

Appendix G: Electricity Supply Confirmation



15 January 2016

Mr Mike Botting
Paterson Pitts Group
P O Box 283
WANAKA 9343

By email only: mike.botting@ppgroup.co.nz

Dear Mike

RE: ELECTRICITY SUPPLY FOR NORTHLAKE STAGES 1 - 4

Thank you for your letter and accompanying plans dated 21 December 2015, outlining the above proposed development.

Aurora can make an electricity supply available for this development, subject to the following conditions:

- Supply confirmation is limited to a single phase 15kVA supply per lot.
- Easements in gross, in favour of Aurora, must be granted over the placement of all new and existing Aurora plant associated with this development, unless installed in road reserve.
- Where the development involves further subdivision of a land parcel containing an existing serviced installation, the mains cables (overhead or underground) intended to supply each lot must be completely contained within the lot that it serves. In some cases, this will require relocation of the cable serving the existing installation.
- All electrical installations must comply with Aurora's Network Connection Requirements and related standards and policies.
- The developer **must** comply with the Electricity Act, subordinate Regulations and associated Codes of Practice. Particular attention must be paid to the minimum distances between power lines and other structures defined in NZECP34:2011 "NZ Electrical Code of Practice for Electrical Safe Distances".
- No building shall be erected over any electricity easement without specific written authority from Delta's General Manager - Asset Management.
- The developer is responsible for all resource consents and local authority approvals.
- The developer will be required to make capital contributions toward the costs of providing the power supply, in accordance with Aurora's Capital Contributions policy prevailing at the time the development, or each stage of development, proceeds.
- This approval will lapse within 12 months of the date of this letter, unless the developer enters into a formal supply agreement with Aurora for this development.



Please note that this letter is to confirm that a power supply can be made available and does not imply that a power supply is available now, or that Aurora will make power available at its cost.

Aurora's Network Connection Requirements and Capital Contributions policy are available from <http://www.auroraenergy.co.nz/>. Should you require further information or clarification, please contact the undersigned.

Yours sincerely



Alec Findlater
COMMERCIAL MANAGER (Delta)
for Aurora Energy Limited

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Appendix H: Telecommunications Supply Confirmation

Mike Botting

From: Don Baskett <Don.Baskett@chorus.co.nz>
Sent: Tuesday, 22 December 2015 10:38 a.m.
To: Mike Botting; TSG
Cc: Marc Bretherton; Richard Mould
Subject: Northlake - Chorus network Confirmation
Attachments: W4481-7 008 Rev 1 151217 North Lake - Power & Telecom Modelling Plans.pdf.pdf

Mike

Thank you for the forward notice with regard to the proposed development areas. I have entered some comments in blue font below in response to your queries. Happy to discuss if required, I will be in the Nelson Office until around 4pm on Wednesday the 23rd of December or back after the 11th of January 2016.

TSG

Please create a file entry for this request:
WNK: Northlake Development concept plans
File status: Feasibility

Regards
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From: Mike Botting [mailto:Mike.Botting@ppgroup.co.nz]
Sent: Monday, 21 December 2015 2:44 p.m.
To: Don Baskett <Don.Baskett@chorus.co.nz>
Cc: Marc Bretherton <marc.bretherton@wintonpartners.co.nz>
Subject: FW: w4481-7 - Northlake - Power Confirmation

Hi Don

Attached are some overall plans of the Northlake zone with the plans broken down into proposed stages. I have emailed you rather than TSG because of the issues surrounding obtaining confirmation that telecommunications can be made available to development area as opposed to requesting an actual supply contract.

At this stage we do not have an overall subdivision plan that can be provided to Chorus. We only have the structure plan which contains various subzones. The attached plans show the subzones, maximum dwelling densities and also provide a preliminary idea of how the staging of the area will progress.

As part of our high order planning we would like to know the following from Chorus

1. As an initial step can you review the proposed plans and provide us with a letter confirming that telecommunications can be made available to Stages 1 -4. This we see as a simple letter outlining that subject to detailed design Chorus will be able to provide telecommunications to the development area.

Chorus fibre network can be extended into the development area subject to the entering into a subdivision reticulation contract and fee payment agreement with the developer.

As you will be aware there are existing subdivision areas off Aubrey Road that have Chorus fibre reticulation.

2. Also can you outline what the servicing requirements are i.e. where telecommunications would be brought into the development area and also what constraints if any there are in the telecommunications network that might affect how the area can be developed i.e. offsite upgrades.

The existing fibre network would need to be augmented for extension into the North Lake development area and would require fibre installation from Wanaka Exchange via existing duct lines up into Aubrey Road.

A fibre feeder scope of work and cost can be provided when the detail around Stages 1 to 4 are provided in 2016. If this can be done as soon as the scheme plan detail is available it will allow time to sort out the reticulation contract detail and Chorus budget approval.

At this point in time stages 1 – 4 by Northlake Investments are proceeding starting next year. Further refined detail on the exact subdivision layout will be provided in the New Year once the Overall Development Plan (ODP) is finalized.

In the interim the attached plans within each subzone show the maximum density of dwellings. This is based on the Northlake District Plan rule densities plus 15%, so these numbers are considered to be the maximum yield. The actual yield will be known once the ODP is finalized and may be slightly less.

Give me a call to discuss if necessary. Look forward to receiving the initial confirmation in due course. Can you confirm approximate timeframes for confirming back to me with the requested information please.

Note that Marc Bretherton, the Project Manager for Winton partners who are developing the majority of the Northlake zone would like to discuss the project with you in more detail once you have reviewed the attached plans. If possible, this side of Christmas, could you let me know what time would suit you to hold a teleconference please. Failing this we can catch up in early January once you are back at work.

Regards

Mike Botting

Director & Registered Professional Surveyor

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NORTHLAKE STAGES 4-6 SUBDIVISION INFRASTRUCTURE REPORT

PROJECT: Northlake Wanaka Stages 4 - 6
PRINCIPAL: Northlake Investments Limited
OUR REF: W4481-8
DATE: 21 December 2016

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REVISION / APPROVAL PANEL

Rev:	Date:	Prepared By:	Reviewed By:	Comments:
0	21/12/16	AGT	MJB	Original issue

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1. SCOPE

This report covers the availability of the following infrastructure elements and is intended to accompany a resource consent application for Subdivision Consent for Stages 4-6 of Northlake Investments Limited's development of Northlake, Wanaka.

- Earthworks
- Rooding Design Statement
- Rooding Design Parameters
- Stormwater
- Wastewater
- Water Supply
- Network Utility Services (electricity and telecommunications)

Landscaping and geotechnical are covered by separate consultant reports.

2. PROPOSED INFRASTRUCTURE

All infrastructure for the Northlake development has been designed in accordance with Councils Land Development and Subdivision Code of Practice (LDSCOP)

The following information is contained in Appendices A – F;

- Appendix 1: Bulk earthworks plans stages 4-6
- Appendix 2: Site management plan approved under RM160186
- Appendix 3: Approved ODP rooding hierarchy plan and typical cross sections
- Appendix 4: Table 3.2 road classification table
- Appendix 5a: Electricity supply confirmation
- Appendix 5b: PowerNet design for ODP area
- Appendix 6: Telecommunications supply confirmation
- Appendix 7: Tonkin and Taylor water modelling report (Feb 2016)

2.1 Earthworks

RM160186 granted consent for bulk earthworks across Stages 1 – 7 of the Northlake development. This consent was approved a total earthworks quantum of 297,858m³ over an area of 20.4ha. The approved bulk earthworks includes the formation of roads to subgrade, the levelling and re-contouring of residential allotments, and the topsoiling of road berms, reserve areas and allotments.

Since obtaining the bulk earthworks consent, the final ground level for proposed Stage 4 has been re-designed to provide better outlook and orientation for the resultant lots. Stages 5 & 6 remain very similar to what was approved under RM160186 with the only differences being the transition to the re-designed ground levels in Stage 4.

We also note that the consented earthworks need to be essentially re-approved in order to reset the post subdivision ground level (in accordance with the QLDC District Plan definition of ground level).

A revised set of drawings for Stages 4-6 bulk earthworks is included with this application for approval – refer to **Appendix 1**. A summary of the Stages 4-6 earthworks is shown below:

- Area of exposed bare earth: 6.7 Ha
- Volume of earthworks: 91,000m³

- Maximum cut height: 6.5m
- Maximum fill height: 2.3m

The potential for environmental effects i.e. dust, sedimentation and erosion, resulting from the proposed earthworks will be managed in accordance with the site management plan approved under RM160186. A copy of this is attached to this report as **Appendix 2**. Sheet 106 of this drawing set is an updated site management plan factoring in the now completed earthworks for Stages 1-3

2.2 Road Design Statement

2.2.1 Scope of Rooding Design Statement

The intention of this rooding design statement is to outline to Council details of the proposed rooding network for the Northlake Development as a whole and in doing so give context to the stages 4-6 application for subdivision consent.

This rooding design statement covers all aspects of the proposed rooding design as required by Section 3.2.6 of the QLDC LDSCOP. This includes:

- (a) Road dimensions and layout
- (b) Place and link functions
- (c) Connectivity
- (d) How target operating speeds have been achieved
- (e) How LID principles have been considered for stormwater run-off from the roads

2.2.2 Rooding Dimensions & Layout

The road layout for the Northlake development is shown on the plans contained in **Attachment B** of the AEE. The rooding layout has been governed primarily by the location of existing road connections i.e. Outlet Road, Northburn Road and Mount Linton Avenue and the requirements of the Northlake structure plan.

Road dimensions have been based initially on the minimum requirements outlined in Table 3.2 QLDC LDSCOP and then modified to suit the functional and aesthetic goals of the proposed development. Refer **Appendix 4** for our modified table 3.2.

