Coast Road and residential developments.
West:	Parrs Stream beyond which is farm and residential land (however, in the southwest the boundary extends westward of Parrs Stream to the existing residential development off Albionvale Road).

3.5 GEOLOGY AND STRATIGRAPHY

The Institute of Geological and Nuclear Sciences (IGNS) Geological Map of the Auckland Urban Area, 1:50,000, Sheet R11, 1992 indicates that the geology at the site generally comprises deposits of the Puketoka Formation comprising pumiceous muds, sands and gravels with muddy peat and lignite.

The actual geological conditions at the site were investigated in two stages. Initially, twenty-three handauger holes were advanced to depths of between 0.8 – 3.15 m below ground level (mbgl) in May 2006. Additional fieldwork was carried out in July 2006 and comprised 4 No machine boreholes to depths of between 9 m and 14 mbgl.

During these investigations, it was noted that the materials encountered in the boreholes were generally consistent with those indicated on the geological map.

The ground conditions at the site generally comprised a 0.1 m to 0.8 m thick layer of topsoil overlying stiff to very stiff clays interbedded with silt and sand horizons, which frequently containing pumiceous material. Localised areas of fill approximately 0.6 m to 0.8 m in thickness were encountered in two locations, one in the centre and one in the extreme west of the site.

In the central and southern parts of the site, adjacent to the stream, the boreholes identify the presence of soft to firm clays containing organics.

Full details of the geotechnical investigations are presented in:

- Geotechnical Assessment Report, West Coast Road Housing Development prepared for NZ Housing Foundation (Ref: 42608) dated June 2006 (BDOC02880325).
- Supplementary Geotechnical Assessment Report, West Coast Road Housing Development prepared For NZ Housing Foundation (Ref: 42608) dated November 2006 (BDOC03004368).

3.6 HYDROGEOLOGY

According to the Proposed Auckland Regional Plan (PARP:ALW, 2005)[1], the site is not located in an aquifer management area.

[1] Auckland Regional Council, Proposed Auckland Regional Plan: Air, Land and Water, June 2005

Groundwater conditions at the site were investigated during the initial geotechnical assessment undertaken in May 2006. Groundwater seepages were recorded in twenty of the twenty three geotechnical boreholes advanced at the site, at depths of between 0.1 and 2.9 mbgl. In general, groundwater was encountered at shallow depths in the boreholes located adjacent to the stream and at greater depths in the boreholes located on the higher ground. Groundwater flow direction is, therefore, inferred to be generally westwards towards the Parrs Stream.

No long term monitoring of the local groundwater regime has been undertaken.

3.7 HYDROLOGY

A stormwater pond is located in the southwestern part of the site. The partially culverted (offsite) Parrs Stream crosses the southwestern part of the site in a natural open channel, flows south to north along the upper western boundary of the site and joins the Waikumete Stream, which flows from east to west approximately parallel to the northern site boundary.

4.0 CONTAMINATION ASSESSMENT

4.1 INTRODUCTION

A Preliminary Site Investigation (PSI)[2] for the site was undertaken by BCL in August and September 2006. Initially both ARC and Waitakere City Council (WCC) were contacted to determine if they have any records relating to potential contamination at the site, and aerial photographs of the site were reviewed. Although no potential contamination issues were identified by either council, review of the aerial photographs indicated three areas of the site which may previously have been used for horticulture. These areas were the subject of an intrusive investigation at the site, undertaken on 31st August and 1st September 2006, which involved advancing 20 handauger holes to a depth of 1 m. Samples were retrieved at various depths from each handauger hole and 30 samples were submitted to Hill Laboratories in Hamilton for chemical analysis for pH, arsenic, copper, lead and organochlorine pesticides (OCPs).

The locations of the environmental exploratory holes are shown in Drawing No. 42608/GE02 and logs for all the holes are included in Appendix B.

The information presented in the following sections is a summary of the information included in the PSI report. For further details regarding any of the following issues, reference should be made to that report.

4.2 ASSESSMENT OF RESULTS

A phase 1 assessment of the chemical analysis results from the site was carried out with reference to Assessment Trigger Values (ATVs) derived from Canadian Guidelines [3] and the New Zealand Timber Treatment Guidelines[4] as

[2] Preliminary Site Investigation (PSI) report (BDOC03073428), prepared by BCL on behalf of New Zealand Housing Foundation, dated September 2006

[3] Canadian Council of Ministers of the Environment (CCME), Canadian Environmental Quality Guidelines, 1999 (including updates 2001 and 2002)

The Environmental and Construction Plan includes details of:

- Site inductions and tool box talks;
- The contractors method statements and risk assessments; and
- General Personal Protective Equipment (PPE) requirements for the site.

In addition to the requirements in the Environmental and Construction Plan, any workers entering the area of the remediation works were required to wear the following, unless they remained in their vehicle:

- Gloves
- Dust Mask
- Disposable overalls

5.3 CLEAN UP CRITERIA

The clean-up criteria for the site, based on the requirements of Rule 5.5.40 of the PARP:ALW, 2005, were derived in the RAP and are presented in Table 5.1.

Table 5.1 Clean up Criteria

Determinand	Basis for selection	BCL Clean-up Criteria
Copper	BCL ATV derived in the Preliminary Site Investigation report (BDOC03073428), prepared by BCL, dated September 2006	80
DDT	BCL ATV derived in the Preliminary Site Investigation report (BDOC03073428), prepared by BCL, dated September 2006	0.7

Notes:

All units are mg/kg unless otherwise specified

1. ATV based on the soil acceptance criteria for residential land use specified in the 'Health and Environmental Guidelines for Selected Timber Treatment Chemicals', MfE, 1997.
2. ATV based on soil quality guidelines specified for residential land use in the 'Canadian Environmental Quality Guidelines', Canadian Council of Ministers of the Environment, 1999 including updates in 2001 and 2002.

5.4 REMOVAL OF IDENTIFIED CONTAMINATION

The initial sampling and analysis undertaken at the site indicated that three hotspots of low concentration contamination exist at the site; in the vicinity of EHA10, EHA16 and EHA20. The location of these hotspots is shown on Drawing no. 42608/GE02 in Appendix A.

The identified contamination at EHA10, EHA16 and EHA20 was removed in three phases, as discussed in Sections 5.4.1 – 5.4.3, and validation samples were recovered during each phase. The validation samples were submitted to Hills Laboratories in Hamilton for chemical analysis of:

- Total Copper
- DDT Profile

The laboratory analysis reports for the validation testing are presented in Appendix G and are summarised in the table in Appendix C.

5.4.1 Phase 1 – 1 and 2 February 2007

For each hotspot, all of the topsoil within a 10 m x 10 m, area centred on the handauger hole location, was removed. The depth of excavation was based on the depth to a "clean" sample, recovered during the investigation works, in the

handauger hole being considered: 0.5 m in EHA10 and 0.2 m in EHA16 and EHA20.

Six validation samples were recovered from each hotspot; two from the base and one from each side of the excavation. These samples were sent to Hill Laboratories in Hamilton for analysis for copper and DDX (DDT and its isomers).

The approximate locations of these samples are shown in Drawing No. 42608/GE03, presented in Appendix A, and details of the samples are presented in Tables 5.2 and 5.3.

Table 5.2 Phase 1 Validation Samples

Remediation Area	Sample No.	Location
EHA10	EHA10.1 EHA10.2 EHA10.3 EHA10.4 EHA10.5 EHA10.6	North East South West Base (northeast) Base (southwest)
EHA16	EHA16.1 EHA16.2 EHA16.3 EHA16.4 EHA16.5 EHA16.6	North East South West Base (northeast) Base (southwest)
EHA20	EHA20.1 EHA20.2 EHA20.3 EHA20.4 EHA20.5 EHA20.6	North side East side South side West side Base (northeast) Base (southwest)

Seven of the validation samples taken at the end of the Phase 1 works recorded concentrations of contaminants above the clean-up criteria for the site as in Table 5.3.

Table 5.3 Phase 1 Samples Exceeding ATV and Action to be Taken

Validation Sample	Contaminants recorded above Clean-up Criteria	Concentrations recorded (mg/kg)	Further Action Required
EHA10.1	Copper DDX	105 1.8	**Excavate an additional 5 m**
EHA10.2	Copper DDX	117 2.59	**Excavate to the fence line (approx. 5.3 m)**
EHA10.3	DDX	1.06	**Excavate an additional 5 m**
EHA10.4	DDX	0.98	**Excavate approx. 5 m to within 0.5 m of the stream**
EHA16.2	Copper DDX	111 0.99	**Excavate to the fence line (approx. 5.5 m)**
EHA16.3	Copper DDX	108 0.7	**Excavate an additional 5 m**
EHA20.2	DDX	1.16	**Excavate to the fence line (approx. 2.3 m)**

5.4.2 Phase 2 – 15 and 19 February 2007

The further remediation works required based on the results of the Phase 1 validation works and undertaken as Phase 2 are highlighted in bold in Table 5.3.

Twelve validation samples were taken from the EHA10 Phase 2 area, six from the EHA16 Phase 2 area and four from the EHA20 Phase 2 area. In addition, six handauger holes were advanced to the south of the additional excavation at EHA10, and four handauger holes were advanced to the south of the additional excavation at EHA16, to assess the extent of the hotspots in that direction.

The approximate locations of these samples are shown in Drawing No. 42608/GE03, presented in Appendix A, and details of the samples are presented in Tables 5.4 and 5.5.

Table 5.4 Phase 2 Validation and Handauger Samples

Remediation Area	Sample Type	Sample No.	Location
EHA10	Validation Samples	EHA10.7	West
		EHA10.8	Base (west)
		EHA10.9	East
		EHA10.10	Base (east)
		EHA10.11	Southeast
		EHA10.12	South
		EHA10.13	Base (south)
		EHA10.14	Southwest
		EHA10.15	Northwest
		EHA10.16	North
		EHA10.17	Base (north)
		EHA10.18	Northeast
	Handauger Samples	A5	Southeast
		A6	Southeast
		A7	Southeast
		A8	Southwest
		A9	Southwest
		A10	Southwest
EHA16	Validation Samples	EHA16.7	North
		EHA16.8	East
		EHA16.9	Base (east)
		EHA16.10	South
		EHA16.11	Base (south)
		EHA16.12	West
	Handauger Samples	A1	Southeast
		A2	Southwest
		A3	Southeast
		A4	Southwest
EHA20	Validation Samples	EHA20.7	North
		EHA20.8	East
		EHA20.9	Base (east)
		EHA20.10	South

Nine of the validation samples and two of the handauger hole samples taken at the end of the Phase 2 works recorded concentrations of contaminants above the clean-up criteria for the site. The recorded elevated contaminants in each sample, along with the proposed Phase 3 works for each are listed in Table 5.5.

Table 5.5 Phase 2 Samples Exceeding ATV and Action to be Taken

Validation / Handauger Sample	Contaminants recorded above Clean-up Criteria	Concentrations recorded (mg/kg)	Further Action Required
EHA10.9	Copper DDX	95 1.58	None. Hotspot excavated to site boundary.
EHA10.11	Copper DDX	161 2.35	**Excavate to handauger hole A5**
EHA10.12	Copper DDX	104 2.18	**Excavate to handauger hole A8**
EHA10.18	DDX	0.76	Minor exceedence within laboratory error limits[1] – no action required
A5	DDX	0.71	Minor exceedence within laboratory error limits[1] – no action required
A6	DDX	0.72	Minor exceedence within laboratory error limits[1] – no action required
EHA16.8	Copper DDX	217 2.65	None. Hotspot excavated to site boundary.
EHA16.10	Copper DDX	111 2.21	**Excavate to handauger hole A1**
EHA20.8	Copper DDX	145 2.96	None. Hotspot dug out to site boundary.
EHA20.9	Copper DDX	177 3.84	**Scrape bottom of excavation to remove traces of topsoil**
EHA20.10	Copper DDX	100 1.23	**Excavate to edge of earthworks cut (approx. 10 m)**

[1] Discussion with Hill Laboratories has confirmed a coefficient of variation of 10 % for DDX.

5.4.3 Phase 3 – 2 March 2007

Phase 3 works, as indicated in bold in Table 5.5, were undertaken on the 2 March 2007. Four validation samples were taken from the EHA10 Phase 3 area, four from the EHA16 Phase 3 area and five from EHA20 Phase 3 area.

The approximate locations of these samples are shown in Drawing No. 42608/GE03, presented in Appendix A, and details of the samples are presented in Table 5.6 and 5.7.

Table 5.6 Phase 3 Validation Samples

Remediation Area	Sample No.	Location
EHA10	EHA10.19 EHA10.20 EHA10.21 EHA10.22	Southeast Base (south) South Southwest
EHA16	EHA16.13 EHA16.14 EHA16.15 EHA16.16	Southeast South (base) South Southwest
EHA20	EHA20.11 EHA20.12 EHA20.13 EHA20.14 EHA20.15	Base (east) Southeast South Base (south) Southwest

Four of the validation samples taken at the end of the Phase 3 works recorded concentrations of contaminants above the clean-up criteria for the site as follows:

Table 5.7 Phase 3 Samples Exceeding ATV and Action to be Taken

Validation Sample	Contaminants recorded above Clean-up Criteria	Concentrations recorded (mg/kg)	Further Action Required
EHA10.19	DDX	1.02	None. Hotspot excavated to the site boundary.
EHA10.21	DDX	1.2	See below.
EHA16.13	DDX	1.94	None. Hotspot excavated to the site boundary.
EHA20.11	Copper DDX	143 2.85	See below

EHA10.21

A concentration of 1.2 mg/kg DDX was recorded in sample EHA10.21. This sample was recovered in approximately the same location as handauger hole A8, where <0.03 mg/kg DDX was recorded. Lower concentrations of DDX were also recorded in the other handauger hole samples (A5-A10) recovered to the south of EHA10 (in the vicinity of EHA10.21). The elevated concentration of DDX recorded in EHA10.21 is, therefore, considered to represent a very small, isolated hotspot and is not considered to warrant further delineation or excavation.

EHA20.11

Elevated concentrations of copper and DDX were recorded in sample EHA20.11 recovered from the base of the excavation, adjacent to the eastern boundary of the site. This sample was recovered from the natural clay horizon. The elevated concentrations of copper and DDX are considered to be present at the top of the clay horizon as a result of particles being washed through the topsoil and collecting on the surface of the clay layer. This sample was recovered close to the eastern boundary of the site, where a retaining wall is proposed approximately 2 m from the site boundary to provide protection for the trees on the adjacent site (see Drawing No. 42608/C51, Rev C for details), and the area behind the retaining wall is to be infilled to create a platform. As a result of the retaining wall and the fill, the pathway by which site users may come into contact with the identified contamination will be removed. The contamination identified in sample EHA20.11 is, therefore, not considered to represent a threat to sensitive receptors at the site, and hence further excavation in this area is not considered to be warranted.

Following Phase 3 of the site works the validation results indicated that the remediation works have resulted in the removal of the hotspots from the site or limited them to within areas which will not be accessible to sensitive receptors. Remediation of the site in accordance with the RAP is, therefore, considered to be complete.

5.5 OFF-SITE DISPOSAL

All of the contaminated material was disposed of off site to the North Waikato Regional Landfill at Hampton Downs. The estimated and actual volume of material excavated from within each hotspot is summarised in Table 5.8.