The proposed roads have a movement lane widths of either 2 x 4.2m, 5.5 – 5.7m or 2.75 – 3.0m. The reasons for these width options is as follows;

Road Type A

Road Type A on the rooding hierarchy plan corresponds to an E13 type road in table 3.2 of QLDC LDSCOP. This is classed as a collector road.

This features movement lanes of 2 x 4.2m width, recessed parallel car parking with a dimensions of 2.7 m x 6.1m parking bays, footpaths on both sides with a width of 2m.

An added feature is proposed within Road type A includes a central boulevard/planting island and a large swale providing the primary stormwater conveyance down the middle of the site.

Road type A is contained within a 30m legal width to provide sufficient room to accommodate the swale, central boulevard/planting island, the 2m wide footpaths, recessed parking, the movement lane, landscaping and services.

Road Type AA

Road Type AA on the roading hierarchy plan corresponds to an E13 type road in table 3.2 of QLDC LDSCOP. This is classed as a collector road.

This features movement lane widths of 2 x 4.2m, recessed parallel car parking with dimensions of 2.7m x 6.1m parking bays, footpaths on both sides with a width of 2m.

An added features proposed within Road type AA includes a central boulevard/planting island. This road type does not include the large swale. Road type AA is contained within a 20m legal width to provide sufficient room to accommodate the central boulevard/planting island, the 2m wide footpaths, recessed parking, the movement lane, landscaping and services.

Road Type B – 20m Width

Road Type B – 20m width on the roading hierarchy plan corresponds to an E12 type road in table 3.2 of QLDC LDSCOP. This is classed as a local road.

This features a movement lane width of 5.7m, recessed parallel car parking with a dimensions of 2.7m x 6.1m parking bays, footpaths on both sides with a minimum width of 1.5m.

Footpaths will be provided on both side where the road is servicing 20 or more dwellings or is longer than 100m in length. Recessed car parking will be provided where the road is servicing more than 100 dwellings.

Road Type B – 20m Width is contained within a 20m legal width to provide sufficient room to accommodate the 1.5m wide footpaths on both sides, recessed parking, the movement lane, landscaping and services.

Road Type B – 15m Width

Road Type B – 15m width on the roading hierarchy plan corresponds to an E12 type road in table 3.2 of QLDC LDSCOP. This is classed as a local road.

This features a movement lane width of 5.7m, car parking is shared in movement lane or recessed on one side only, footpaths on one or both sides with a minimum width of 1.5m.

Footpaths will be provided on both sides where the road is servicing 20 or more dwellings or is longer than 100m in length.

Road Type B – 15m Width is contained within a minimum 15m legal width to provide sufficient room to accommodate the 1.5m wide footpaths, recessed parking, the movement lane, landscaping and services.

A 5.7m movement lane width provides for the ability to park on one side of the road and one through lane or alternatively two through lanes. Neither option will be delineated but rather this will be left for road users to decide.

Road Type C

Road Type C on the roading hierarchy plan corresponds to an E11 type road in table 3.2 of QLDC LDSCOP. This is classed as a lane.

This features a movement lane width of 5.7m, car parking is shared in the movement lane, footpaths on one side with a minimum width of 1.5m.

Road Type C is contained within a minimum 12m legal width to provide sufficient room to accommodate the 1.5m wide footpath, the movement lane, landscaping and services.

Road Type D

Road Type D on the roading hierarchy plan corresponds to an E11 type road in table 3.2 of QLDC LDSCOP. This is classed as a lane.

This features a movement lane width of 5.7m, car parking is shared in the movement lane, and pedestrian access is shared within the movement lane.

Road Type D is contained within a minimum 10m legal width to provide sufficient room to accommodate the movement lane, landscaping and services.

Road Type F- Access

Road Type F Access corresponds to an E9 or E10 road in table 3.2 of QLDC LDSCOP. This is classed as a lane and will be either private or public depending on the number of lots serviced.

This features a movement lane width of 3.0m, allows for passing every 50m, and pedestrian access is shared within the movement lane.

Road Type Access is contained within a width of 6m to 10m legal width to provide sufficient room to accommodate the movement lane, landscaping and services.

8. Road Type – Semi Rural

Road Type Semi Rural corresponds to an E8 road in table 3.2 of QLDC LDSCOP. This is classed as a collector road.

This features a movement lane of 5.7m width, sealed shoulders with a water table drain. Pedestrians are catered for by a 2m wide gravel footpath along one side.

Road Type Semi Rural is contained within a 20m legal width.

2.2.3 Place and Link Functions

Section 3.2.4 QLDC LDSCOP states that “the two fundamental roles of a road are to provide a space for interaction between people for a range of purposes and access to land so that movement between places can occur”.

The following two sections discuss the proposed design in terms of both ‘place context’ and ‘link context’

Place Context

Place context is defined for both the specific land use served and the broader area type in which it is located. The land use characteristic is defined according to the description of predominant activities in individual areas. QLDC LDSCOP uses the descriptions “live, play, shop, work and learn, in addition to activities associated with growing, manufacturing and transporting of goods and products”.

Using Table 3.1 from QLDC LDSCOP, we have categorised the development area as:

- (a) Land use: **live and play**
- (b) Area type: **suburban**

The live and play land use is defined as “homes, home based businesses, and mixed use developments with residential uses, as well as parks and low impact recreation”. The proposed use of the development is for residential homes, local purpose and/or recreation reserves, walkway linkages and stormwater reserves and is consistent with the live and play land use.

The suburban area type is defined as “low and moderate density housing up to 15 units per hectare in an area where housing is the exclusive or dominant use”. Residential housing will be the predominant land use allowing for the fact that there will likely be a few home based businesses established.

The ‘urban’ area type anticipates much a higher residential density (50 units per hectare) plus the inclusion of other land uses and is therefore not an appropriate category for the subject site. Similarly, the ‘rural’ area type is not appropriate because this is intended for a residential population outside of the urban limits.

Table 3.1 explains the transport context for the suburban area type as private vehicles being the predominant form of transport with public transport providing for peak flow on arterial and connector/collector roads. It further explains that non-motorised trips are primarily recreational and occur on local roads. Whilst the public transport component of this explanation is not currently applicable in the Wanaka context and private vehicles will be the predominant form of transport for the next few years, it is anticipated that public transport will be in place at some time in the future. With this in mind it would appear logical that bus stops could be situated on the Type A and Type B roads by converting some of the recessed parking into a suitable bus stop or by constructing a suitable bus stop at the appropriate time in the future by removal of street landscaping as required.

Link Context

Link context is classified by the extent of access and the degree of through movement intended to be served. This standard includes three levels of link context;

- (a) Lane: a road that provides very high local access and very limited through movement connectivity. Very low vehicle speeds with shared pedestrian and vehicle access predominate;
- (b) Local road: A road that provides access and connectivity for a local area. Low vehicle speeds, pedestrian and local amenity values predominate;
- (c) Connector/collector road: A road that provides circulation in local areas and links to arterial roads, while balancing this with pedestrian and local amenity values. Higher vehicle and access for all modes of transport including public transport predominate.

The proposed road classification table contained in **Appendix 4** contains columns that detail which of the above classification options has been assigned to each of the proposed roads.

2.2.4 Connectivity

Section 3.2.5 of QLDC LDSCOP states that well connected networks (roads and other links) are achieved with smaller block sizes and regular connections. Network connectivity shall be designed to achieve:

- (a) Shorter travel distances;
- (b) An increased number of alternative routes for all types of users;
- (c) Increased opportunity for interaction;
- (d) Improved access to public transport, cycling and walking networks, and access to destinations.

The proposed roading layout provides considerable options for route choice by utilising all connection points to existing roads.

The proposed roading layout linkage points and connectivity is consistent with the routes shown in RM 160152 being the approved ODP for Northlake.

Access to public transport has been mentioned earlier in this report.

2.2.5 Target Operating Speeds

Section 3.3.5 of QLDC LDSCOP states that traffic management shall be included in the road design to ensure that the target operating speeds are achieved. Target operating speed can be managed by physical and psychological devices such as narrowed movement lanes, reduced forward visibility, slow points, build outs, lengths, chicanes, planting and landscaping and street furniture and art works. The two key geometric factors that contribute to achieving the target operating speed are carriageway width and forward visibility.

The proposed carriageway widths are consistent with the requirements of QLDC LDSCOP in order to provide a suitable number of through lanes as well as making provision for car-parking and passing manoeuvres.

2.2.6 LID Principles for Stormwater Runoff from Roads

It is proposed to direct all stormwater runoff from roads to the roadside kerb and channel which will in turn discharge into mudtanks and an underground piped network. Ultimately all stormwater runoff from the roads will be piped to various stormwater reserves located across the site where the runoff will be detained so as to balance pre and post flows.

The design of the stormwater reserves is discussed in a separate report prepared by Riley Consultants. In summary the design is considered to be 'low impact' since all stormwater will be attenuated to pre-development flows.

Other LID options such as road side swales have been discounted due to the density of housing and the resulting number of vehicle crossing which would limit the effectiveness of any roadside swales, the maintenance requirements of these options (and degradation of visual appeal if maintenance is not undertaken).

2.3 Roading Design Parameters

Typical cross sections for all proposed roads are contained in **Appendix 3**.