Table 5.8 Estimated Hotspot Volumes

Phase	Excavation Location	Excavation			
		Width (m)	Length (m)	Depth (m)	Estimated Volume (m^3)
1	EHA10	10	10	0.5	**50**
2		5 5 5 5	20 20 10 10	0.5	**150**
3		5	15	0.5	**37.5**
1	EHA16	10	10	0.2	**20**
2		5.5 5	15 10	0.2	**41.5**
3		6	15	0.2	**18**
1	EHA20	10	10	0.2	**20**
2		2.3	10	0.2	**4.6**
3		10	7.3	0.2	**14.6**
				TOTAL:	**356.2**

In total 467.98 tonnes of contaminated material was disposed of at Hampton Downs landfill site. The landfill disposal dockets for this material are enclosed in Appendix H.

6.0 CONCLUSIONS

A Preliminary Site Investigation for the site was undertaken by BCL in August and September 2006. The phase 1 assessment recorded elevated concentrations of copper in 3 samples and DDX (DDT and its isomers) in 2 samples.

The qualitative risk assessment undertaken for the site concluded that the risks to human health and/or the environment associated with the identified contamination at the site was low. However, as the site development required topsoil to be removed from the site, it was recommended that in order to remove any residual risk and to ensure full compliance with Rule 5.5.40 of the PARLP:ALW, the areas of contaminated topsoil encountered at the site be removed.

A Remedial Action Plan (RAP) for the removal of these hotspots was prepared by BCL in November 2007 and was approved by ARC and WCC. Site works in accordance with the RAP were undertaken in three phases during February and March 2007. The works were carried out by Earthco Civil Limited and were observed by BCL.

The remediation works resulted in the removal of the identified hotspots from the site or limited them to areas which will not be accessible to sensitive receptors. The remediation of the site in accordance with the RAP is, therefore, considered to be complete.

7.0 LIMITATIONS

7.1 RESTRICTION OF INTENDED PURPOSE

This report has been prepared solely for the benefit of New Zealand Housing Foundation as our client with respect to the brief. The reliance by other parties on the information or opinions contained in the report shall, without our prior review and agreement in writing, be at such party's sole risk.

The brief includes observation and recording of site remediation works to ensure their compliance with the RAP, validation sampling following completion of excavation and arrangement of testing as necessary to demonstrate that the site has been remediated as outlined in the RAP.

Investigation work has extended to the sampling and testing summarised in Sections 4 and 5 of this report.

The investigation of past practices on site has been limited to information obtained from ARC and WCC and the assessment of historical aerial photographs. A detailed search of records covering horticultural practices carried out on the site has not been undertaken by BCL.

This report has been prepared to provide a summary of the remediation works undertaken at the site and to demonstrate the compliance of these works with the RAP for the site. The report shall not be relied upon for any other purpose.

7.2 LEGAL INTERPRETATION

Opinions and judgements expressed herein are based on our understanding and interpretation of current regulatory standards, and should not be construed as legal opinions. Where opinions or judgements are to be relied on they should be independently verified with appropriate legal advice.

7.3 RELIABILITY OF INFORMATION

Recommendations and opinions in this report are based on data from hand auger holes advanced by BCL and on observations made during excavations for remediation works. The nature and continuity of subsoil conditions away from the auger holes and remediation excavations are inferred and it must be appreciated that actual conditions could vary considerably from the assumed model.

7.4 RELIABILITY ON CONTAMINATION INVESTIGATION

Babbage Consultants Ltd has performed the services for this project in accordance with our standard agreement for consulting services and current professional standards for environmental site assessment. No guarantees are either expressed or implied.

There is no investigation that is thorough enough to preclude the presence of materials at the site that presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable may

in the future become subject to different regulatory standards which cause them to become unacceptable and require further remediation for this site to be suitable for the existing or proposed land use activities.

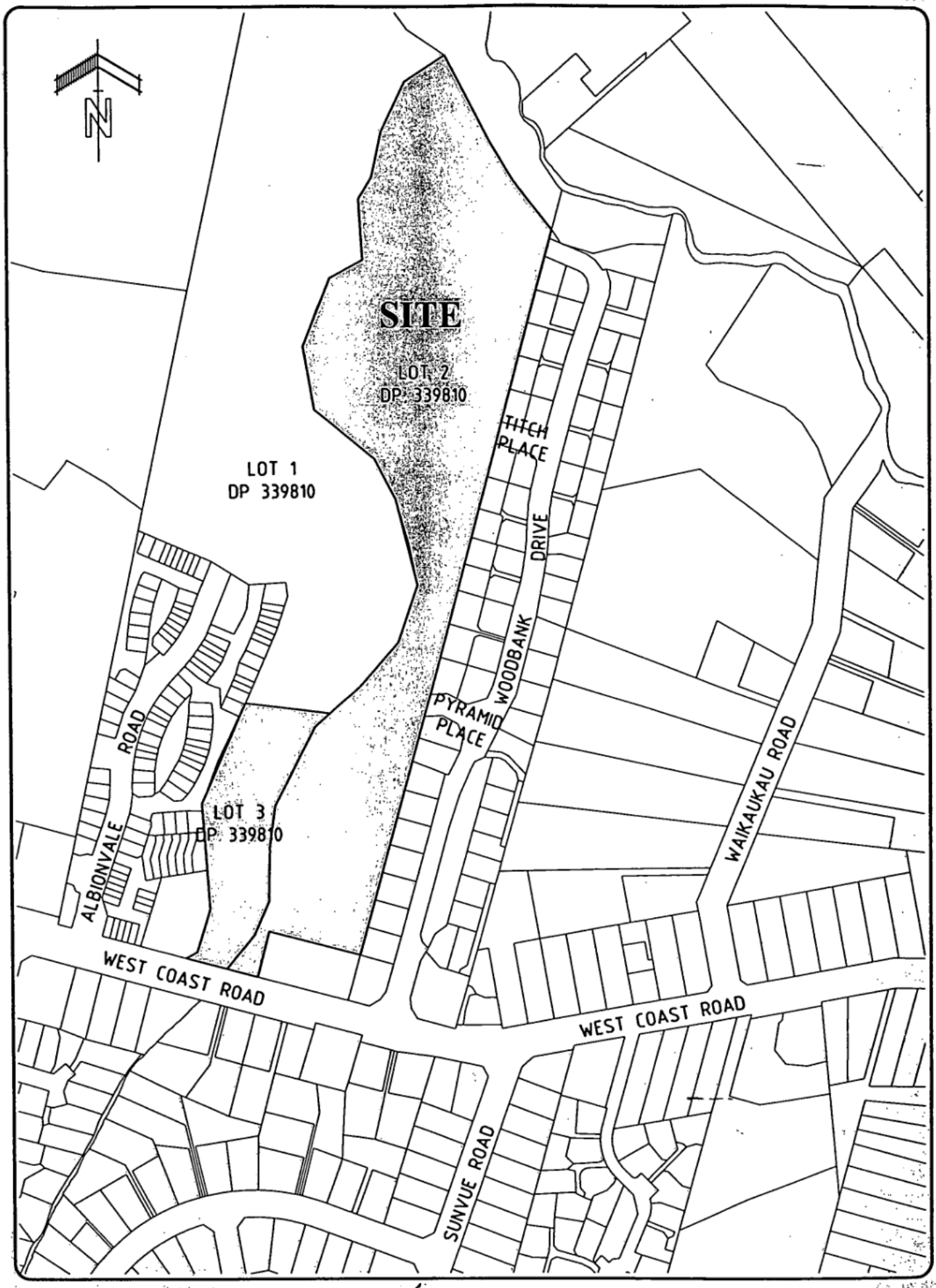
This report has been prepared by Sandra O'Brien and reviewed by Lotta Hagström.

Respectfully submitted
Babbage Consultants Limited

Lotta Hagström
Environmental Engineering Manager

Appendix A

Drawings



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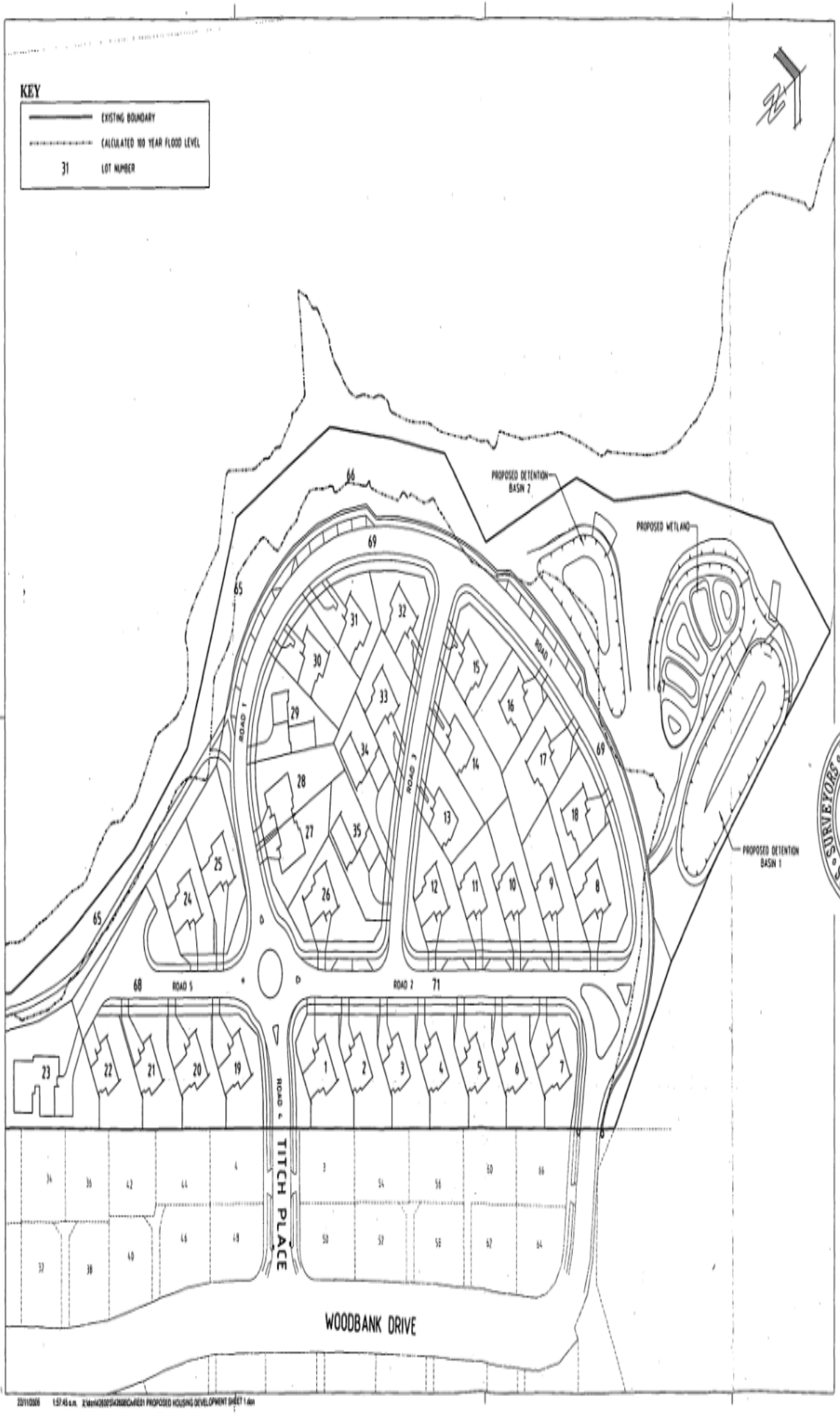
PHONE 09 379 9980, FAX 09 377 1170

WEST COAST ROAD HOUSING DEVELOPMENT FOR NZ HOUSING FOUNDATION

JOB NO:	42608
TITLE:	SITE LOCALITY PLAN
SCALE:	NOT TO SCALE
DRAWING:	G01



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REV	DATE	DESCRIPTION	DRAWN	CHKD

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

PROPOSED HOUSING DEVELOPMENT (SHEET 1)

	DATE	INITIAL
DESIGNED		
DRAWN	SEPT 2008	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
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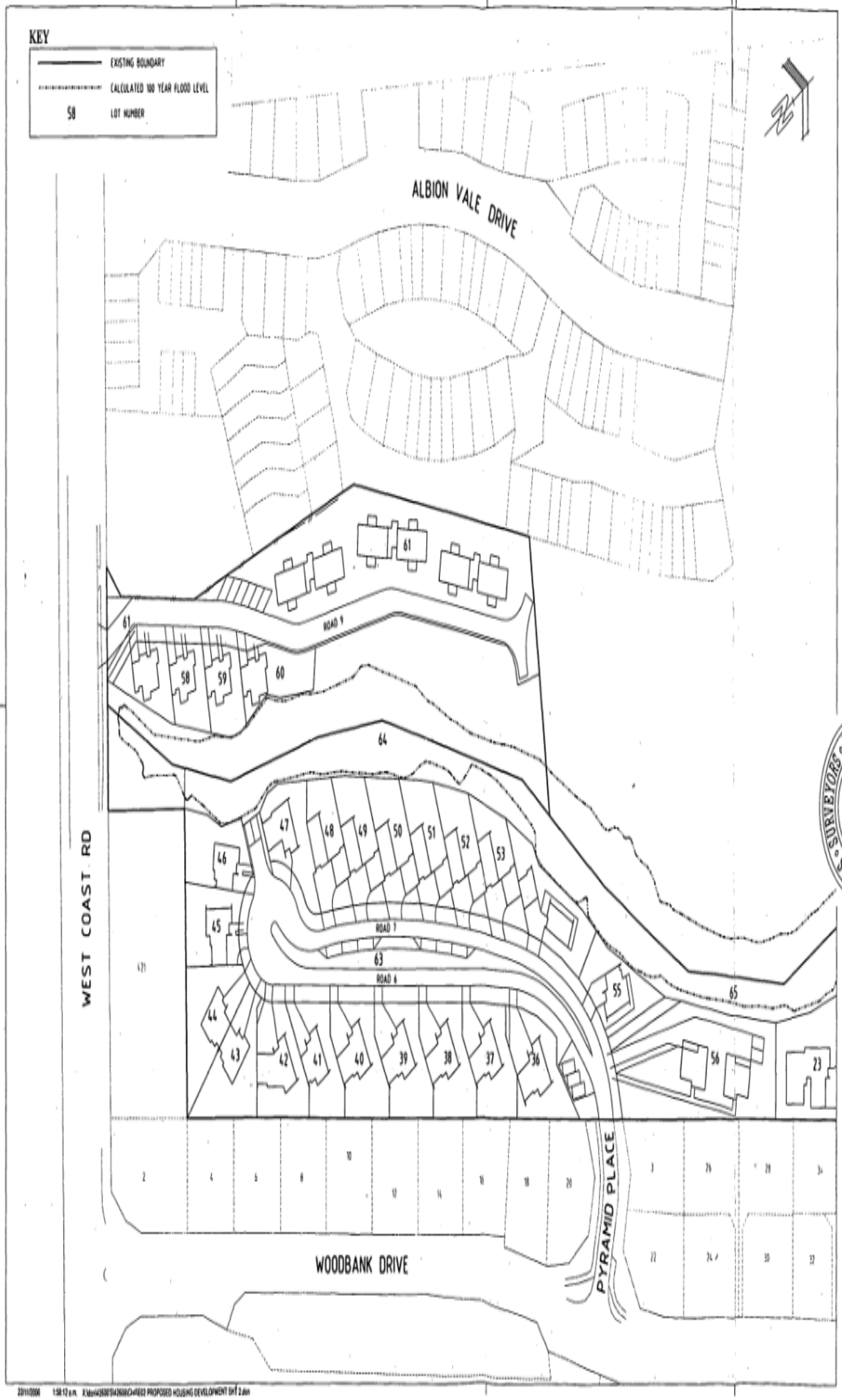

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WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

PROPOSED HOUSING DEVELOPMENT (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	SEPT 2008	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

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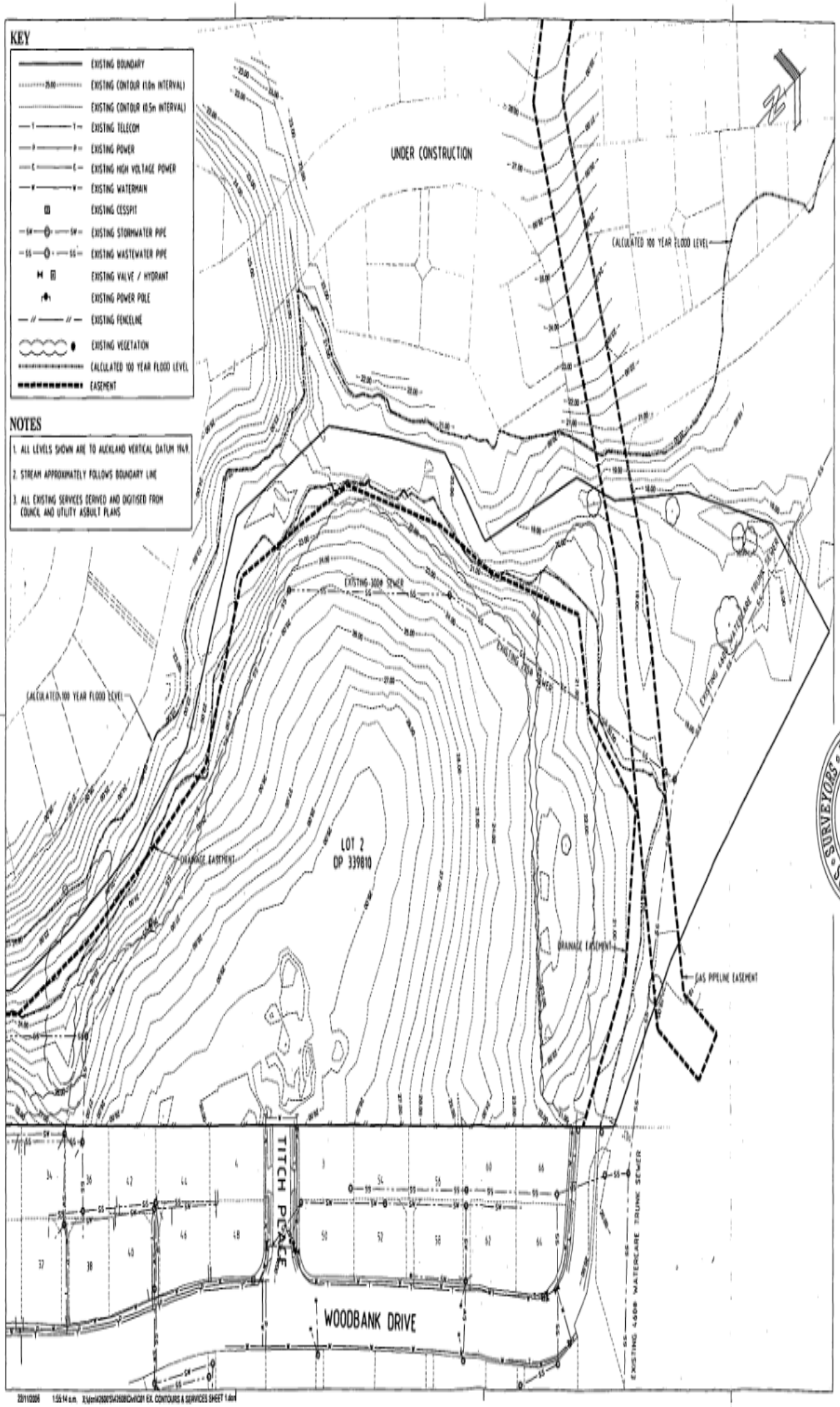

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A	7.05.08	CONTOURS AMENDED	FK	DMR

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WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

TOPOGRAPHICAL PLAN (SHEET 1)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2008	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
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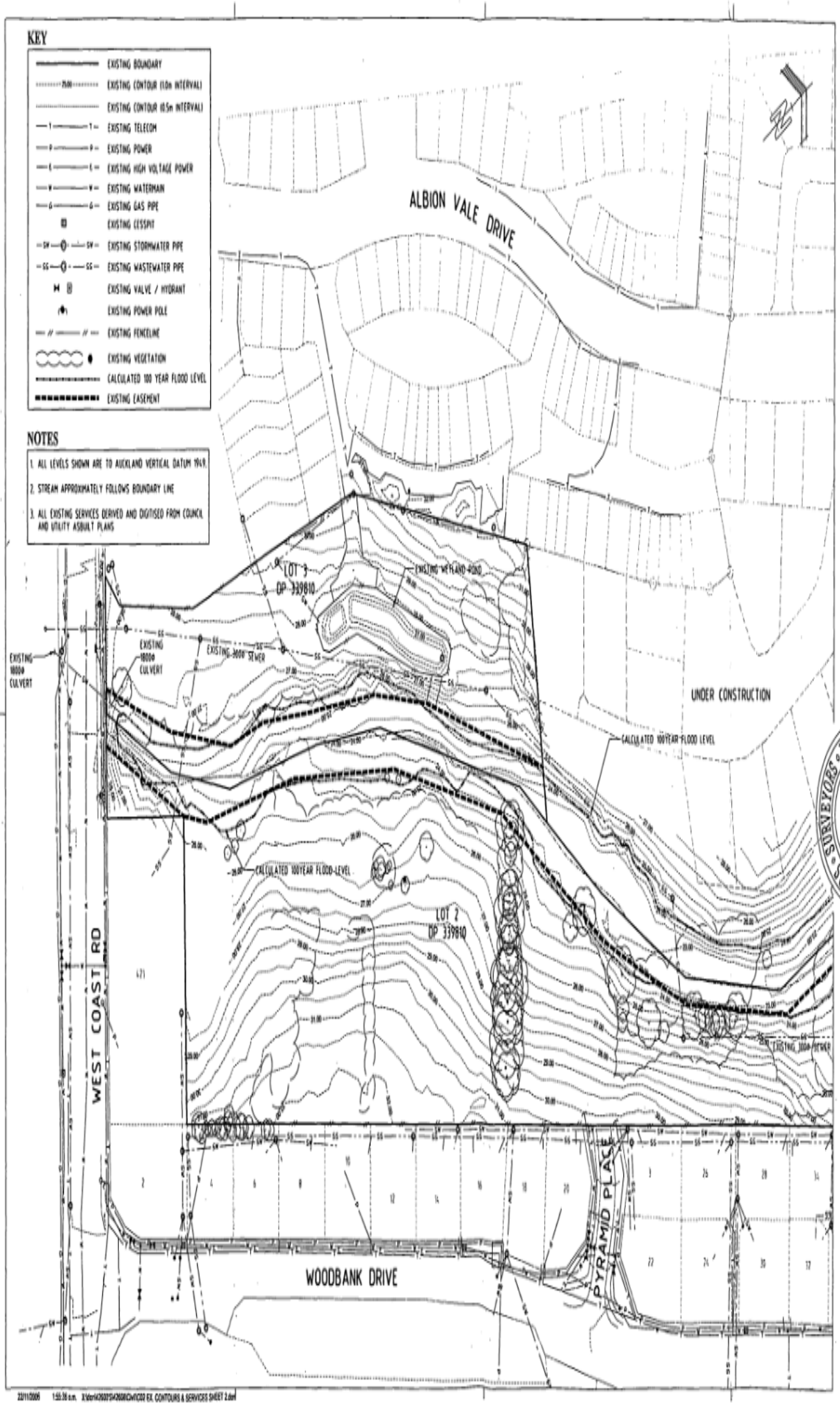

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A	15.08.06	GENERAL AMENDMENTS	GHB	BMR

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WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

TOPOGRAPHICAL PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED		
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
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DRAWING NOTES

KEY

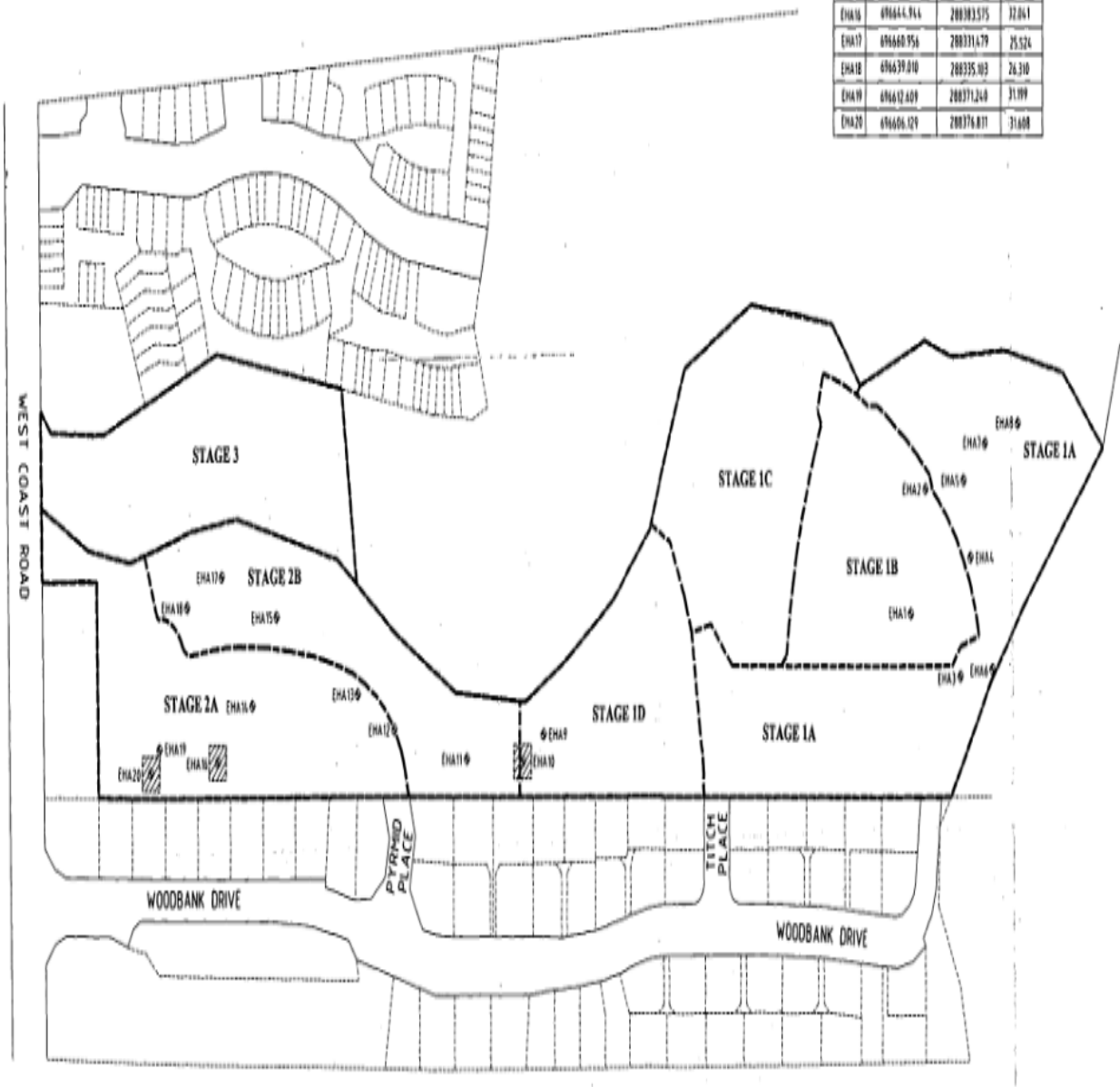
- STAGE BOUNDARY
- EHA11 HAND AUGER HOLES BORED BY BABBAGE CONSULTANTS LTD, - AUGUST/SEPTEMBER 2006
- AREA OF TOPSOIL TO BE REMOVED (10m x 10m)

NOTES

1. COORDINATES IN TERMS OF GEODETIC DATUM 1949
2. LEVELS ARE IN TERMS OF LINZ DATUM

SHEDULE OF COORDINATES

CODE	NORTHING	EASTING	RL
EHA1	697054.382	288444.360	23.844
EHA2	697071.749	288410.900	20.377
EHA3	697078.099	288469.376	20.492
EHA4	697092.564	288437.095	20.343
EHA5	697094.326	288413.976	19.364
EHA6	697096.981	288472.318	19.600
EHA7	697109.246	288406.783	19.186
EHA8	697130.098	288405.977	18.934
EHA9	696832.864	288423.960	24.865
EHA10	696819.860	288428.565	26.825
EHA11	696787.529	288419.636	27.524
EHA12	696748.120	288480.743	27.065
EHA13	696729.832	288395.314	26.087
EHA14	696668.825	288372.635	30.723
EHA15	696689.194	288351.193	26.934
EHA16	696644.944	288383.575	32.861
EHA17	696660.956	288331.679	25.524
EHA18	696639.010	288335.103	26.310
EHA19	696612.609	288371.248	31.199
EHA20	696606.129	288376.811	31.608



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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

REMEDIATION PLAN

	DATE	INITIAL
DESIGNED	NOV. 2006	ACH
DRAWN	NOV. 2006	MJD
CHECKED	NOV. 2006	ACH
APPROVED	NOV. 2006	

SCALE (A1)

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JOB NUMBER	DRAWING NUMBER	REVISION
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DIAGRAM A
SCALE 1:25 @ A1