The road design parameters proposed are as follows: (refer also the proposed road classification Table 3.2 contained in **Appendix 4**)

2.3.1 Extension of Road 1 (Northlake Drive)

Feature	Design Features	Reason for Departure if any
Road No	1	
Cross Section Ref	E13	
Our Road Type	Type A	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	Up to 800du	
Target operating speed	50km/h	
Legal road width	30m	
Pedestrians	A footpath will be constructed on both sides of the road 2.0m wide	
Passing, parking, loading and shoulder	Recessed parking	
Cyclists	Shared in movement lane	

Movement lane width	2 x 4.2	
Classification	Connector Road (~8000 vpd)	
Turning Head	Not Required	
Road to be vested in QLDC (YES/NO)	YES	

2.3.2 Extension of Road 8

Feature	Design Features	Reason for Departure if any
Road No	Rd 8	
Cross Section Ref	E12	
Our Road Type	Type B – 15m	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	1 - 200 lots	
Target operating speed	40km/h	
Legal road width	20m	
Pedestrians	1.5m each side	
Passing, parking, loading and shoulder	No recessed parking	
Cyclists	Shared in movement lane	
Movement lane width	5.7m	
Classification	Local road (~2000 vpd)	
Turning Head	Not Required	
Road to be vested in QLDC (YES/NO)	YES	

2.3.3 Road 11

Feature	Design Features	Reason for Departure if any
Road No	11	
Cross Section Ref	E12	
Our Road Type	Type B – 20m	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	1 to 200 du	
Target operating speed	40km/h	
Legal road width	20m	Wider than the minimum of 15m – Linking Road 12 (which is the continuation of Northburn Drive) into the Village Centre
Pedestrians	1.5m each side	
Passing, parking, loading and shoulder	No recessed parking	

Cyclists	Shared in movement lane	
Movement lane width	5.7m	
Classification	Local road (~2000 vpd)	
Turning Head	Not Required	
Road to be vested in QLDC (YES/NO)	YES	

2.3.4 Road 12

Feature	Design Features	Reason for Departure if any
Road No	12	
Cross Section Ref	E12	
Our Road Type	Type B – 20m	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	1 to 200 du	
Target operating speed	40km/h	
Legal road width	20m	Wider than minimum of 15m – continuation of Northburn Drive
Pedestrians	1.5m each side	
Passing, parking, loading and shoulder	No recessed parking	
Cyclists	Shared in movement lane	
Movement lane width	5.7m	
Classification	Local road (~2000 vpd)	
Turning Head	Not Required	
Road to be vested in QLDC (YES/NO)	YES	

2.3.5 Road 13

Feature	Design Features	Reason for Departure if any
Road No	13	
Cross Section Ref	E11	
Our Road Type	Type C – 12m	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	1 to 20 du	
Target operating speed	20km/h	
Legal road width	12m	Wider than minimum of 9m to allow room for carriageway, services and landscaping
Pedestrians	1.5m on one side only	

Passing, parking, loading and shoulder	No recessed parking	
Cyclists	Shared in movement lane	
Movement lane width	5.7m	
Classification	Lane (~200 vpd)	
Turning Head	Not Required	
Road to be vested in QLDC (YES/NO)	YES	

2.3.6 Access 7

Feature	Design Features	Reason for Departure if any
Access No	7	
Cross Section Ref	E9	
Our Road Type	Type F – 10m	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	1 to 6 du	
Target operating speed	10km/h	
Legal road width	10m	Wider than required to allow room for carriageway, services and earthworks batters
Pedestrians	Shared in movement lane	
Passing, parking, loading and shoulder	Shared in movement lane	
Cyclists	Shared in movement lane	
Movement lane width	3.0m	
Classification	Lane	
Turning Head	Y shaped – complies with LDSCOP	
Road to be vested in QLDC (YES/NO)	YES	

2.3.7 Access 8

Feature	Design Features	Reason for Departure if any
Access No	8	
Cross Section Ref	E9	
Our Road Type	Type F – 10m	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	1 to 6 du	
Target operating speed	10km/h	

Legal road width	10m – 17m	Wider than required to room for carriageway, services and turning head / courtyard area
Pedestrians	Shared in movement lane	
Passing, parking, loading and shoulder	Shared in movement lane	
Cyclists	Shared in movement lane	
Movement lane width	3.0m	
Classification	Lane	
Turning Head	T shaped – complies with LDSCOP	
Road to be vested in QLDC (YES/NO)	YES	

2.3.8 Access 9

Feature	Design Features	Reason for Departure if any
Road No	9	
Cross Section Ref	E9	
Our Road Type	Type F – 10m	
Area	Suburban	
Local attributes	Primary access to housing	
Locality served	1 to 6 du	
Target operating speed	10km/h	
Legal road width	10m – 17m	Wider than required to room for carriageway, services and turning head / courtyard area
Pedestrians	Shared in movement lane	
Passing, parking, loading and shoulder	Shared in movement lane	
Cyclists	Shared in movement lane	
Movement lane width	3.0m	
Classification	Lane	
Turning Head	T shaped – complies with LDSCOP	
Road to be vested in QLDC (YES/NO)	YES	

2.4 Stormwater

For stormwater refer separate report by Riley Consultants which provide the overall stormwater disposal concept for the ODP – this report is contained in **Attachment F1** to the application.

Attachment F2 to the application outlines the proposed management of upstream flows once Stages 4-6 are constructed.

2.5 Wastewater

Council's Project Manager (Infrastructure) has been consulted during the investigation of the proposed development's wastewater requirements. Rationale Ltd were engaged by Council to assess whether there is sufficient capacity in the existing network to accommodate the connection of the Northlake Zone and to determine whether there is an opportunity to optimise the network by identifying and assessing a range of technical options for the servicing of this development.

Further consultation with Myles Lind of Council has confirmed that Council is happy with the proposed connections and confirms that no upgrades are required to off-site infrastructure.

The proposal for Stages 4 -6 is to provide each lot with a Ø100mm lateral that is connected to the reticulated mains within the road corridors. All wastewater from these stages will gravity flow towards Road 1 and then south along Outlet Road in the drainage network that is being extended in Stage 1.

2.6 Water Supply

Council's Project Manager (infrastructure) has been consulted during the investigation of the proposed development's potable water requirements. Tonkin and Taylor Ltd were engaged by Council to assess whether there is sufficient capacity in the existing network to accommodate the connection of the Northlake development and to determine whether there is an opportunity to optimise the network by identifying and assessing a range of technical options for the servicing of this development.

Consultation with Mark Baker of Council has confirmed that Council is happy with the proposed connection of Northlake to its infrastructure but requires further modelling to be carried out by Council using a calibrated model before offsite upgrades, if any are required, can be confirmed.

2.6.1 *Internal Reticulation*

The proposal for Stages 4-6 is as follows:

- Extend the existing Ø150mm water main in Northburn Drive north along Road 12 and Access 9 to tie into the Ø250mm main in Road 1 (Northlake Drive)
- Extend the Ø250mm principal main along the south side of Road 1 (Northlake Drive) constructed in Stage 2
- All other reticulation will be Ø100mm water mains or Ø50mm rider mains

2.6.2 *Modelling Considerations*

The Tonkin and Taylor report (refer to **Appendix 7**) states in Section 4.1 that the modelling shows 'Beacon Point Reservoir (RL 382m) and the corresponding network infrastructure has sufficient capacity to meet the additional 47.80l/s demand of Stages 1-4 with little impact on pressure and demand to the surrounding network. However, minimum residual pressures of 300kPa were not met at areas of higher elevation (above RL 343m). This is due to the reservoir elevation relative to the higher levels of the development and is not considered a result of head losses in the network".

With regard to the current application, only Lots 135-140 are at or above RL343 with Lots 137-139 being at the highest elevation of 344m. We note that the Tonkin and Taylor report contained in **Appendix 7** is dated Feb 2016 and we understand that since this date Council has undertaken further modelling and calibration of its water supply network. We therefore request that Council review the T&T report and advise accordingly.

Section 4.1 of the T&T report further notes that firefighting flows will be available

2.7 Network Utility Services

2.7.1 Electricity

The electrical reticulation that will be installed for Stages 1-3 of Northlake can be extended to supply Stages 4-6. The local electricity authority, Aurora Energy, were consulted during the preliminary planning of Stages 1-3 and they have confirmed that supply can be made available to this site. This supply is currently limited to single phase 15kVA per lot. A letter from Aurora confirming this is attached **Appendix 5a**.

Subsequent to this discussion, PowerNet have been commissioned to install and operate an embedded network for Northlake. A design for the entire ODP area approved under RM 160152 has been provided by Peak Power and is attached as **Appendix 5b**. The area covered by this design includes Stages 4-6.

2.7.2 Telecommunications

Chorus has confirmed that telecommunications can be made available to the site. This will require extension of the reticulation installed for Stages 1-3. The final design is subject to confirmation with Chorus. A letter from Chorus confirming this is attached in **Appendix 6**.

2.8 Conclusion

All of the network operators for water, waste water, power and telecom have confirmed connection to their system by Northlake is possible.

While some system upgrades are known to be necessary, further modelling by Council using its new calibrated water supply model is required to confirm the exact timing. At this stage the subdivision of Stage 4-6 covers only a small part of the Northlake zone. It is anticipated that detailed modelling by Council will confirm what subdivision stages can connect before triggering offsite upgrades.