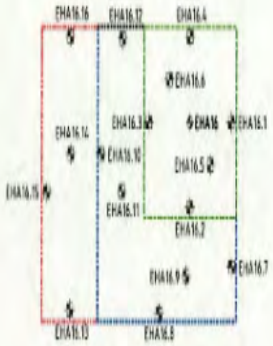
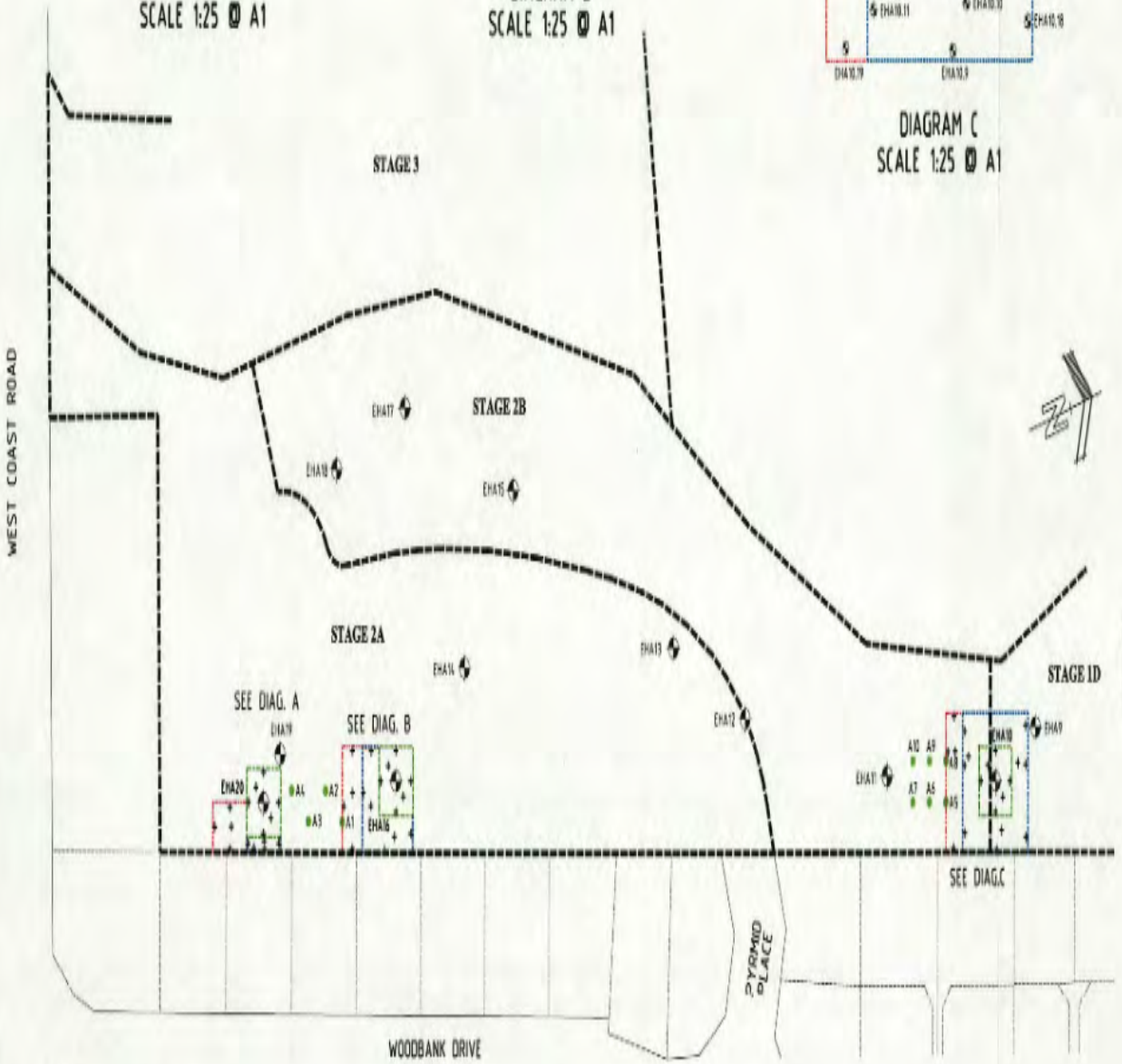


DIAGRAM B
SCALE 1:25 @ A1

DIAGRAM C
SCALE 1:25 @ A1



KEY

- STAGE BOUNDARY
- EHA16 — HAND AUGER HOLES BORED BY BABBAGE CONSULTANTS LTD. AUGUST/SEPTEMBER 2006
- EHA20.6 — APPROXIMATE LOCATION OF VALIDATION SAMPLES TAKEN BY BABBAGE CONSULTANTS LTD. FEB AND MARCH 2007
- A7 — HAND AUGER ADVANCED BY BCC ON 15th AND 19th FEB 2007
- AREA OF TOPSOIL REMOVED (10m x 10m) 1st AND 2nd FEB 2007
- AREA OF TOPSOIL REMOVED 15th AND 19th FEB 2007
- AREA OF TOPSOIL REMOVED 2nd MARCH 2007

REV	DATE	DESCRIPTION	DRAWN CHECK

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WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

VALIDATION SAMPLE PLAN

	DATE	INITIAL
DESIGNED		
DRAWN	FEB 2007	MSD
CHECKED	FEB 2007	BCB
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
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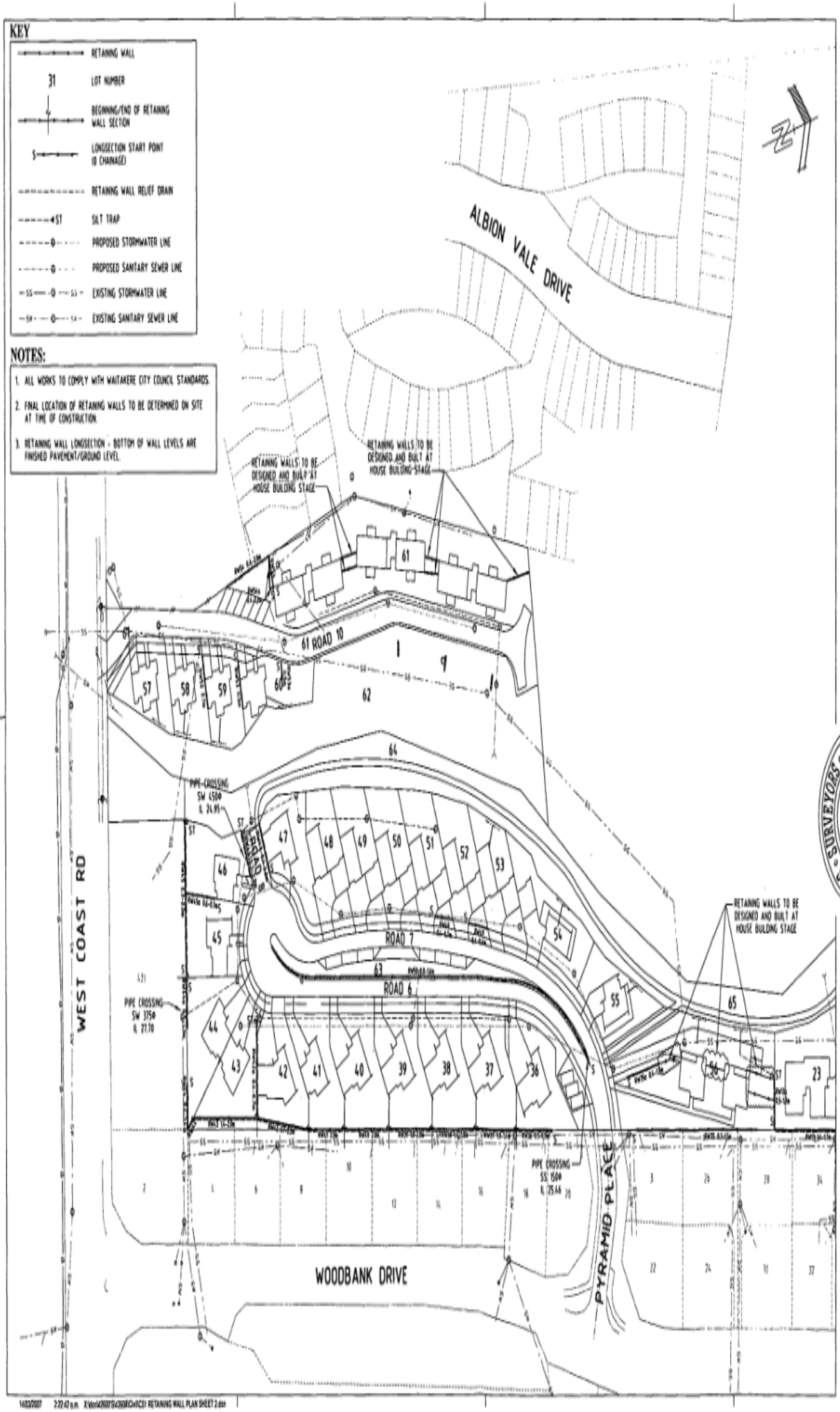

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REV	DATE	DESCRIPTION	DRAWN	CHECK
C	31/07/07	RELIEF DRAINS AND SILT TRAPS ADDED	FK	
B	18/07/07	DRAINAGE UPDATED	FK	
A	15/06/07	VARIOUS AMENDMENTS	FK	DMR

DRAWING REVISIONS

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CLIENT / PROJECT

WEST COAST ROAD HOUSING DEVELOPMENT

FOR

NZ HOUSING FOUNDATION

DRAWING TITLE

RETAINING WALL PLAN (SHEET 2)

	DATE	INITIAL
DESIGNED	JUNE 2006	FK
DRAWN	JUNE 2006	FK
CHECKED		
APPROVED		

SCALE (A1)

1:500

JOB NUMBER	DRAWING NUMBER	REVISION
42608	C51	C

Appendix B

Exploratory Hole Logs

Babbage CONSULTANTS

SUMMARY OF SOIL PROFILE & TESTING

JOB No. 42608

PROJECT: West Coast Road Environmental

HOLE No. EHA1

DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●

LIMITS: PLASTIC = X LIQUID = +

20 40 60

IN SITU VANE (kPa) = ✳

50 100 150

OTHER TESTS

Corrected Shear Vane Result **

U = peak / R = remoulded

SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.10		Mulch on surface							
		CLAY: silty, firm, moderate to highly plastic, grey orange mottled, moist	ALLUVIUM			J1			
						J2	HA	100	
0.80		CLAY: sandy, silty, stiff to very stiff, moderately plastic, yellow orange light grey mottled							
1.00						J3			
1.15		End of Borehole at 1.15 m							

Remarks:

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA2	
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.10		TOPSOIL: Silt, firm, dark brown							
		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J1			
						J2			
							HA	100	
1.00						J3			
1.15		End of Borehole at 1.15 m							

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

PROJECT: West Coast Road Environmental		JOB No.	42608
		HOLE No.	EHA3
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00		TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.40		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J2	HA	100	
1.00						J3			
1.15		End of Borehole at 1.15 m							

Remarks:

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA4	
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00		TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.20		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J2	HA	100	
1.00						J3			
1.15		End of Borehole at 1.15 m							

Remarks:

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

PROJECT: West Coast Road Environmental		JOB No.	42608
		HOLE No.	EHA5
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00								
	TOPSOIL: CLAY, silty, firm, dark brown							
0.15	CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J1	HA	100	
					J2			
1.00								
1.15	End of Borehole at 1.15 m				J3			

Remarks:

Babbage CONSULTANTS

SUMMARY OF SOIL PROFILE & TESTING

JOB No. 42608

PROJECT: West Coast Road Environmental

HOLE No. EHA6

DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

SAMPLES RECOVERED & TEST RESULTS

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00		TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.30		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J2	HA	100	
1.00						J3			
1.15		End of Borehole at 1.15 m							

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA7	
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = × LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00								
	TOPSOIL: CLAY, silty, firm, dark brown							
0.15	CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J1	HA	100	
					J2			
1.00								
1.15	End of Borehole at 1.15 m				J3			

Remarks:

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

PROJECT: West Coast Road Environmental		JOB No.	42608
		HOLE No.	EHA8
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

DEPTH (m)	SOIL SYMBOL	SOIL/ROCK DESCRIPTION	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE	SAMPLES RECOVERED & TEST RESULTS	OTHER TESTS
		DATUM: Ground Surface SURFACE ELEVATION: For an explanation of the terms & symbols used see attached sheets.								MOISTURE CONTENTS = ● LIMITS: PLASTIC = X LIQUID = + 20 40 60 IN SITU VANE (kPa) = ✳ 50 100 150	Corrected Shear Vane Result ** U = peak / R = remoulded SPT / Scala Penetrometer
		TOPSOIL: CLAY, silty, firm, dark brown	ALLUVIUM			J1					
0.50		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist				J2	HA	100			
1.00		water seepage at 1m				J3					
1.15		End of Borehole at 1.15 m									

Remarks:

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA9	
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00		TOPSOIL: CLAY, silty, firm, dark brown	ALLUVIUM			J1	HA	100	
0.50		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist							
		Obstruction at 0.85m - pipe?				J2			
0.85		End of Borehole at 0.85 m							

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA10	
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✱
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL	DESCRIPTION	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
		TOPSOIL: CLAY, silty, firm, dark brown	ALLUVIUM			J1			
0.50		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist				J2	HA	100	
1.00									
1.15		End of Borehole at 1.15 m				J3			

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA11	
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = × LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00								
	TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.40	CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J2	HA	100	
1.00								
1.15	End of Borehole at 1.15 m				J3			

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

PROJECT: West Coast Road Environmental		JOB No.	42608
		HOLE No.	EHA12
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL	SOIL/ROCK DESCRIPTION	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00		TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.40		CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J2	HA	100	
1.00						J3			
1.15		End of Borehole at 1.15 m							

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA13	
DATE STARTED: 31/08/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 31/08/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/SO

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00								
	TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.30	CLAY: silty, fine sandy, stiff to very stiff, moderately plastic, yellow orange mottled, moist	ALLUVIUM			J2	HA	100	
1.00								
1.15					J3			
	End of Borehole at 1.15 m							

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

Babbage CONSULTANTS

SUMMARY OF SOIL PROFILE & TESTING

JOB No. 42608

PROJECT: **West Coast Road Environmental**

HOLE No. EHA14

DATE STARTED: 01/09/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 01/09/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/JD

SOIL/ROCK DESCRIPTION

SAMPLES RECOVERED & TEST RESULTS

DEPTH (m)	SOIL SYMBOL	DATUM: Ground Surface SURFACE ELEVATION: For an explanation of the terms & symbols used see attached sheets.	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE	MOISTURE CONTENTS = ● LIMITS: PLASTIC = X LIQUID = + 20 40 60 IN SITU VANE (kPa) = ✳ 50 100 150	OTHER TESTS Corrected Shear Vane Result ** U = peak / R = remoulded SPT / Scala Penetrometer
		TOPSOIL: CLAY, silty, firm, dark brown				J1					
0.20		CLAY: silty, very stiff, moderately plastic, light grey yellow mottled	ALLUVIUM			J2	HA	100			
1.00											
1.15						J3					
		End of Borehole at 1.15 m									

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

PROJECT: West Coast Road Environmental		JOB No.	42608
		HOLE No.	EHA15
DATE STARTED: 01/09/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 01/09/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/JD

DEPTH (m)	SOIL SYMBOL	SOIL/ROCK DESCRIPTION	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE	SAMPLES RECOVERED & TEST RESULTS: MOISTURE CONTENTS = ● LIMITS: PLASTIC = X LIQUID = + (20, 40, 60); IN SITU VANE (kPa) = ✳ (50, 100, 150)	OTHER TESTS: Corrected Shear Vane Result ** U = peak / R = remoulded; SPT / Scala Penetrometer
		DATUM: Ground Surface SURFACE ELEVATION: For an explanation of the terms & symbols used see attached sheets.									
0.00		TOPSOIL: CLAY, silty, firm, dark brown	ALLUVIUM			J1	HA	100			
0.20		CLAY: silty, very stiff, moderately plastic, light grey yellow mottled				J2					
1.00											
1.15		End of Borehole at 1.15 m				J3					

Remarks:

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

PROJECT: West Coast Road Environmental		JOB No.	42608
		HOLE No.	EHA16
DATE STARTED: 01/09/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 01/09/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/JD

DEPTH (m)	SOIL SYMBOL	SOIL/ROCK DESCRIPTION	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE	SAMPLES RECOVERED & TEST RESULTS: MOISTURE CONTENTS = ●, LIMITS: PLASTIC = X, LIQUID = +, IN SITU VANE (kPa) = ✳	OTHER TESTS: Corrected Shear Vane Result **, U = peak / R = remoulded, SPT / Scala Penetrometer
		DATUM: Ground Surface SURFACE ELEVATION: For an explanation of the terms & symbols used see attached sheets.								20 40 60 50 100 150	
		TOPSOIL: CLAY, silty, firm, dark brown	ALLUVIUM			J1	HA	100			
0.20		CLAY: silty, very stiff, moderately plastic, light grey yellow mottled				J2					
1.00											
1.15						J3					
		End of Borehole at 1.15 m									

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

Babbage CONSULTANTS

SUMMARY OF SOIL PROFILE & TESTING

JOB No.	42608
PROJECT: West Coast Road Environmental	
HOLE No.	EHA17

DATE STARTED: 01/09/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 01/09/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/JD

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = X LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
		TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.50		CLAY: silty, very stiff, moderately plastic, light grey yellow mottled	ALLUVIUM			J2	HA	100	
1.00									
1.15						J3			
		End of Borehole at 1.15 m							

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

PROJECT: West Coast Road Environmental		JOB No.	42608
		HOLE No.	EHA18
DATE STARTED: 01/09/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 01/09/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/JD

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

MOISTURE CONTENTS = ●
LIMITS: PLASTIC = × LIQUID = +
20 40 60
IN SITU VANE (kPa) = ✳
50 100 150

OTHER TESTS
Corrected Shear Vane Result **
U = peak / R = remoulded
SPT / Scala Penetrometer

DEPTH (m)	SOIL SYMBOL		GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE
0.00		TOPSOIL: CLAY, silty, firm, dark brown				J1			
0.30		CLAY: silty, very stiff, moderately plastic, light grey yellow mottled	ALLUVIUM			J2	HA	100	
1.00		dark brown orange at 0.6m				J3			
1.15		End of Borehole at 1.15 m							

Remarks:

** IN HOUSE METHOD BASED ON NZ GEOTECHNICAL SOCIETY GUIDELINE

SUMMARY OF SOIL PROFILE & TESTING

Babbage CONSULTANTS

JOB No.	42608		
PROJECT: West Coast Road Environmental	HOLE No.	EHA19	
DATE STARTED: 01/09/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 01/09/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/JD

SOIL/ROCK DESCRIPTION

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

SAMPLES RECOVERED & TEST RESULTS

DEPTH (m)	SOIL SYMBOL	SOIL/ROCK DESCRIPTION	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE	MOISTURE CONTENTS = ● LIMITS: PLASTIC = X LIQUID = + (20 40 60) IN SITU VANE (kPa) = ✳ (50 100 150)	OTHER TESTS: Corrected Shear Vane Result ** U = peak / R = remoulded SPT / Scala Penetrometer
		TOPSOIL: CLAY, silty, firm, dark brown				J1					
0.40		CLAY: silty, very stiff, moderately plastic, light grey yellow mottled	ALLUVIUM			J2	HA	100			
1.00											
1.15		End of Borehole at 1.15 m				J3					

Remarks:

Babbage CONSULTANTS

SUMMARY OF SOIL PROFILE & TESTING

JOB No. 42608

PROJECT: West Coast Road Environmental

HOLE No. EHA20

DATE STARTED: 01/09/2006	METHOD: HA	RIG: 50mm HA	SHEET 1 of 1
DATE FINISHED: 01/09/2006	DRILLED BY: Babbage Consultants Ltd	FLUID: none	LOGGED BY: SL/JD

SOIL/ROCK DESCRIPTION

SAMPLES RECOVERED & TEST RESULTS

DATUM: Ground Surface

SURFACE ELEVATION:

For an explanation of the terms & symbols used see attached sheets.

DEPTH (m)	SOIL SYMBOL	GEOLOGIC UNIT	GROUND WATER	CONDITION	TYPE	METHOD	RECOVERY (%)	PENETRATION RESISTANCE	MOISTURE CONTENTS = ● LIMITS: PLASTIC = X LIQUID = + (20 40 60) IN SITU VANE (kPa) = ✳ (50 100 150)	OTHER TESTS: Corrected Shear Vane Result ** U = peak / R = remoulded SPT / Scala Penetrometer
0.20		FILL			J1					
0.35		FILL			J2					
1.00		ALLUVIUM				HA	100			
1.15		ALLUVIUM			J3					

TOPSOIL: CLAY, silty, firm, dark brown

FILL: TOPSOIL and CLAY: stiff, moderately plastic, light grey

CLAY: silty, very stiff, moderately plastic, light grey yellow mottled

End of Borehole at 1.15 m

Remarks:

EXPLANATION OF TERMS AND SYMBOLS

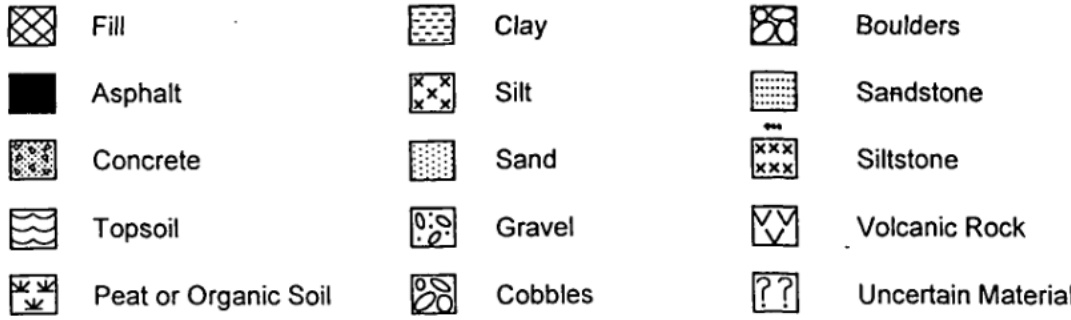
These pages present an explanation of the terms and symbols used on the log sheets entitled "Summary of Soil Profile and Testing". The materials, boundaries and conditions have been interpreted at the test hole locations only and could differ elsewhere on the site.

1. DEPTH / ELEVATION

This column refers to the depth below the ground surface existing at the time of drilling. The corresponding elevations are shown with respect to the datum noted where survey information is available.

2. SOIL AND ROCK SYMBOL

This column contains the standard soil and rock symbols used by Babbage for the materials encountered in the boreholes as shown below:



3. SOIL AND ROCK DESCRIPTION

The terms used to describe the soils and rocks are generally in accordance with the NZ Geomechanics Society's "***Guidelines for the Field Description of Soils and Rocks in Engineering Use***", Nov. 1988 and the NZ Geotechnical Society's "***Guidelines for the Classification and Field Description of Soils and Rocks for Engineering Purposes***" Feb 2003 (draft for comment).

The **soils** are generally described in the following order:

Major soil type, minor soil type/s, consistency (for cohesive soils) or density (for cohesionless soils), plasticity, structure and/or particle shapes, colour, moisture condition, minor inclusions, other significant aspects (e.g. geological description).

Where rock is encountered, the **rock material** and the **rock mass** are described in the following order:

Major rock type, texture and fabric, strength, weathering, colour, discontinuity type, discontinuity spacing, discontinuity orientation, discontinuity opening, discontinuity roughness, geological description (if this can be determined).

Where no field or laboratory tests are carried out, the soils and rock descriptions are based on handling and visual assessment of the recovered samples. **Any design based on such descriptions should allow for the generic nature of the descriptions.**

4. GEOLOGIC UNIT

This column divides the soil and/or rock encountered in the borehole into units that have been formally described and published by geologists (determined from geological maps), or informal units describing what general categories the materials belong to eg. fill, weathered rock, alluvium, etc.

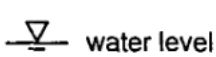
EXPLANATION OF TERMS AND SYMBOLS

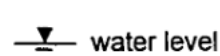
5. PIEZOMETER

This column graphically displays what happens to the hole on completion of drilling – ie. whether the hole is backfilled, left open with a plug, or if a piezometer/standpipe is installed. Details of the installation are given in the "Remarks" section at the bottom of the log.

6. GROUNDWATER

The groundwater level, or the depth at which free water was observed in the borehole, or any seepage observed in the borehole, are denoted by the symbols given below.

 water level at time of drilling

 water level at a later date

observed seepage

The level is the water level in an open hole unless otherwise indicated.

N in the column indicates the water level could not be recorded due to drilling water/mud, rain or hole caving.
NR in this column indicates that no record of the groundwater level was taken.
D in this column indicates that the hole was dry.
F in this column indicates when free water in the hole was first noticed.

7. SOIL SAMPLES

Condition

This column indicates the depth, length and condition of each sample taken. The following symbols are used to represent the condition of the samples.

undisturbed

disturbedremoulde

sample / solid nose SPT test

standard penetration

no recovery

rock core

Type (and sample number)

The type of sample and its sequential number is indicated in this column as follows:

A	auger sample	**P**	piston tube sample
B	block or bulk sample	**S**	standard penetration test (SPT) sample
D	disturbed sample (eg. open barrel core)	**T**	thin-walled tube sample
J	jar sample	**W**	wash or air return sample
GW	ground water sample	**O**	other (see text)

Disturbed soils samples are transported and stored in plastic bags. Machine borehole disturbed samples are transported and stored in core boxes. Tube samples are sealed with plastic bags in the field and with wax on return to the laboratory.

Method

This refers to the particular drilling/sampling technique:

HA	hand auger	**TU**	push-tube
HD	hand dug	**SSA**	solid stem machine auger
HSA	hollow stem machine auger	**SPT**	standard penetration test
EX	hydraulic excavator	**SP**	scala penetrometer
OB	open barrel	**TT**	triple tube
PP	pneumatic percussion	**WD**	wash drill

EXPLANATION OF TERMS AND SYMBOLS

Recovery

This column gives the sample recovery as a percentage of the sampled length for open barrel and triple tube core runs, and also split spoon SPT tests. If nothing is shown, the sample recovery was not measured.

8. TEST RESULTS

Penetration Resistance

The Penetration Resistance is the number of blows required to drive either a 50mm (outside diameter) open end "spilt spoon" or "Raymond" sampler the final 300mm of a 450mm penetration using a 64kg weight falling 760mm. The number of blows required to drive the sampler the final 300mm is referred to as the **"N" value**. The test is referred to as the **Standard Penetration Test or SPT**. The number of blows for each 150mm penetration of the test, or part-penetration when driving is terminated due to hard ground, are given in the "Other Tests" column, e.g. 15, 36, 46 for 55mm would indicate 15 blows for the first 150mm, 36 blows for the second 150mm and 46 blows for a further 55mm penetration and a N value of greater than 50 would be reported.

In some cases a solid steel 60° cone is used for this test (a **solid nose Standard Penetration Test**). For these cases the penetration resistance is reported as an **"S" value** is reported in this column.

Water Content and Atterberg Limits

The moisture or water content, plastic limit and liquid limit of the recovered soil sample, as determined in the laboratory in accordance with the test procedures set out in NZS4402, is plotted against depth. The abbreviations and graphic symbols are defined as follows:

•	w	natural moisture content
×	w_P	plastic limit
+	w_L	liquid limit

Other Tests

The following abbreviations are used to indicate the type of test undertaken:

COM	Compaction Test	pp	Pocket penetrometer strength
*CON	Consolidation test	*Q	Consolidated undrained triaxial test
G	Specific gravity or solid density of particles	qu	Unconfined compressive strength
k	Permeability coefficient	*SB	Shear box test
LS	Linear shrinkage	SP	Scala penetrometer
OC	Organic content	*ST	Swelling test
*PSD	Particle size distribution	SV	Vane shear strength: (U) – undisturbed (R) – remoulded

*These tests are usually summarised separately.

9. REMARKS

Any additional observations or relevant information such as weather conditions, piezometer design, daily drilling progress, survey co-ordinates of the borehole, problems encountered during drilling, etc.