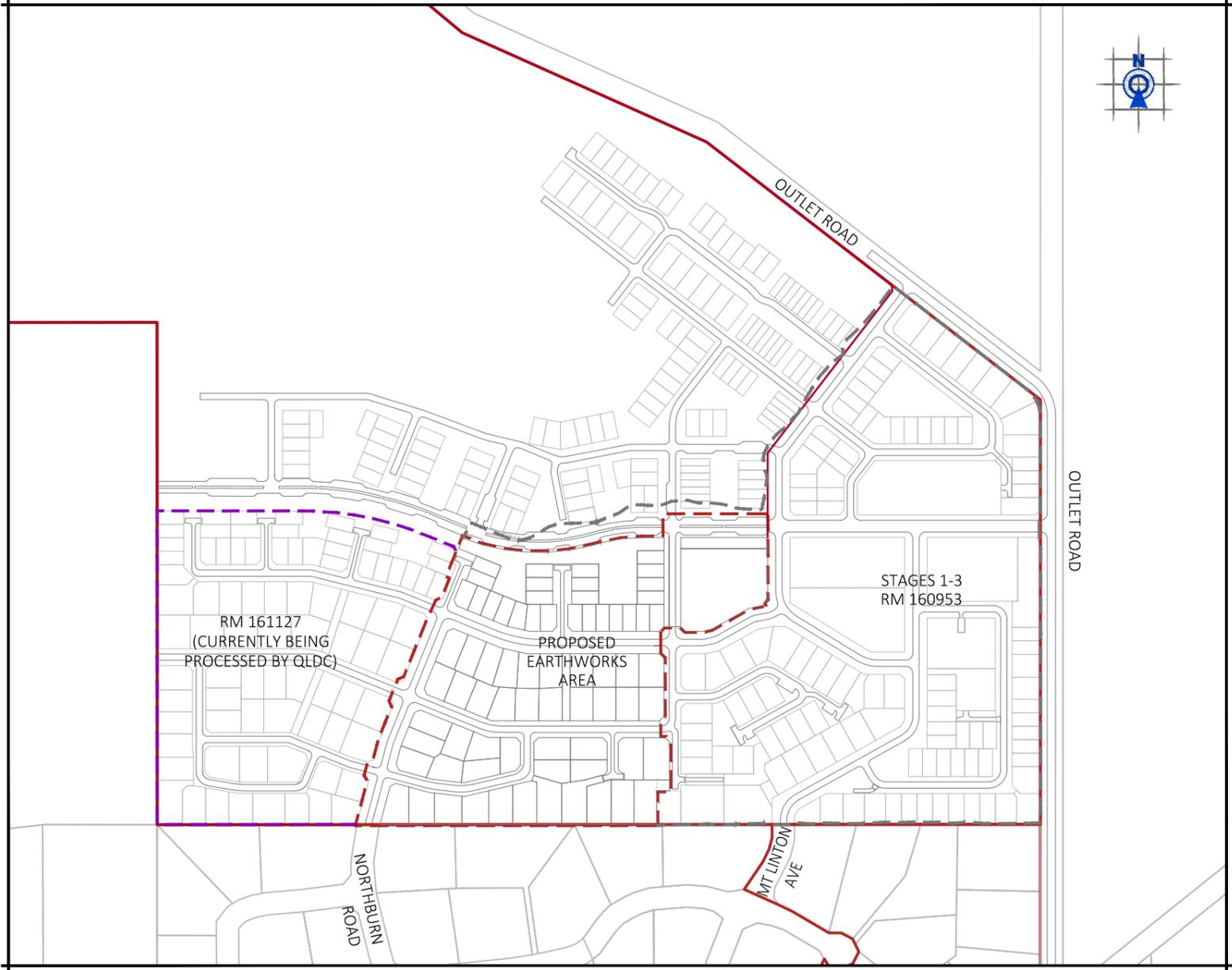
Development contributions payable for this development (less the credit for upgrading the system) will mitigate any effect this development will have on Council's existing infrastructure.



Alex Todd
Paterson Pitts Group Limited (Wanaka)

Appendix 1: Stages 4-6 Bulk Earthworks Drawings

Northlake : Bulk Earthworks Stages 4-6



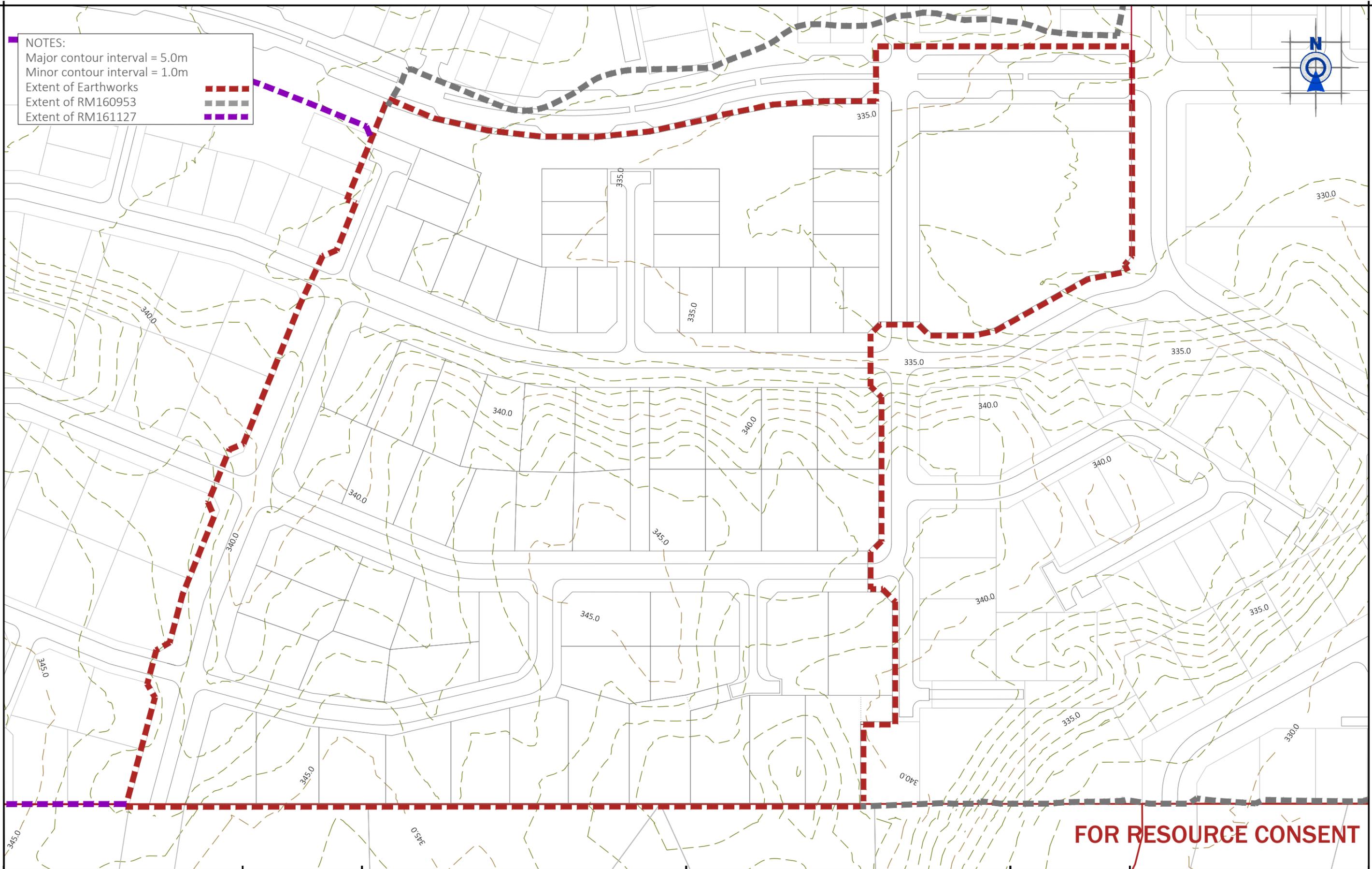
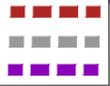
PLAN INDEX

SHEET	CONTENTS	REV	DATE
100	Plan Index	0	05/12/2016
101	Existing Contours	0	05/12/2016
102	Proposed Final Contours	0	05/12/2016
103	Cut / Fill Contours	0	05/12/2016
104	Cross Sections - Detail 1	0	05/12/2016
105	Cross Sections - Detail 2	0	05/12/2016
106	Site Management Detail	0	05/12/2016

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NOTES:
 Major contour interval = 5.0m
 Minor contour interval = 1.0m
 Extent of Earthworks
 Extent of RM160953
 Extent of RM161127



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 Northlake Stages 4-6

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			05/12/2016

NOTES:
 Major contour interval = 5.0m
 Minor contour interval = 1.0m
 Extent of Earthworks 
 Extent of RM160953 
 Extent of RM161127 



Stages 8-9 design contours
 as per RM 161127

Stages 1-3 design contours
 as per RM 160953

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Drawing No:	041			Date Created:	05/12/2016



CUT / FILL LEGEND	
Depth contours at 1.0m interval	
	3.0m +
	2.5m to 3.0m
	2.0m to 2.5m
	1.5m to 2.0m
	1.0m to 1.5m
	0.5m to 1.0m
	0.2m to 0.5m
	0.0m to 0.2m
CUT	
	0.0m to 0.2m
	0.2m to 0.5m
	0.5m to 1.0m
	1.0m to 1.5m
	1.5m to 2.0m
	2.0m to 2.5m
	2.5m to 3.0m
	3.0m +



EARTHWORKS VOLUMES	
AREA OF EARTHWORKS	6.7ha
STRIP TOPSOIL	13,500m ³
CUT TO FILL	91,000m ³
RESPREAD TOPSOIL (EXCL. FUTURE ROADS)	13,000m ³
TOPSOIL TO STOCKPILE	500m ³
MAXIMUM CUT DEPTH	6.5m
MAXIMUM FILL DEPTH	2.3m
NOTE: Compaction factor of 0.75 has been used to convert natural in-situ volume to compacted fill volume	