Appendix C

Chemical Analysis Results Summary Tables

Phase	Sample ID	Sample Direction	Depth (m)	Distance from original HA (m)	Laboratory Sample Reference	Date	Total Recoverable Copper	2,4-DDD	2,4-DDE	2,4-DDT	4,4-DDD	4,4-DDE	4,4-DDT	Total DDD, DDE and DDT
	ATV (mg/kg dry wt.)						80	ND	ND	ND	ND	ND	ND	0.7
	Origin of ATV (see Note 1)						1							2
	EHA10	Original	0.15	-	430358/34	31/08/2006	**118**	**0.08**	<0.01	**0.1**	**0.23**	**1.1**	**0.97**	**2.48**
	EHA10.1	North	0.15	5	445971/13	2/02/2007	**105**	**0.021**	**0.057**	**0.101**	**0.796**	**0.085**	**0.736**	**1.8**
Phase 1	EHA10.2	East	0.15	5	445971/14	2/02/2007	**117**	**0.014**	**0.045**	**0.156**	**1.16**	**0.1**	**1.11**	**2.59**
	EHA10.3	South	0.15	5	445971/15	2/02/2007	**64**	**0.013**	**0.037**	**0.062**	**0.471**	**0.072**	**0.405**	**1.06**
	EHA10.4	West	0.15	5	445971/16	2/02/2007	69	**0.018**	**0.056**	**0.036**	**0.46**	**0.13**	**0.276**	**0.98**
	EHA10.5	Base (northeast)	0.5	4	445971/17	2/02/2007	36	**0.019**	**0.023**	**0.029**	**0.293**	**0.092**	**0.137**	**0.59**
	EHA10.6	Base (southwest)	0.5	4	445971/18	2/02/2007	<2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.03
	EHA10.7	West	0.15	15	446862/1	15/02/2007	7	<0.005	<0.005	<0.005	**0.006**	<0.005	<0.005	<0.03
	EHA10.8	Base (west)	0.5	14.5	446862/2	15/02/2007	13	<0.005	<0.005	**0.008**	**0.06**	**0.005**	**0.057**	**0.13**
	EHA10.9	East	0.15	15	446862/3	15/02/2007	**95**	**0.014**	**0.054**	**0.082**	**0.692**	**0.082**	**0.655**	**1.58**
	EHA10.10	Base (east)	0.5	14	Lost	15/02/2007	Lost							
	EHA10.11	Southeast	0.15	15	446862/4	15/02/2007	**161**	**0.015**	**0.092**	**0.119**	**0.95**	**0.144**	**1.03**	**2.35**
	EHA10.12	South	0.15	15	446862/5	15/02/2007	**104**	**0.014**	**0.071**	**0.125**	**0.939**	**0.113**	**0.916**	**2.18**
	EHA10.13	Base (south)	0.5	14	446862/6	15/02/2007	6	<0.005	**0.008**	**0.007**	**0.03**	**0.01**	**0.018**	**0.07**
	EHA10.14	Southwest	0.15	15	446862/7	15/02/2007	8	<0.005	<0.05	<0.005	**0.007**	<0.005	**0.006**	<0.03
	EHA10.15	Northwest	0.15	15	447054/1	19/02/2007	13	**0.006**	<0.005	<0.005	<0.005	<0.005	**0.005**	<0.03
Phase 2	EHA10.16	North	0.15	15	447054/2	19/02/2007	20	<0.005	<0.005	<0.005	**0.068**	<0.005	**0.055**	0.12
	EHA10.17	Base (north)	0.5	14	447054/3	19/02/2007	3	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.03
	EHA10.18	Northeast	0.15	15	447054/4	19/02/2007	58	<0.005	**0.062**	**0.03**	**0.345**	**0.156**	**0.166**	**0.76**
	A5	Southeast	0.15	20	446862/12	15/02/2007	69	**0.008**	**0.02**	**0.029**	**0.363**	**0.045**	**0.241**	**0.71**
	A6	Southeast	0.15	25	446862/13	15/02/2007	50	**0.01**	**0.026**	**0.033**	**0.343**	**0.049**	**0.255**	**0.72**
	A7	Southeast	0.15	30	446862/14	15/02/2007	54	**0.011**	**0.019**	**0.026**	**0.183**	**0.039**	**0.177**	**0.45**
	A8	Southwest	0.15	20	447054/15	19/02/2007	9	<0.005	<0.005	<0.005	**0.005**	<0.005	**0.005**	<0.03
	A9	Southwest	0.15	25	447054/16	19/02/2007	10	<0.005	<0.005	<0.005	**0.01**	<0.005	**0.006**	<0.03
	A10	Southwest	0.15	30	447054/17	19/02/2007	9	<0.05	<0.005	<0.005	**0.023**	<0.005	**0.015**	**0.04**
	EHA10.19	East	0.15	19	448129/1	2/03/2007	78	**0.011**	**0.029**	**0.046**	**0.468**	**0.04**	**0.425**	**1.02**
Phase 3	EHA10.20	Base (south)	0.5	19	448129/2	2/03/2007	13	<0.005	<0.005	<0.005	**0.007**	<0.005	**0.007**	<0.03
	EHA10.21	South	0.15	20	448129/3	2/03/2007	65	<0.005	**0.055**	**0.031**	**0.519**	**0.162**	**0.431**	**1.2**
	EHA10.22	West	0.15	19	448129/4	2/03/2007	19	<0.005	<0.005	**0.008**	**0.098**	**0.006**	**0.09**	0.2
	EHA16	Original	0.15	-	430513/7	1/09/2006	**159**	**0.03**	<0.01	**0.02**	**0.07**	**0.39**	**0.17**	**0.68**
	EHA16.1	North	0.15	5	445971/7	1/02/2007	11	<0.005	<0.005	<0.005	**0.02**	<0.005	**0.005**	**0.03**
	EHA16.2	East	0.15	5	445971/8	1/02/2007	**111**	**0.017**	**0.047**	**0.038**	**0.552**	**0.098**	**0.24**	**0.99**
Phase 1	EHA16.3	South	0.15	5	445971/9	1/02/2007	**108**	**0.018**	**0.033**	**0.022**	**0.416**	**0.082**	**0.125**	**0.7**
	EHA16.4	West	0.15	5	445971/10	1/02/2007	12	<0.005	<0.005	<0.005	**0.021**	<0.005	**0.007**	**0.04**
	EHA16.5	Base (northeast)	0.2	4	445971/11	1/02/2007	18	<0.005	0.006	<0.005	**0.029**	**0.006**	**0.006**	**0.05**
	EHA16.6	Base (southwest)	0.2	4	445971/12	1/02/2007	8	<0.005	<0.005	<0.005	**0.007**	<0.005	<0.005	<0.03
	EHA16.7	North	0.15	10	447054/5	19/02/2007	37	<0.005	0.018	0.01	**0.216**	0.037	0.075	0.36
	EHA16.8	East	0.15	10	447054/6	19/02/2007	**217**	**0.014**	**0.11**	**0.095**	**1.55**	**0.231**	**0.652**	**2.65**
	EHA16.9	Base (east)	0.2	8	447054/7	19/02/2007	6	<0.005	<0.005	<0.005	**0.017**	<0.005	**0.007**	<0.03
	EHA16.10	South	0.15	10	447054/8	19/02/2007	**111**	**0.015**	**0.07**	**0.103**	**1.01**	**0.127**	**0.888**	**2.21**
Phase 2	EHA16.11	Base (south)	0.2	8	447054/9	19/02/2007	15	<0.005	<0.005	<0.005	**0.013**	<0.005	<0.005	<0.03
	EHA16.12	West	0.15	10	447054/10	19/02/2007	9	<0.005	<0.005	<0.005	**0.01**	<0.005	**0.007**	<0.03
	A1	Southeast	0.15	15	446862/8	15/02/2007	19	<0.005	**0.007**	**0.005**	**0.034**	**0.005**	**0.018**	**0.07**
	A2	Southwest	0.15	20	446862/9	15/02/2007	7	<0.005	<0.005	<0.005	**0.02**	**0.005**	**0.008**	**0.04**
	A3	Southeast	0.15	25	446862/10	15/02/2007	22	<0.005	<0.005	**0.041**	<0.005	<0.005	**0.009**	**0.05**
	A4	Southwest	0.15	30	446862/11	15/02/2007	23	<0.005	**0.006**	**0.007**	**0.013**	<0.05	**0.016**	**0.04**
	EHA16.13	East	0.15	13	448129/5	2/03/2007	143	**0.019**	**0.062**	**0.103**	**0.884**	**0.085**	**0.791**	**1.94**
Phase 3	EHA16.14	Base (south)	0.2	13	448129/6	2/03/2007	8	<0.005	<0.005	<0.005	**0.024**	<0.005	**0.007**	**0.03**
	EHA16.15	South	0.15	15	448129/7	2/03/2007	37	<0.005	**0.009**	**0.012**	**0.131**	**0.017**	**0.089**	**0.26**
	EHA16.16	West	0.15	13	448129/8	2/03/2007	4	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.03
	EHA20	Original	0.15	-	430513/19	1/09/2006	**140**	**0.09**	**0.02**	**0.16**	**0.19**	**1.56**	**1.35**	**3.37**
	EHA20.1	North	0.15	5	445971/1	1/02/2007	40	<0.005	<0.005	<0.005	**0.008**	<0.005	**0.005**	<0.03
	EHA20.2	East	0.15	5	445971/2	1/02/2007	70	<0.005	**0.059**	**0.028**	**0.588**	**0.255**	**0.226**	**1.16**
Phase 1	EHA20.3	South	0.15	5	445971/3	1/02/2007	24	<0.005	<0.005	**0.005**	**0.95**	**0.009**	**0.055**	**0.16**
	EHA20.4	West	0.15	5	445971/4	1/02/2007	18	<0.005	<0.005	**0.008**	**0.087**	**0.012**	**0.068**	**0.18**
	EHA20.5	Base (northeast)	0.2	4	445971/5	1/02/2007	25	<0.005	<0.005	<0.005	**0.035**	**0.007**	**0.018**	**0.06**
	EHA20.6	Base (southwest)	0.2	4	445971/6	1/02/2007	3	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.03
	EHA20.7	North	0.15	6	447054/11	19/02/2007	41	<0.005	**0.013**	**0.028**	**0.282**	**0.03**	**0.244**	**0.6**
Phase 2	EHA20.8	East	0.15	7.3	447054/12	19/02/2007	**145**	**0.012**	**0.091**	**0.158**	**1.35**	**0.198**	**1.15**	**2.96**
	EHA20.9	Base (east)	0.2	6.5	447054/13	19/02/2007	**177**	**0.016**	**0.305**	**0.083**	**1.74**	**1.19**	**0.51**	**3.84**
	EHA20.10	South	0.15	6	447054/14	19/02/2007	**100**	**0.007**	**0.054**	**0.055**	**0.61**	**0.1**	**0.401**	**1.23**
	EHA20.11	Base (east)	0.2	6.5	448129/9	2/03/2007	**143**	**0.026**	**0.236**	**0.071**	**1.34**	**0.73**	**0.447**	**2.85**
	EHA20.12	East	0.15	13	448129/10	2/03/2007	48	**0.009**	**0.015**	**0.02**	**0.254**	**0.028**	**0.198**	**0.52**
Phase 3	EHA20.13	South	0.15	15	448129/11	2/03/2007	4	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.03
	EHA20.14	Base (south)	0.2	13	448129/12	2/03/2007	3	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.03
	EHA20.15	West	0.15	13	448129/13	2/03/2007	<2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.03

Note 1:

1 Soil acceptance criteria for residential land use (excluding Chromium) specified in the 'Health and Environmental Guidelines for Selected Timber Treatment Chemicals' (MfE, June 1997) (50% of produce home grown)

2 Soil quality guidelines specified for residential land use in the 'Canadian Environmental Quality Guidelines', (Canadian Council of Ministers of the Environment, CCME 1999, including updates 2001 and 2002)

ND Not Determined

Note 2: **Bold** indicates DDT, DDD or DDD recorded above the laboratory detection limit

indicates concentration exceeds the ATV for that contaminant

original results

Appendix D

Regulatory Approval

From: Rebecca Cleghorn <Rebecca.Cleghorn@arc.govt.nz>
Date: Sent: Fri 1 Dec 2006 16:17
To: sandra.obrien@babbage.co.nz,lotta@babbage.co.nz,felicitas.dhilwayo@waitakere.govt.nz
Cc:
Subject: West Coast Road
Job: 42608/GE : West Coast Rd (No. 423-429) Henderson

To : sandra.obrien@babbage.co.nz,lotta@babbage.co.nz
CC : felicitas.dhilwayo@waitakere.govt.nz
From: Rebecca Cleghorn, Rebecca.Cleghorn@arc.govt.nz

Hi Sandra and Lotta

Having just reviewed the RAP for your Housing Development at no.s 423-429, Henderson, I can confirm that the RAP is acceptable to the ARC Contaminated Land Management Team, and meets the requirements of rule 5.5.42 of the Proposed Auckland Regional Plan: Air, Land and Water.

Please ensure that no sediment-contaminated runoff is allowed to discharge from the remediation works areas, and that all landfill receipts for the disposal of the contaminated soil are kept for inclusion with the SVR. We look forward to receiving the SVR for the site within three months following the completion of remediation.

Have a nice weekend.

Regards,

Rebecca

Rebecca Cleghorn
Contaminated Sites Officer

direct (09) 366 2000 extn 8061
Mondays, Wednesdays and Fridays only
mobile (021) 518 420
fax (09) 366 2155

Auckland Regional Council
21 Pitt Street
Private Bag 92012
Auckland
New Zealand

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_____ NOD32 1894 (20061130) Information _____

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http://www.eset.com

Appendix E

Site Diary

SITE DIARY

Site: West Coast Road (423-429)	Date: 1 February 2007
Engineers Name: Sandra O'Brien (SO'B) Lotta Hagström (LH)	Sheet: 1 of 2
Weather: Dry and sunny, slight breeze	

Time	Comments
9.00	LH and SO'B arrived on site. An excavator was waiting to start excavating the contaminated soil from EHA20.
	LH spoke to Dave (site foreman) and brought to his attention that there was some cement bound sheet material evident on the surface near EHA16. It was speculated that this material may contain asbestos and was agreed that the area containing the majority of this sheeting would be surface scraped using the excavator, and the scraped material would be disposed of to landfill with the contaminated material. SO'B would walk over the remainder of the area and collect any other small pieces of sheeting for disposal.
9.45	Began excavating EHA20 and loading the first truck and trailer (license plate no. DBS452) commenced. Photos were taken prior to and during excavation.
10.00	Finished loading truck DBS452. Truck driver donned disposable overalls and a dust mask and began covering truck and trailer.
	LH noted that the first excavation area appeared to be deeper than necessary and instructed SO'B to request the excavator operator not to excavate as deep over the remainder of the area.
	Second truck and trailer (license place no. ASL930) arrived on site.
	LH left site.
10.20	Truck DBS452 fully covered and left site.
10.30	Started loading truck ASL930 with the remainder of the material from EHA20.
10.40	Truck driver estimated that his truck and trailer were at approximately 30 t and requested that no more material be added. (Note (2/2/07): driver reported that this load weighed 22 t when checked at the landfill). Driver donned PPE and began covering the truck and trailer.
11.00	Truck ASL930 fully covered and left site.
11.10	Bevin (earthworks contractor's representative) asked SO'B if the remainder of the material in the vicinity of EHA20 could be removed so that better access to the area which is currently being filled (south of EHA20) could be gained. SO'B advised that the soil in the vicinity of EHA20 should remain in place until the results of the validation sampling have been received. SO'B explained to Bevin that the validation results will confirm if all of the contaminated material from this area has been sent for disposal or if there is additional contaminated material which will need to be excavated and disposed of off site.
11.20	SO'B walked over the area adjacent to EHA16 where the cement bound sheeting was noted and, whilst wearing gloves, moved all visible pieces of sheeting to the area scheduled for surface skimming.
1.55	Truck DBS452 arrived back on site
2.00	Loaded the remaining material from EHA20 into truck DBS452.
	Truck ASL930 arrived back on site.
2.05	Started surface scraping the area where the pieces of cement bound sheeting were noted and loaded the scraped material into the truck.
2.15	Began excavating area EHA16 into truck DBS452.
	SO'B took photos of area EHA16 prior to and during excavation.
2.45	Started filling truck ASL930 with material from EHA16.
2.50	Truck DSB452 appropriately covered and left site.
	Excavation of EHA16 completed.
2.55	Started loading some of EHA10 into truck ASL930.
	SO'B took photos of area EHA10 prior to and during excavation.

SITE DIARY

Time	Comments
3.10	Loading of ASL930 complete.
	Excavator began widening the haulage road to enable the truck to leave the site.
	Truck driver spoke to SO'B and told her that it would not be possible to bring the contaminated material to Hampton Downs landfill that evening as the landfill site is approximately 2 hours drive from site and closes at 4.30 pm. Both drivers would go to Hampton Downs first thing in the morning (landfill opens at 6.30) and planned to be on site for between 8.30-9.00 am.
3.25	Truck ASL930 fully covered and left site.
3.30	SO'B took validation samples from the sides and bases of EHA20 and EHA16 excavation areas along with photographs showing the excavations.
4.00	SO'B left site.

SITE DIARY

Site: West Coast Road (423-429)	**Date: 2 February 2007**
Engineers Name: Sandra O'Brien (SO'B)	**Sheet: 1 of 1**
Weather: Dry after earlier rain, cloudy	

Time	Comments
8.30	SO'B arrived on site. Excavator ready to begin removing the remaining material from EHA10 but was waiting for the trucks to arrive.
9.45	Excavator began scraping the clay off the haulage road in the vicinity of EHA10, as part of the material beneath the haulage road is included in the 10 m x 10 m area surrounding EHA10 which required excavation and disposal.
9.50	Truck ASL930 arrived on site.
10.00	Began filling truck ASL930 with the remaining material from EHA10.
	SO'B asked the truck driver where the trucks were parked overnight and was informed that truck DBS452 was parked at the company's depot in East Tamaki overnight and that truck ASL930 was parked at a truck stop in Kumeu, Rodney District overnight.
10.25	Finished excavating EHA10.
	SO'B took validation samples from the sides and base of EHA10 excavation area along with photographs showing the excavation.
10.40	Truck ASL930 fully covered.
	Haulage road in the vicinity of EHA10 reinstated.
10.50	Truck ASL930 left site
11.00	SO'B left site.

SITE DIARY

Site: West Coast Road (423-429)	Date: 15 February 2007
Engineers Name: Sandra O'Brien (SO'B)	Sheet: 1 of 1
Weather: Sunny	

Time	Comments
10.00	SO'B arrived on site and undertook a site walkover.
	It was noted that excavation at EHA10 can only go to within 0.5 m of the stream.
	It was also noted that the vegetation has been removed in the vicinity of the pond in the southwest of the site and the fencing which previously surrounded the pond has been removed.
11.00	Truck ASL930 arrived on site.
	Started loading the section of EHA10 to the south and west (towards the stream).
11.10	Finished loading truck ASL930.
11.30	Driver began to cover truck and trailer but stopped as he did not have disposable overalls. SO'B phoned Alistair (site foreman) to arrange for disposable overalls.
	Truck DBS452 arrived on site.
11.35	Began filling truck DBS452 with material from the south and east of EHA10 (towards the fence).
11.45	Finished loading truck DBS452.
12.00	Disposable overalls arrived. Drivers began to cover both trucks.
12.25	Both trucks covered and left site.
1.30	Areas of cut around EHA10, EHA16 and EHA20 marked out.
	Samples EHA10.7-EHA10.10 taken.
2.30	SO'B took sample of water from sediment control pond.
	Began to advance hand auger holes between EHA16 and EHA20.
3.15	Hand auger holes A1-A4 completed and samples recovered.
3.35	Hand auger holes A5 and A6, to the south of EHA10, completed and samples recovered.
	Trucks ASL930 and DBS452 arrived back on site.
3.45	Began loading the remainder of the southern and western portions of cut in the vicinity of EHA10 into truck ASL930.
	Advanced hand auger A7 and took sample.
4.00	Finished loading truck ASL930.
	Began loading the remainder of the southern, eastern and western portions of cut in the vicinity of EHA10 into truck DSB452.
4.20	Finished loading DSB452.
	Recovered samples EHA10.11-EHA10.14.
4.35	Trucks covered and left site.
4.45	SO'B left site.

SITE DIARY

Site: West Coast Road (423-429)	**Date: 19 February 2007**
Engineers Name: Sandra O'Brien (SO'B)	**Sheet: 1 of 1**
Weather: Cloudy	

Time	Comments
9.45	SO'B arrived on site and undertook site walkover.
10.15	Checked the cut areas in the vicinity of EHA16 and EHA20.
	NOTE: The additional cut areas at EHA10, EHA16, EHA20 were excavated on 16/02/07 while there was no representative from BCL on site to oversee the works.
	Recovered samples EHA20.7-EHA20.10 and EHA16.7-EHA16.12.
10.45	Checked EHA10.
	Recovered hand auger samples A8, A9 and A10.
11.15	Took samples EHA10.15-EHA10.18.
11.30	SO'B left site.

SITE DIARY

Site: West Coast Road (423-429)	**Date: 2 March 2007**
Engineers Name: Sandra O'Brien (SO'B)	**Sheet: 1 of 1**
Weather: Sunny	

Time	Comments
8.30	SO'B arrived on site.
	Truck ASL930 was already on site and the digger was ready to begin excavating EHA20
9.15	Finished filling truck ASL930
9.40	SO'B took validation samples from EHA20
	Marked out further cut for EHA16
9.45	Truck DBS452 arrived on site
	Marked out further cut from EHA10
9.55	Truck ASL930 covered and left site
	Dug out the remainder of EHA20 and all of EHA16 extra cut
	Area of rubble (mostly brick) noted in the south of the EHA16 cut area
10.30	DSB452 covered and left site
	SO'B took validation samples from EHA16 additional cut area.
11.00	SO'B left site.
1.10	SO'B returned to site
	Truck ASL930 was already on site and the digger had begun loading the additional cut from EHA10 into the truck
1.20	Truck ASL930 filled
	SO'B took photos of the EHA10, EHA16 and EHA20 excavations
1.30	Truck ASL930 covered and left site
1.35	Truck DBS452 arrived on site
1.45	Began loading the remainder of the EHA10 additional cut area into DBS452
2.00	Finished loading EHA10 into DBS452
2.10	SO'B took validation samples from EHA10 additional cut area
2.30	DBS452 covered and left site
	SO'B left site

Appendix F

Photographs

Photo 1: EHA10 excavated to the riparian margin. 19/02/07.

Photo 2: EHA10 excavated to the boundary fence. 19/02/07.

Babbage CONSULTANTS
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PO BOX 2027, AUCKLAND I, NEW ZEALAND
PHONE 09 379 9980, FAX 09 377 1170

423-429 West Coast Road

New Zealand Housing Foundation.

Scale:	NOT TO SCALE
Title:	Site Photographs
Job No.:	42608/GE
Photo:	E01

Photo 3: Loading of contaminated material from EHA 10 into truck ASL930. 15/02/07

Photo 4: Hotspot EH16 marked out. 01/02/07.

Babbage CONSULTANTS
109 FANSHAWE STREET, AUCKLAND
PO BOX 2027, AUCKLAND I, NEW ZEALAND
PHONE 09 379 9980, FAX 09 377 1170

423-429 West Coast Road

New Zealand housing Foundation.

Scale:	NOT TO SCALE
Title:	Site Photographs
Job No.:	42608/GE
Photo:	E02

Photo 5: EHA16 excavated to the boundary. 19/02/07

Photo 6: Excavation of material from EHA20. 01/02/07.

Babbage CONSULTANTS
109 FANSHAWE STREET, AUCKLAND
PO BOX 2027, AUCKLAND I, NEW ZEALAND
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423-429 West Coast Road

New Zealand housing Foundation.

Scale:	NOT TO SCALE
Title:	Site Photographs
Job No.:	42608/GE
Photo:	E03

Photo 7: EHA20 excavated to tree line. 02/03/07.

Photo 8: Covered trick DSB452 eaving site. 15/02/07.

Babbage CONSULTANTS
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PO BOX 2027, AUCKLAND I, NEW ZEALAND
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423-429 West Coast Road

New Zealand Housing Foundation.

Scale:	NOT TO SCALE
Title:	Site Photographs
Job No.:	42608/GE
Photo:	E04

Appendix G

Laboratory Analysis Reports (Validation Results)

Hill Laboratories
A WORLD LEADER IN ANALYTICAL SERVICES

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Email mail@hill-labs.co.nz
Web www.hill-labs.co.nz

Client: Babbage Consultants
Address: P O Box 2027,
Auckland
Contact: Sandra O'Brien

Laboratory No: 445971
Date Registered: 7/02/2007
Date Completed: 13/02/2007
Page Number: 1 of 3

Client's Reference: 42608/GE

15 FEB 2007
SOB.

The results for the analyses you requested are as follows:

Sample Type: Environmental Solids, Soil

Sample Name	Lab No	Total Recoverable Copper (mg/kg dry wt)
EHA20.1 01/02/07	445971/1	40
EHA20.2 01/02/07	445971/2	70
EHA20.3 01/02/07	445971/3	24
EHA20.4 01/02/07	445971/4	18
EHA20.5 01/02/07	445971/5	25
EHA20.6 01/02/07	445971/6	3
EHA16.1 01/02/07	445971/7	11
EHA16.2 01/02/07	445971/8	111
EHA16.3 01/02/07	445971/9	108
EHA16.4 01/02/07	445971/10	12
EHA16.5 01/02/07	445971/11	18
EHA16.6 01/02/07	445971/12	8
EHA10.1 02/02/07	445971/13	105
EHA10.2 02/02/07	445971/14	117
EHA10.3 02/02/07	445971/15	64
EHA10.4 02/02/07	445971/16	69
EHA10.5 02/02/07	445971/17	36
EHA10.6 02/02/07	445971/18	< 2

DDT screening in soils

Sample Name	EHA20.1 01/02/07	EHA20.2 01/02/07	EHA20.3 01/02/07	EHA20.4 01/02/07	EHA20.5 01/02/07
Lab No	445971/1	445971/2	445971/3	445971/4	445971/5
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
2,4'-DDD	< 0.005	0.059	< 0.005	< 0.005	< 0.005
2,4'-DDT	< 0.005	0.028	0.005	0.008	< 0.005
4,4'-DDE	0.008	0.588	0.095	0.087	0.035
4,4'-DDD	< 0.005	0.255	0.009	0.012	0.007
4,4'-DDT	0.005	0.226	0.055	0.068	0.018
Total DDT isomers	< 0.03	1.16	0.16	0.18	0.06

365 laboratory

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The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.

DDT screening in soils

Sample Name	EHA20.6 01/02/07	EHA16.1 01/02/07	EHA16.2 01/02/07	EHA16.3 01/02/07	EHA16.4 01/02/07
Lab No	445971/6	445971/7	445971/8	445971/9	445971/10
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005	0.017	0.018	< 0.005
2,4'-DDD	< 0.005	< 0.005	0.047	0.033	< 0.005
2,4'-DDT	< 0.005	< 0.005	0.038	0.022	< 0.005
4,4'-DDE	< 0.005	0.020	0.552	0.416	0.021
4,4'-DDD	< 0.005	< 0.005	0.098	0.082	< 0.005
4,4'-DDT	< 0.005	0.005	0.240	0.125	0.007
Total DDT isomers	< 0.03	0.03	0.99	0.70	0.04

DDT screening in soils

Sample Name	EHA16.5 01/02/07	EHA16.6 01/02/07	EHA10.1 02/02/07	EHA10.2 02/02/07	EHA10.3 02/02/07
Lab No	445971/11	445971/12	445971/13	445971/14	445971/15
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005	0.021	0.014	0.013
2,4'-DDD	0.006	< 0.005	0.057	0.045	0.037
2,4'-DDT	< 0.005	< 0.005	0.101	0.156	0.062
4,4'-DDE	0.029	0.007	0.796	1.16	0.471
4,4'-DDD	0.006	< 0.005	0.085	0.100	0.072
4,4'-DDT	0.006	< 0.005	0.736	1.11	0.405
Total DDT isomers	0.05	< 0.03	1.80	2.59	1.06

DDT screening in soils

Sample Name	EHA10.4 02/02/07	EHA10.5 02/02/07	EHA10.6 02/02/07
Lab No	445971/16	445971/17	445971/18
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	0.018	0.019	< 0.005
2,4'-DDD	0.056	0.023	< 0.005
2,4'-DDT	0.036	0.029	< 0.005
4,4'-DDE	0.460	0.293	< 0.005
4,4'-DDD	0.130	0.092	< 0.005
4,4'-DDT	0.276	0.137	< 0.005
Total DDT isomers	0.98	0.59	< 0.03

Sample Containers

The following table shows the sample containers that were associated with this job.

Container Description	Container Size (mL)	Number of Containers
Glass Jar (Soils)	300	18

Details of sample bottle preparation procedures are available upon request.

Summary of Methods Used and Detection Limits

The following table(s) gives a brief description of the methods used to conduct the analyses for this job.
The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Substance Type: Environmental Solids

Parameter	Method Used	Detection Limit
Dry and sieve sample	Air dry (35 °C), sieved to pass 2mm.	N/A
Total Recoverable digest	Nitric / hydrochloric acid digestion. US EPA 200.2	N/A
Total Recoverable Copper	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
DDT screening in soils	Air dry soil, grind, hexane/acetone extraction, florisil cleanup, GC-ECD.	N/A

Analyst's Comments:

These samples were collected by yourselves and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the submitter.

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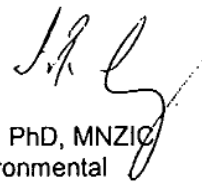

Terry Cooney MSc (Hons), PhD, MNZIC
Divisional Manager – Environmental

Peter Robinson MSc (Hons), PhD, FNZIC
Client Services Manager - Environmental Division

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26 FEB 2007
Lotta .

Client: Babbage Consultants
Address: P O Box 2027,
Auckland
Contact: Lotta Hagstrom

Laboratory No: 446862
Date Registered: 17/02/2007
Date Completed: 21/02/2007
Page Number: 1 of 3

Client's Reference: 42608/GE

The results for the analyses you requested are as follows:

Sample Type: Environmental Solids, Soil

Sample Name	Lab No	Total Recoverable Copper (mg/kg dry wt)
EHA10.7 15/2/07	446862/1	7
EHA10.8 15/2/07	446862/2	13
EHA10.9 15/2/07	446862/3	95
EHA10.11 15/2/07	446862/4	161
EHA10.12 15/2/07	446862/5	104
EHA10.13 15/2/07	446862/6	6
EHA10.14 15/2/07 15/2/07	446862/7	8
A1/0.15m 15/2/07	446862/8	19
A2/0.15m 15/2/07	446862/9	7
A3/0.15m 15/2/07	446862/10	22
A4/0.15m 15/2/07	446862/11	23
A5 15/2/07	446862/12	69
A6 15/2/07	446862/13	50
A7 15/2/07	446862/14	54

DDT screening in soils

Sample Name	EHA10.7 15/2/07	EHA10.8 15/2/07	EHA10.9 15/2/07	EHA10.11 15/2/07	EHA10.12 15/2/07
Lab No.	446862/1	446862/2	446862/3	446862/4	446862/5
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005	0.014	0.015	0.014
2,4'-DDD	< 0.005	< 0.005	0.054	0.092	0.071
2,4'-DDT	< 0.005	0.008	0.082	0.119	0.125
4,4'-DDE	0.006	0.060	0.692	0.950	0.939
4,4'-DDD	< 0.005	0.005	0.082	0.144	0.113
4,4'-DDT	< 0.005	0.057	0.655	1.03	0.916
Total DDT isomers	< 0.03	0.13	1.58	2.35	2.18

ilac-MRA 365 laboratory

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The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.

DDT screening in soils

Sample Name	EHA10.13 15/2/07	EHA10.14 15/2/07 15/2/07	A1/0.15m 15/2/07	A2/0.15m 15/2/07	A3/0.15m 15/2/07
Lab No	446862/6	446862/7	446862/8	446862/9	446862/10
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
2,4'-DDD	0.008	< 0.005	0.007	< 0.005	< 0.005
2,4'-DDT	0.007	< 0.005	0.005	< 0.005	0.041
4,4'-DDE	0.030	0.007	0.034	0.020	< 0.005
4,4'-DDD	0.010	< 0.005	0.005	0.005	< 0.005
4,4'-DDT	0.018	0.006	0.018	0.008	0.009
Total DDT isomers	0.07	< 0.03	0.07	0.04	0.05

DDT screening in soils

Sample Name	A4/0.15m 15/2/07	A5 15/2/07	A6 15/2/07	A7 15/2/07
Lab No	446862/11	446862/12	446862/13	446862/14
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	0.008	0.010	0.011
2,4'-DDD	0.006	0.020	0.026	0.019
2,4'-DDT	0.007	0.029	0.033	0.026
4,4'-DDE	0.013	0.363	0.343	0.183
4,4'-DDD	< 0.005	0.045	0.049	0.039
4,4'-DDT	0.016	0.241	0.255	0.177
Total DDT isomers	0.04	0.71	0.72	0.45

Sample Type: Water,

Sample Name		Pondwater 15/2/07
Lab No		446862/15
Total Boron	(g.m-3)	0.039
Total Iron	(g.m-3)	0.43
Total Manganese	(g.m-3)	0.0655
Total Aluminium	(g.m-3)	0.299
Total Arsenic	(g.m-3)	< 0.001
Total Cadmium	(g.m-3)	< 0.00005
Total Cobalt	(g.m-3)	< 0.0002
Total Chromium	(g.m-3)	< 0.0005
Total Copper	(g.m-3)	0.0042
Total Nickel	(g.m-3)	< 0.0005
Total Lead	(g.m-3)	0.0005
Total Zinc	(g.m-3)	0.015

Sample Containers

The following table shows the sample containers that were associated with this job.

Container Description	Container Size (mL)	Number of Containers
Glass Jar (Soils)	300	14
Unpreserved (1L)	1000	1
Nitric Preserved Pottle	100	1

Details of sample bottle preparation procedures are available upon request.

Summary of Methods Used and Detection Limits

The following table(s) gives a brief description of the methods used to conduct the analyses for this job.
The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Substance Type: Environmental Solids

Parameter	Method Used	Detection Limit
Dry and sieve sample	Air dry (35 °C), sieved to pass 2mm.	N/A
Total Recoverable digest	Nitric / hydrochloric acid digestion. US EPA 200.2	N/A
Total Recoverable Copper	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
DDT screening in soils	Air dry soil, grind, hexane/acetone extraction, florisil cleanup, GC-ECD.	N/A

Substance Type: Water

Parameter	Method Used	Detection Limit
Total (nitric) acid digest for low level metals	Nitric acid digestion. APHA 3030 E 20th ed. 1998	N/A
Total Boron	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.005 g.m-3
Total Iron	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.02 g.m-3
Total Manganese	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.0005 g.m-3
Total Aluminium	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.003 g.m-3
Total Arsenic	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.001 g.m-3
Total Cadmium	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.00005 g.m-3
Total Cobalt	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.0002 g.m-3
Total Chromium	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.0005 g.m-3
Total Copper	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.0005 g.m-3
Total Nickel	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.0005 g.m-3
Total Lead	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.0001 g.m-3
Total Zinc	Nitric acid digestion. ICP-MS. APHA 3125 B 20th ed. 1998	0.001 g.m-3

Analyst's Comments:

These samples were collected by yourselves and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the submitter.

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Terry Cooney MSc (Hons), PhD, MNZIC
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S o'B.