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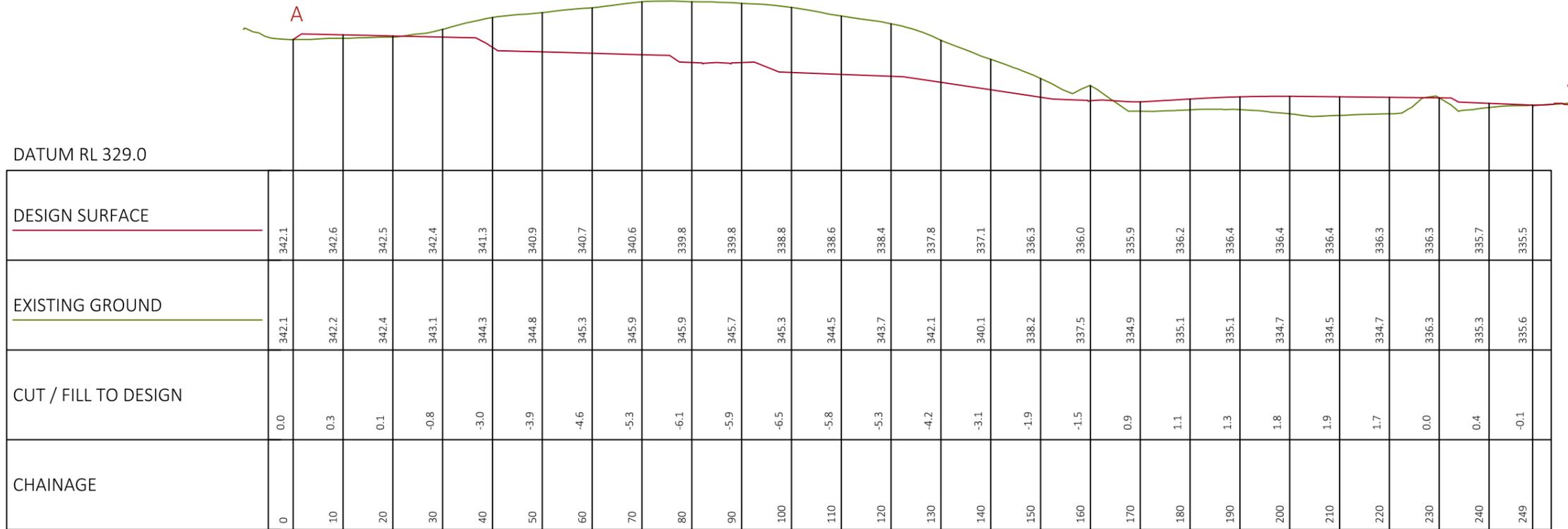
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Purpose & Drawing Title:
Proposed Earthworks
Cut / Fill Plan

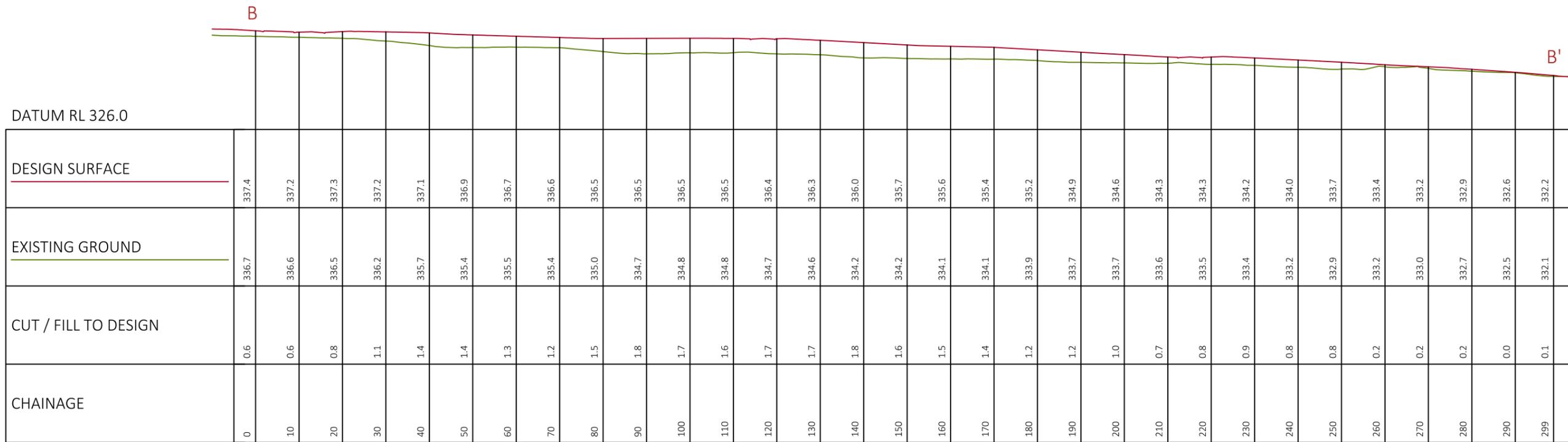
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		103	05/12/2016



BULK EARTHWORKS CROSS SECTION A

A3 HORZ SCALE 1:1000 A3 VERT SCALE 1:500

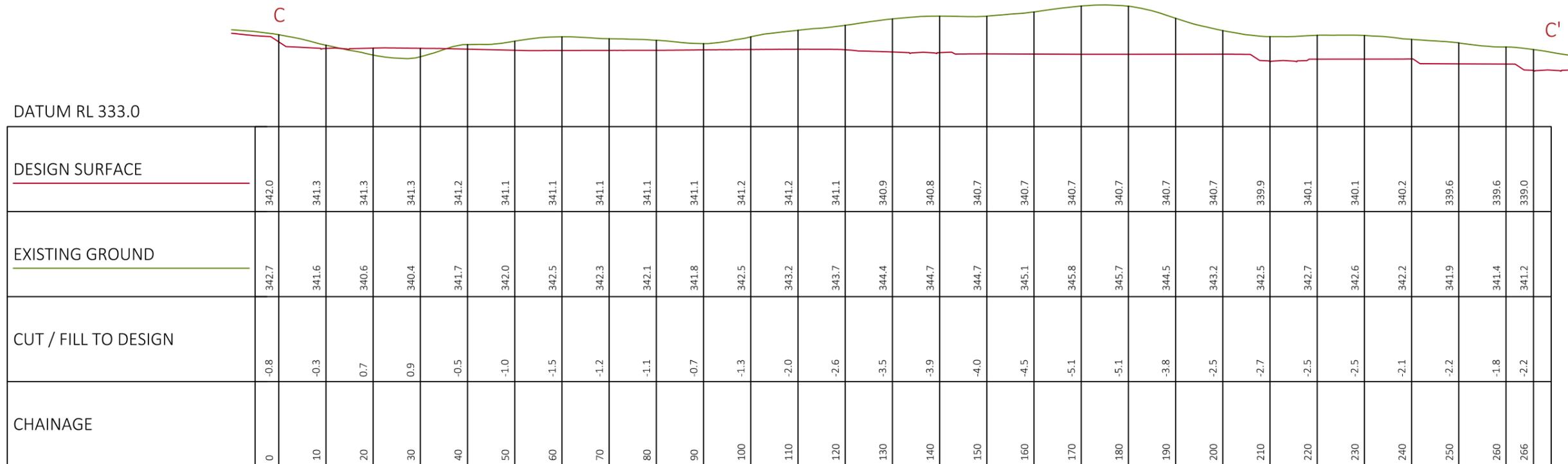


BULK EARTHWORKS CROSS SECTION B

A3 HORZ SCALE 1:1000 A3 VERT SCALE 1:500

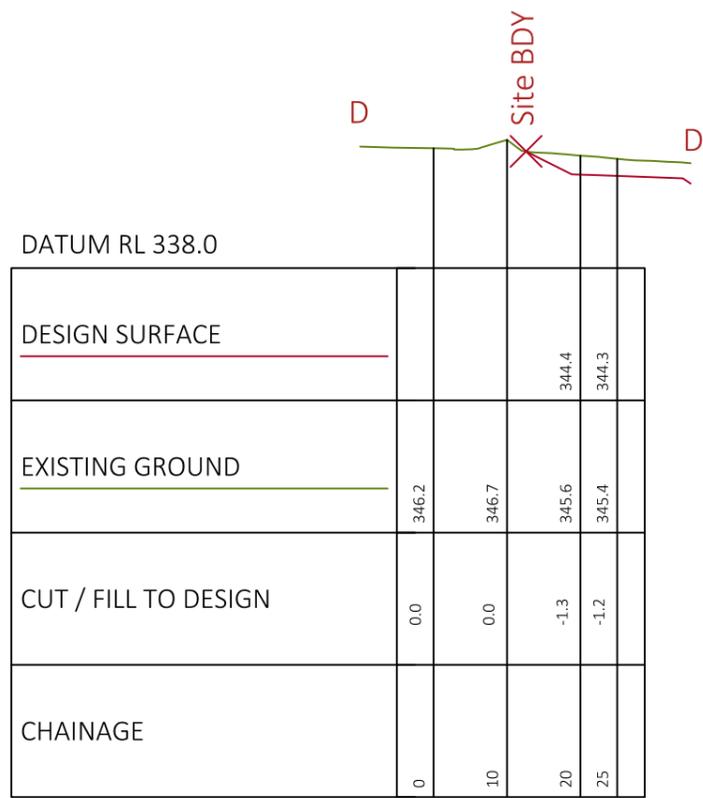
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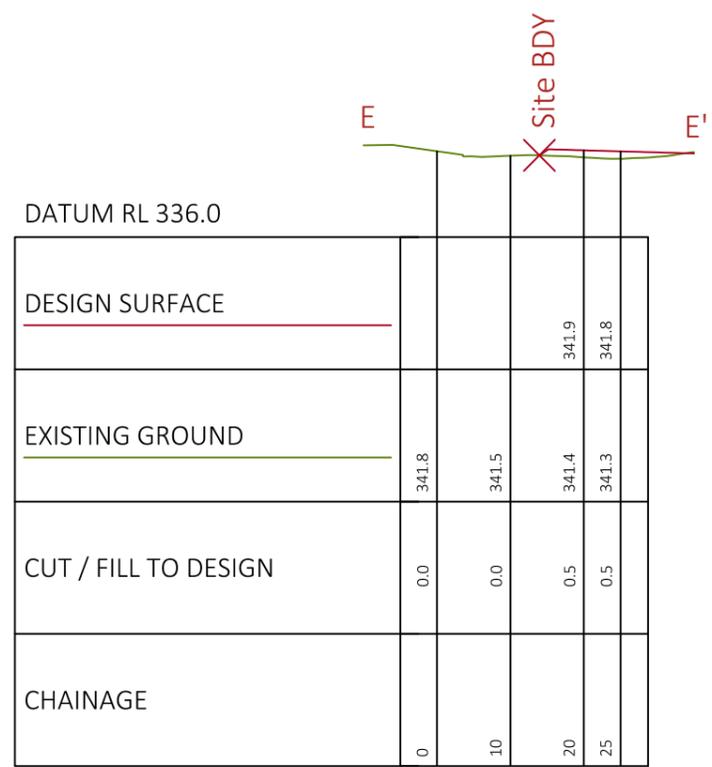
BULK EARTHWORKS CROSS SECTION C

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BULK EARTHWORKS CROSS SECTION D

A3 HORZ SCALE 1:1000 A3 VERT SCALE 1:500



BULK EARTHWORKS CROSS SECTION E

A3 HORZ SCALE 1:1000 A3 VERT SCALE 1:500

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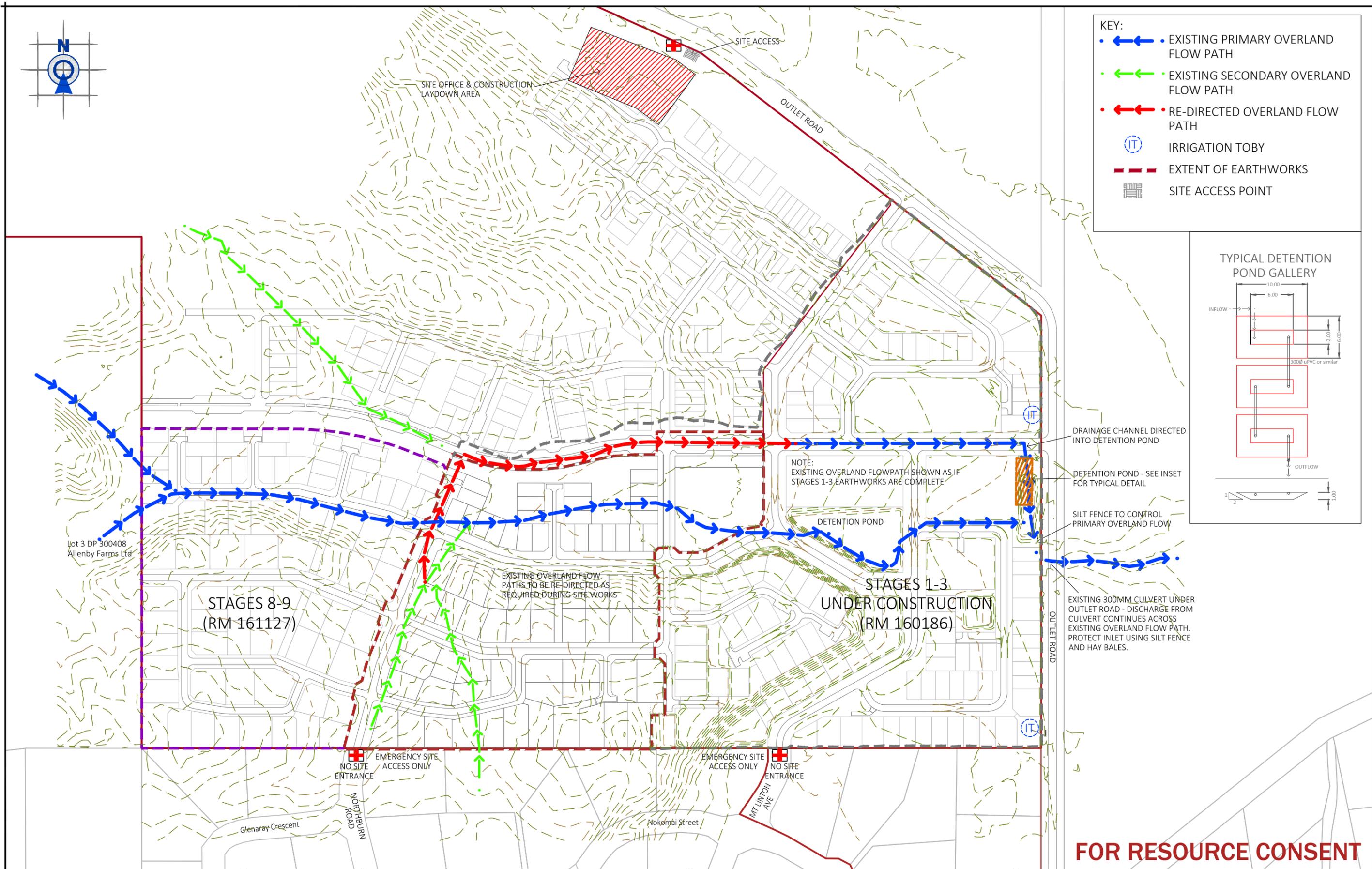
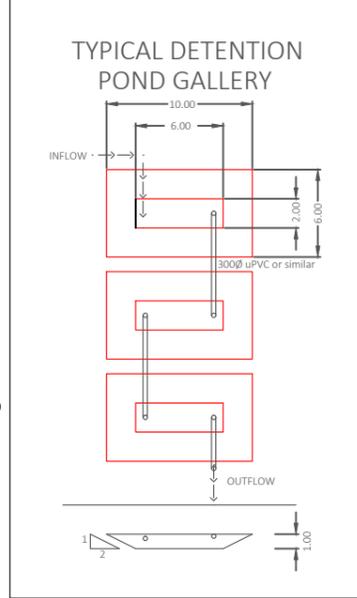
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KEY:

- ← ← • EXISTING PRIMARY OVERLAND FLOW PATH
- ← ← • EXISTING SECONDARY OVERLAND FLOW PATH
- ← ← • RE-DIRECTED OVERLAND FLOW PATH
- Ⓜ IRRIGATION TOBY
- EXTENT OF EARTHWORKS
- Ⓜ SITE ACCESS POINT



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Purpose & Drawing Title:
Preliminary Site Management
Plan For Bulk Earthworks

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Appendix 2: Site Management Plan

SITE MANAGEMENT PLAN

**NORTHLAKE**
wanaka



For: Northlake Development - Bulk Earthworks stage 1 – 7
- Stage 5 contamination
- Civils stage 1 - 3

From: Civil Construction Limited

Date: 12th July 2016

Status: Final

Version: 5

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1. Outline

The following outlines how Civil Construction will manage potential issues surrounding the site to ensure compliance with the conditions of the resource consent (RM 160186).

This is a live document and will be updated as and when necessary. Civil Construction recognises the intrinsic value of the natural environment and is committed to its protection.

This document will be held on site, with all contractors and staff briefed on its requirements.

The contents of this Site Management Plan are covered in the Civil Construction Northlake Development Site Induction to ensure all employees and third parties are aware of the key points within this plan.

2. Site layout

The site is located off Outlet Road in Wanaka. The site is contained with part of a 108 hectare block of land owned by Northlake Investments Limited (NIL).