Client: *Babbage Consultants*
Address: *P O Box 2027, Auckland*
Contact: *Sandra O'Brien*

Laboratory No: *447054*
Date Registered: *20/02/2007*
Date Completed: *27/02/2007*
Page Number: *1 of 3*

Client's Reference: 42608/GE

The results for the analyses you requested are as follows:

Sample Type: Environmental Solids, Soil

Sample Name	Lab No	Total Recoverable Copper (mg/kg dry wt)
EHA10.15 0.15m 19/02/07	447054/1	13
EHA10.16 0.15m 19/02/07	447054/2	20
EHA10.17 0.5m 19/02/07	447054/3	3
EHA10.18 0.15m 19/02/07	447054/4	58
EHA16.7 0.15m 19/02/07	447054/5	37
EHA16.8 0.15m 19/02/07	447054/6	217
EHA16.9 0.2m 19/02/07	447054/7	6
EHA16.10 0.15m 19/02/07	447054/8	111
EHA16.11 0.2m 19/02/07	447054/9	15
EHA16.12 0.15m 19/02/07	447054/10	9
EHA20.7 0.15m 19/02/07	447054/11	41
EHA20.8 0.15m 19/02/07	447054/12	145
EHA20.9 0.2m 19/02/07	447054/13	177
EHA20.10 0.15m 19/02/07	447054/14	100
A8 0.15m 19/02/07	447054/15	9
A9 0.15m 19/02/07	447054/16	10
A10 0.15m 19/02/07	447054/17	9

365 laboratory

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The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.

DDT screening in soils

Sample Name	EHA10.15 0.15m 19/02/07	EHA10.16 0.15m 19/02/07	EHA10.17 0.5m 19/02/07	EHA10.18 0.15m 19/02/07	EHA16.7 0.15m 19/02/07
Lab No	447054/1	447054/2	447054/3	447054/4	447054/5
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	0.006	< 0.005	< 0.005	< 0.005	< 0.005
2,4'-DDD	< 0.005	< 0.005	< 0.005	0.062	0.018
2,4'-DDT	< 0.005	< 0.005	< 0.005	0.030	0.010
4,4'-DDE	< 0.005	0.068	< 0.005	0.345	0.216
4,4'-DDD	< 0.005	< 0.005	< 0.005	0.156	0.037
4,4'-DDT	0.005	0.055	< 0.005	0.166	0.075
Total DDT isomers	< 0.03	0.12	< 0.03	0.76	0.36

DDT screening in soils

Sample Name	EHA16.8 0.15m 19/02/07	EHA16.9 0.2m 19/02/07	EHA16.10 0.15m 19/02/07	EHA16.11 0.2m 19/02/07	EHA16.12 0.15m 19/02/07
Lab No	447054/6	447054/7	447054/8	447054/9	447054/10
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	0.014	< 0.005	0.015	< 0.005	< 0.005
2,4'-DDD	0.110	< 0.005	0.070	< 0.005	< 0.005
2,4'-DDT	0.095	< 0.005	0.103	< 0.005	< 0.005
4,4'-DDE	1.55	0.017	1.01	0.013	0.010
4,4'-DDD	0.231	< 0.005	0.127	< 0.005	< 0.005
4,4'-DDT	0.652	0.007	0.888	< 0.005	0.007
Total DDT isomers	2.65	< 0.03	2.21	< 0.03	< 0.03

DDT screening in soils

Sample Name	EHA20.7 0.15m 19/02/07	EHA20.8 0.15m 19/02/07	EHA20.9 0.2m 19/02/07	EHA20.10 0.15m 19/02/07	A8 0.15m 19/02/07
Lab No	447054/11	447054/12	447054/13	447054/14	447054/15
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	0.012	0.016	0.007	< 0.005
2,4'-DDD	0.013	0.091	0.305	0.054	< 0.005
2,4'-DDT	0.028	0.158	0.083	0.055	< 0.005
4,4'-DDE	0.282	1.35	1.74	0.610	0.005
4,4'-DDD	0.030	0.198	1.19	0.100	< 0.005
4,4'-DDT	0.244	1.15	0.510	0.401	0.005
Total DDT isomers	0.60	2.96	3.84	1.23	< 0.03

DDT screening in soils

Sample Name	A9 0.15m 19/02/07	A10 0.15m 19/02/07
Lab No	447054/16	447054/17
Units	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005
2,4'-DDD	< 0.005	< 0.005
2,4'-DDT	< 0.005	< 0.005
4,4'-DDE	0.010	0.023
4,4'-DDD	< 0.005	< 0.005
4,4'-DDT	0.006	0.015
Total DDT isomers	< 0.03	0.04

Sample Containers

The following table shows the sample containers that were associated with this job.

Container Description	Container Size (mL)	Number of Containers
Glass Jar (Soils)	300	17

Details of sample bottle preparation procedures are available upon request.

Summary of Methods Used and Detection Limits

The following table(s) gives a brief description of the methods used to conduct the analyses for this job.
The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Substance Type: Environmental Solids

Parameter	Method Used	Detection Limit
Dry and sieve sample	Air dry (35 °C), sieved to pass 2mm.	N/A
Total Recoverable digest	Nitric / hydrochloric acid digestion. US EPA 200.2	N/A
Total Recoverable Copper	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
DDT screening in soils	Air dry soil, grind, hexane/acetone extraction, florisil cleanup, GC-ECD.	N/A

Analyst's Comments:

These samples were collected by yourselves and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the submitter.

This report must not be reproduced, except in full, without the written consent of the signatory.

Terry Cooney MSc (Hons), PhD, MNZIC
Divisional Manager - Environmental

Peter Robinson MSc (Hons), PhD, FNZIC
Client Services Manager - Environmental Division

Laboratories
A WORLD LEADER IN ANALYTICAL SERVICES

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Web www.hill-labs.co.nz

RECEIVED
15 MAR 2007
SO'B

Client: Babbage Consultants
Address: P O Box 2027, Auckland
Contact: Sandra O'Brien

Laboratory No: 448129
Date Registered: 5/03/2007
Date Completed: 12/03/2007
Page Number: 1 of 3

Client's Reference: 42608/GE

The results for the analyses you requested are as follows:

Sample Type: Environmental Solids, Soil

Sample Name	Lab No	Total Recoverable Copper (mg/kg dry wt)
EHA10.19 2/3/07	448129/1	78
EHA10.20 2/3/07	448129/2	13
EHA10.21 2/3/07	448129/3	65
EHA10.22 2/3/07	448129/4	19
EHA16.13 2/3/07	448129/5	143
EHA16.14 2/3/07	448129/6	8
EHA16.15 2/3/07	448129/7	37
EHA16.16 2/3/07	448129/8	4
EHA20.11 2/3/07	448129/9	143
EHA20.12 2/3/07	448129/10	48
EHA20.13 2/3/07	448129/11	4
EHA20.14 2/3/07	448129/12	3
EHA20.15 2/3/07	448129/13	< 2

DDT screening in soils

Sample Name	EHA10.19 2/3/07	EHA10.20 2/3/07	EHA10.21 2/3/07	EHA10.22 2/3/07	EHA16.13 2/3/07
Lab No	448129/1	448129/2	448129/3	448129/4	448129/5
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	0.011	< 0.005	< 0.005	< 0.005	0.019
2,4'-DDD	0.029	< 0.005	0.055	< 0.005	0.062
2,4'-DDT	0.046	< 0.005	0.031	0.008	0.103
4,4'-DDE	0.468	0.007	0.519	0.098	0.884
4,4'-DDD	0.040	< 0.005	0.162	0.006	0.085
4,4'-DDT	0.425	0.007	0.431	0.090	0.791
Total DDT isomers	1.02	< 0.03	1.20	0.20	1.94

ilac-MRA 365 laboratory

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.

DDT screening in soils

Sample Name	EHA16.14 2/3/07	EHA16.15 2/3/07	EHA16.16 2/3/07	EHA20.11 2/3/07	EHA20.12 2/3/07
Lab No	448129/6	448129/7	448129/8	448129/9	448129/10
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005	< 0.005	0.026	0.009
2,4'-DDD	< 0.005	0.009	< 0.005	0.236	0.015
2,4'-DDT	< 0.005	0.012	< 0.005	0.071	0.020
4,4'-DDE	0.024	0.131	< 0.005	1.34	0.254
4,4'-DDD	< 0.005	0.017	< 0.005	0.730	0.028
4,4'-DDT	0.007	0.089	< 0.005	0.447	0.198
Total DDT isomers	0.03	0.26	< 0.03	2.85	0.52

DDT screening in soils

Sample Name	EHA20.13 2/3/07	EHA20.14 2/3/07	EHA20.15 2/3/07
Lab No	448129/11	448129/12	448129/13
Units	(mg/kg dry wt)	(mg/kg dry wt)	(mg/kg dry wt)
2,4'-DDE	< 0.005	< 0.005	< 0.005
2,4'-DDD	< 0.005	< 0.005	< 0.005
2,4'-DDT	< 0.005	< 0.005	< 0.005
4,4'-DDE	< 0.005	< 0.005	< 0.005
4,4'-DDD	< 0.005	< 0.005	< 0.005
4,4'-DDT	< 0.005	< 0.005	< 0.005
Total DDT isomers	< 0.03	< 0.03	< 0.03

Sample Containers

The following table shows the sample containers that were associated with this job.

Container Description	Container Size (mL)	Number of Containers
Glass Jar (Soils)	300	13

Details of sample bottle preparation procedures are available upon request.

Summary of Methods Used and Detection Limits

The following table(s) gives a brief description of the methods used to conduct the analyses for this job.
The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

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Parameter	Method Used	Detection Limit
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Total Recoverable digest	Nitric / hydrochloric acid digestion. US EPA 200.2	N/A
Total Recoverable Copper	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
DDT screening in soils	Air dry soil, grind, hexane/acetone extraction, florisil cleanup, GC-ECD.	N/A

Analyst's Comments:

These samples were collected by yourselves and analysed as received at the laboratory.

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Terry Cooney MSc (Hons), PhD, MNZIC
Divisional Manager - Environmental

Peter Robinson MSc (Hons), PhD, FNZIC
Client Services Manager - Environmental Division

Appendix H

Landfill Disposal Dockets

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 6360350

DATE 01/02/07 TIME IN 12:42 TIME OUT 12:59 REF. No.

ACCOUNT 18125.000 FLEET 002 DOCKET No. 1038030

CUSTOMER R J Doughty Ltd

Waste Permit 11480

GROSS (t)	38.240
TARE (t)	15.900
NET (t)	22.340

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
62636 Sp Category B - agriculture	TN		22.340	

DOCKET

Fleet 10

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 6360350

DATE 01/02/07 TIME IN 11:55 TIME OUT 12:34 REF. No.

ACCOUNT 18125.000 FLEET 001 DOCKET No. 1038021

CUSTOMER R J Doughty Ltd

Waste Permit 11480

GROSS (t)	45.200
TARE (t)	14.840
NET (t)	30.360

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
62638 Sp Category B - agriculture	TN		30.360	

DOCKET

Fleet 25

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 6360250

DATE 02/02/07 TIME IN 06:39 TIME OUT 07:35 REF No.

ACCOUNT 18125.000 FLEET 001 DOCKET No. 1038096

CUSTOMER R T Doughty Ltd

Waste Permit 11480

GROSS (t) 41.480

TARE (t) 14.780

NET (t) 26.700

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
2634 Sp Category B - Agriculture	TN		26.700	

DOCKET

Via RJ Doughty/2.

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 6360250

DATE 02/02/07 TIME IN 06:36 TIME OUT 07:17 REF No.

ACCOUNT 18125.000 FLEET 002 DOCKET No. 1038094

CUSTOMER R T Doughty Ltd

Waste Permit 11480

GROSS (t) 49.300

TARE (t) 15.340

NET (t) 33.960

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
6.63% Sp Category B - agriculture	TN		33.960	

DOCKET

RJ Doughty/10

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 [illegible]

DATE 15/02/07 TIME IN 14:44 TIME OUT 15:17 REF No.

ACCOUNT 181.25.000 FLEET 002 DOCKET No. 1039364

CUSTOMER R J Doughty Ltd

Waste Permit 11480.

GROSS (t) [illegible]

TARE (t) [illegible]

NET (t) [illegible]

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
0263 Sp Category B - agriculture	TN		[illegible]	

DOCKET

Fleet 10

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 [illegible]

DATE 02/02/07 TIME IN 12:46 TIME OUT 13:32 REF No.

ACCOUNT 181.25.000 FLEET 002 DOCKET No. 1038187

CUSTOMER R J Doughty Ltd

Waste Permit 11480

GROSS (t) 23.920

TARE (t) 10.640

NET (t) 13.280

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
0263 Sp Category B - agriculture	TN		13.280	

DOCKET

Fleet 10

TJC

EC 10260?

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 [illegible]

DATE 15/02/07 TIME IN 14:47 TIME OUT 14:50 REF No.

ACCOUNT 18125.000 FLEET 001 Ddocket No. 1039363

CUSTOMER R J Doughty Ltd

Waste Permit 11480

GROSS (t) 44.450

TARE (t) 14.230

NET (t) 30.220

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
02635 Sp Category B - agricultural	TN		30.220	

Docket

Fleet 25

EC. 10260?

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 [illegible]

DATE 16/02/07 TIME IN 06:34 TIME OUT 07:05 REF No.

ACCOUNT 18125.000 FLEET 001 DOCKET No. 1039408

CUSTOMER R J Doughty Ltd

Waste Permit 11480

GROSS (t) 47.960

TARE (t) 14.680

NET (t) 33.280

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
02635 Sp Category B - agriculture	TN		33.280	

Docket

Fleet 25

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 [illegible]

DATE 16/02/07 TIME IN 10:38 TIME OUT 11:15 REF. No.

ACCOUNT 18125.000 FLEET 004 DOCKET No. 1039465

CUSTOMER R J Doughty Ltd

Waste Permit 11480

GROSS (t)	44.480
TARE (t)	15.720
NET (t)	28.760

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
62628 Sp Category B - agricultura	TN		28.760	

DOCKET

fleet 26

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 6360350

DATE 16/02/07 TIME IN 15:04 TIME OUT 15:46 REF. No.

ACCOUNT 18125.000 FLEET 004 DOCKET No. 1039525

CUSTOMER R J Doughty Ltd

Waste Permit 11480

GROSS (t)	44.960
TARE (t)	15.500
NET (t)	29.460

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
62628 Sp Category B - agricultura	TN		29.460	

DOCKET

fleet 02

COMPANY EnviroWaste Services Ltd

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 e360950

DATE 16/02/07 TIME IN 06:03 TIME OUT 06:48 REF. No.

ACCOUNT 18125.000 FLEET 002 DOCKET No. 1039394

CUSTOMER R J Doughty Ltd

Waste Permit 11460

GROSS (t)	43.740
TARE (t)	15.880
NET (t)	28.000

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
62638 Sp Category B - agricultura	TN		28.000	

DOCKET

Fleet 10

COMPANY EnviroWaste Services Ltd

TEC 102647

DIVISION Hampton Downs DEPARTMENT Landfill PHONE 09 e360950

DATE 16/02/07 TIME IN 11:32 TIME OUT 12:45 REF. No.

ACCOUNT 18125.000 FLEET 001 DOCKET No. 1039486

CUSTOMER R J Doughty Ltd

Waste Permit 11460

GROSS (t)	42.620
TARE (t)	14.860
NET (t)	27.760

DESCRIPTION	UNIT	RATE	QUANTITY	VALUE ($)
62638 Sp Category B - agricultura	TN		27.760	

DOCKET

Fleet 25