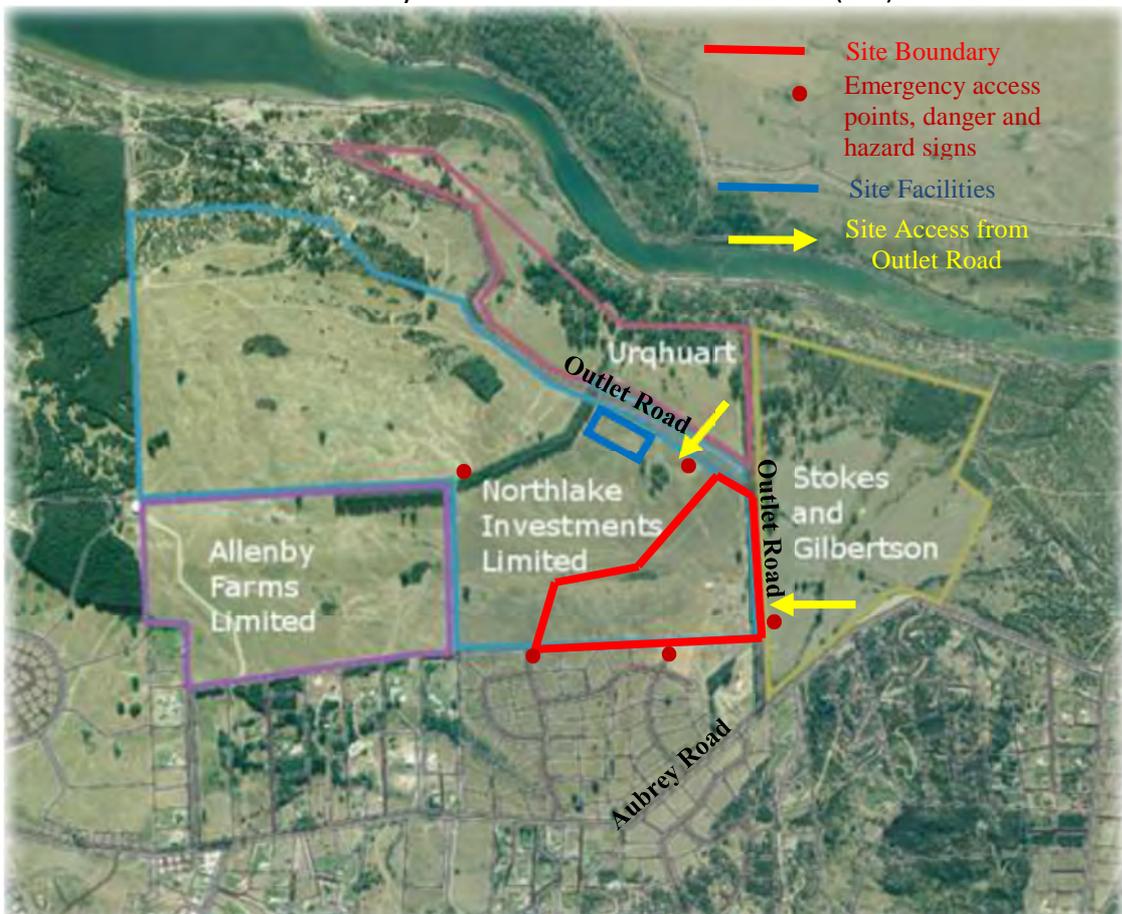


Figure 1: Northlake Development Wanaka Site Layout and land ownership. \

CIVIL CONSTRUCTION

CIVIL WORKS • EARTHWORKS • DRAINAGE • ROADING • GENERAL CONTRACTING



Figure 2: Northlake Development Wanaka Site Facilities Layout

3. Ongoing management and monitoring thorough the project

The following areas have been identified as requiring ongoing management and monitoring throughout the project:

- Surrounding buildings and neighbours
- Work hours
- Construction vehicles, visitor parking and site deliveries.
- Site access & fencing
- Pedestrians and cycle traffic in adjacent areas
- Noise
- Vibration
- Dust
- Sediment/erosion control
- Earthworks
- Vegetation
- Fuel / Chemical storage
- Communication plan
- Complaints process

3.1 Surrounding Buildings and Neighbours

- Letter drops will be completed to surrounding residences prior to the bulk earthworks commencing. Surrounding residents will be kept informed of work activities on a monthly basis through email or letter drop. Recipients of the email or letter will have the opportunity to provide feedback and / or meet with Civil Construction.
- Site Hazard Board located at the site entrance will have site management contact details.
- Site management is available for liaison with surrounding residents.
- The neighbours to the site will be informed as required of any works that is likely to cause disturbance. The disturbance to neighbours is to be minimised in all circumstances.
- Existing buildings will be isolated with a fence on the boundary

3.2 Work Hours

Hours of operating for earthworks will be:

- Monday to Saturday (inclusive): 7:30am to 6:30pm
- Sunday and public holiday: No Activity

In addition, no heavy vehicles are to enter or exit the site and no machinery will start operate earlier than 7:30am. All activity on the site is to cease by 6:30pm.

Establishment operations works are to begin on Monday 4th of July 2016, with earthworks planned to commence 7 days after SMP submission.

3.3 Site access & Fencing

- The site will be kept securely fenced to control access and ensure no unauthorised access to the site.
- The main site access via Outlet road will be for all visitors and the construction traffic.
- Emergency access points in addition of site layout and sign boards.
- Access to site, particularly fencing will be monitored and assessed on an ongoing basis. Where necessary additional measures will be taken to ensure both the safety of members of the public and site security.

3.4 Visitor, Site Parking & Site Deliveries

- All vehicles will be parked adjacent to the site office unless otherwise required onsite.
- All deliveries will be to site office and adjacent laydown area via the main site entrance from Outlet road.

3.5 Pedestrian and Cycle Access in Adjacent Areas

- Construction activities will be isolated from public walk / cycle ways by fence.

3.6 Noise

- The detailed requirements of noise management and the practices to be adopted to comply with NZS 6803:1999.
- All practicable steps are taken to minimise noise during the contract works.
- The works shall be carried out in such a manner as to cause the least inconvenience to the public.
- Machinery won't warm up closer than 100m from nearest dwelling.
- Construction depot will be away from houses and isolated by soil band.
- Effects associated with noise will be controlled through hours of operations

3.7 Vibration

- The earthworks shall cease if at any time a justifiable complaint regarding effects from vibration associated with earthworks activities.
- The issue will be investigated and alternative measures and/or operational changes that can be made to resolve, mitigate or avoid the issue resulting from vibration will be discussed.
- In the event that these concerns cannot be resolved between the parties, suitably qualified professional shall be engaged to assess vibration associated with earthworks and determine any adverse effect on land and buildings beyond this site. This report to be adopted to comply with the standard BS 5228:1992 or a similar internationally accepted standard.

- Civil Construction is proposed to use non vibration equipment to undertake the earthworks.

3.8 Dust Control

- Dust will be controlled by water carts by ensuring haul roads, stockpiles and exposed materials are wetted down.
- Areas such as entrances to and from site will be dampened with K lines systems.
- Once the onsite water supply has been established all water will be source from on site.
- Stripped areas will be kept as small as possible whilst ensuring works can progress economically.
- Top-soil and seeding will be re-spread to the finished lots areas as soon as practicable within 3 weeks after finished earthworks.
- If dust is a nuisance to surrounding buildings work will cease until the issue has been brought under control. Certain works cease during particularly windy days when dust cannot be controlled.

3.9 Erosion Control

- All construction works will be monitored for erosion weekly and following rain event of 10mm in 12 hour period.
- Suitable management of overland water by cut off drains, piping and dispersement will eliminate and/or minimise concentrated flows from causing erosion.
- Earth worked and exposed areas will be stabilised by reinstatement of vegetation as per the resource consent (RM160186).

3.10 Sediment, Runoff, Silt Control

- Primary, Secondary and Tertiary sediment control will be implemented in the means of catchment areas controlled by surface drains, hard piping to detention pond for sediment retention before final disposal into either on site soakage pits or into existing storm water system. Use of silt fence will be implemented, locations to be confirmed based on detailed site assessment of natural surface water movement. These will be monitored and cleared when required.
- The silt catchment strategy revolves around assessment of existing over land water flows (or digging cut-off drains where required) and constructing settlement pond at selected location. Silt fences are then placed downstream of the ponds for final filtering prior to discharge.
- Controls to manage potential silt run-off will be in place prior to earthworks commencing in areas that have the potential to discharge silt.

- Silt controls will be assessed on a monthly basis and after heavy rainfall (10mm within 12hours) to monitor their effectiveness, ensure they are cleaned out regularly, and improve the silt control system as required.

3.11 Construction methodology

- Prior to commencing earthworks on the site construction vehicle crossing will be installed. All construction traffic will use this crossing to enter and exit the site. Minimum standard for this crossing is 150mm depth of compacted AP65 metal that extends 20m into the site. Shake down grid will be installed if finding ground is particularly sticky and causing tracking out onto Outlet Road and beyond.
- Earthworks methods are to be in line with industry best practice:
 1. Establishment of silt and dust control measures
 2. Strip and stockpile soil
 3. Cut to Fill
 4. Subgrade preparation
 5. Re-spread stockpiled soil on finished lots
- Contaminated Soil Works –works will be undertaken in accordance with the Contaminated Soil Management Plan (May 2016)
- Subdivision Works methods are to be in line with industry best practice.
- Plant only operates during permitted times.
- All equipment is subject to pre start inspections to ensure it is fit for purpose and safe to use.
- All staff will be made aware that in the event of uncovering koiwi tangata (human skeletal remains), waahi taoka (resources of importance), waahi tapu (places or features of special significance) or other Maori artefact material, all activity in the immediate area is to cease. Site management are to notify Council, Tangata Whenua, Heritage New Zealand Pouhere Taonga, and in the case of human remains the New Zealand Police. Work will not recommence in the area until directed by the relevant authorities.
Ben Teele of Origin Consultants Limited (Ph.: 03 409 0607) has been appointed for archaeological monitoring of the development.

3.12 Vegetation

Revegetation will be implemented as soon as practicable and as the seasons allow after the completion of the works. Vegetation of the disturbed areas will decrease sediment yield from the disturbed areas and is considered the most appropriate method of preventing on-going sedimentation post-construction works.

3.13 Fuel / Chemical storage

Location of Fuel (chemical) storage / refuelling station is shown in Figure 2: Northlake Development Wanaka Site Facilities Layout.

3.14 Communication Plan

The representative of Civil Construction Limited for Northlake development is:

Paul Horrell
Civil Construction Limited
027 430 1664

Scott Southerland
Civil Construction Limited
027 430 1675

The secondary contact is the Civil Construction Limited office, phone 03 442 3979.

A project information board will be erected at the access points to the development at the Outlet road. The project information boards will be kept in a tidy condition for the duration of the development.

3.15 Complaints Process

While it is hoped that the above measures will prevent complaints from surrounding residents and the wider community, there is potential for complaints or concerns to be reported via two channels:

- a. Direct to site management
- b. Via QLDC

Regardless of the reporting channel, Civil Construction will assess complaints using the process shown in Figure 3.

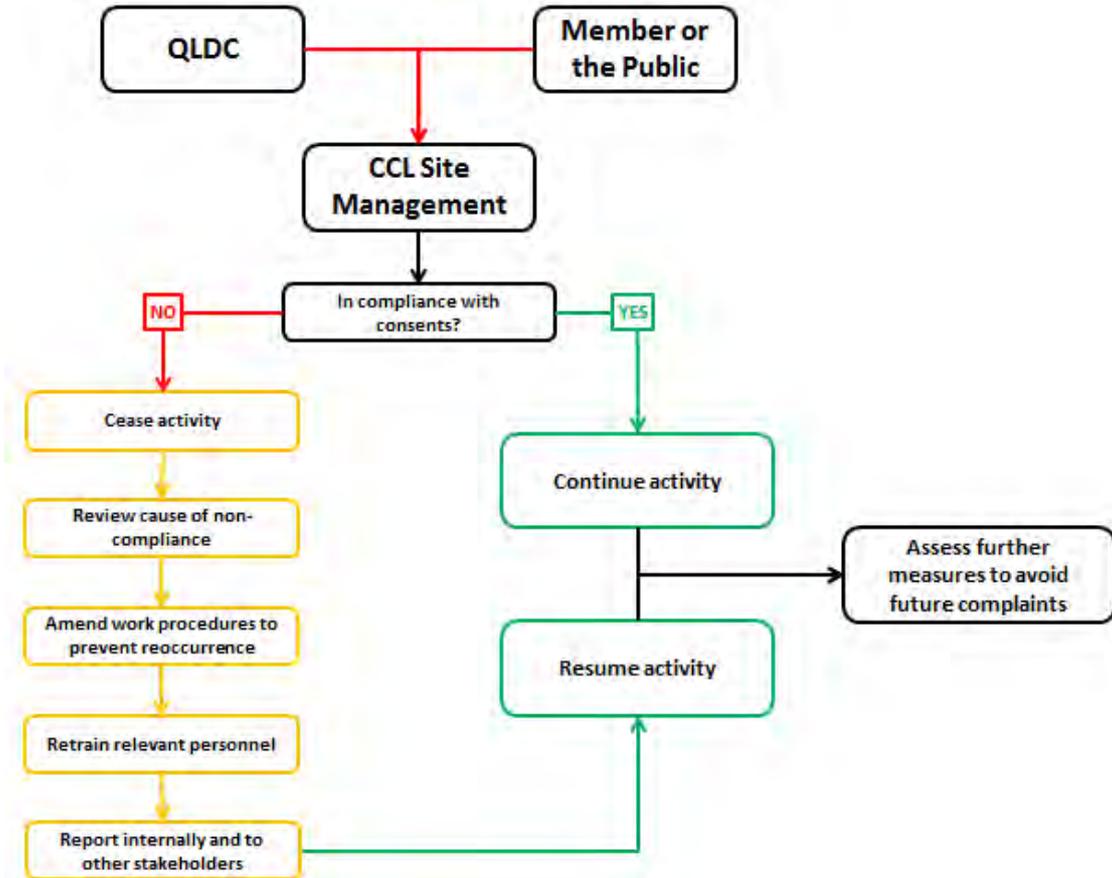


Figure 3: Northlake Development Complaints Management Process

4. Contaminated soil management plan

A contaminated soil management plan (CSMP) has been prepared by Davis Consulting Group Limited and provides a document to guide the excavation and disposal of arsenic-impacted soils and the subsequent ongoing management of the contaminated soil in order to mitigate risk to human health and the environment. A copy of CSMP is annexed to this site management plan.

5.1 Limitations

The mitigation measures relate is specific to the land area specified and the hazard of soil arsenic and boron contamination.

4.2 Contamination Sources

The area for excavation consists of soils with arsenic concentrations exceeding 25mg/kg. Arsenic is considered to have relatively high toxicity and to be non-threshold contaminant. A secondary objective is to remove soils impacted with boron.

4.3 Mitigation Measures

- Excavation and disposal of contaminated soil and stockpiled soil from the encapsulation cell will be sprayed with water prior to end during excavation works when dust generation is likely.
- If dust appears to be migrating off site outside of operation then continuous dampening will be implemented.
- K-lines system will be utilise to provide ongoing wetting if necessary.
- Overland flow uphill of the encapsulation area will be diverted away/around the encapsulation area.
- Rainfall that enters the contaminated excavation site will be channelled to prevent suspended contaminated soil leaving the site.
- In heavy rainfall events the sediment traps will be maintained.
- To prevent tracking of contaminated soil off the site, trucks shall avoid areas of contamination. A staging area will be set up and excavators deliver soil to the trucks.
- If excavators are require to leave the site they will be water blasted. Wash water will be collected within the area of excavation.
- PPE including protective gloves and coveralls shall be worn at all times during the excavations to further minimise the exposure to the soil.
- All earthmoving machinery shall have air conditioned cabins to minimise inhalation of dust.

5. Traffic Management Plan

Traffic Management Plan (TMP) has been prepared by Southern Safety Services Limited. A TMP has been submitted to address increased heavy traffic in the Outlet and Aubrey Rd precinct for the duration of the project. Other TMP's will be required for specific works, including service upgrades and/or connections to the existing infrastructure network and other works as required. All TMP's are live documents, and when active will be reviewed. Updates will be made as they are deemed necessary to be made. A copy of TMP is attached to this site management plan.

On behalf of Civil Construction Ltd:

Date:

Name: Paul Horrell

Signature:

On behalf of Client:

Date:

Name: Marc Bretherton

Signature:

References

This Site Management Plan has been prepared using the following document as the prime reference:

- Paterson Pitts Group “Preliminary Site Management Plan for Bulk Earthworks” Ref. W4481-7 013, sheet 108 dated 5th July 2016
- Paterson Pitts Group “Specification for Construction – Bulk EW” Ref. W4481 – 7
- Riley Consultants Limited “Stormwater Overview Report” Ref. 150693-C, dated 8 April 2016
- Riley Consultants Limited “Geotechnical Assessment Northlake Development, Wanaka” dated 17 February 2016
- Resource Consents RM 160186
- Traffic Management Plan

Annexure 1: Contaminated Soil Management Plan

Contaminated Soil Management Plan

*Aubrey Road Subdivision Arsenic Contaminated Soil Remediation
(May, 2016)*

INTRODUCTION

Purpose of the Site Management Plan

This Contaminated Soil Management Plan (CSMP) has been prepared by Davis Consulting Group Limited (DCG) for Michaela Meehan and provides a document to guide the excavation and disposal of arsenic-impacted soils and the subsequent ongoing management of the contaminated soil in order to mitigate risks to human health and the environment.

Background

The site is located on Aubrey Road, Wanaka, in an area consented for rural residential landuse. The former Iron Hill Timber Treatment Plant operated on the site from 1982 to 2007. A detailed site investigation identified some areas of the site that has elevated arsenic concentrations that exceed background concentrations. Remediation of the site is required to ensure site soils are suitable for residential landuse.

The Remedial Action Plan (RAP) prepared for the site proposes to excavate contaminant hotspots identified by the detailed site investigation in order to remove the majority of the contaminant source from the site, significantly reducing the risk to human health. Figure 1 provides a plan showing the area for excavation and the subsequent disposal site.

Limitations

The mitigation measures presented in this report relate exclusively to the land area specified and the hazard of soil

arsenic and boron contamination. This report does not include other potential hazards that may be encountered on site and all works to be undertaken are required to comply with the Health and Safety at Work Act (2015).

CONTAMINATION SOURCES, EXPOSURE PATHWAYS AND RECEPTORS AND MITIGATION MEASURES

Contaminant Sources

The area for excavation consists of soils with arsenic concentrations exceeding 25mg/kg. Arsenic is considered to have a relatively high toxicity (MfE, 2001) and is considered to be a non-threshold contaminant. It is understood to present a risk at any level of exposure. A secondary objective is to remove soils impacted with boron. While not considered a risk to human health these areas should coincide with the arsenic remedial areas and could allow the ORC to change the HAIL classification to state the impacted lots are 'at or below background concentrations'.

Exposure Pathways, Receptors and Mitigation Measures Excavation and Disposal Works

The receptors associated with the excavation and disposal of the excavated soil include the personnel undertaking the work. The exposure pathways for site workers include soil ingestion via inhalation of dust, and dermal exposure. There is also a possibility that neighbouring properties may have some exposure to dust.

Dust Mitigation:

To limit exposure of site workers and neighbouring properties to dust generated during excavation of the encapsulation cell, excavation and disposal of contaminated soil and stockpiled soil from the encapsulation cell shall be sprayed with water prior to and during excavation works when dust generation is likely. This approach will reduce dust discharges and exposure. The work shall be undertaken in calm conditions when the

risk of dust migration offsite is low. If dust appears to be migrating off site outside of operation then continuous dampening will be implemented.

Dust will also be managed by completing the remedial work within the shortest timeframe possible to reduce exposure time of disturbed contaminated soil and minimising the potential for dust to migrate off site.

Stormwater and Soil Management:

Rainfall that enters the contaminated excavation site will be channelled to remain within the excavation perimeter to prevent suspended contaminated soil leaving the excavation site. Stormwater outside of the excavation site will be directed to drains with sediment traps to allow sediment to settle and not leave site. In heavy rainfall events the sediment traps will be maintained.

To prevent tracking of contaminated soil off the site, trucks shall avoid areas of contamination. A staging area will be set up and excavators will deliver soil to be moved to the trucks. Due to the short distance over which soil will be transported, loads will not be covered, but dampening down of soil prior to transport will help to prevent dust discharges if required. If excavators working within the contaminated area is required to leave the site, they will be thoroughly water blasted to remove contaminated soil prior to leaving the area. Washwater will be collected within the area of excavation.

Noise and Odour Control:

Excavation activity will generate some noise however the activity will only occur 8am to 5pm Monday to Friday and 8am – 1pm on Saturday with no works to be undertaken on Sundays. No odour is anticipated with the nature of this activity. Neighbouring resident's properties will be inspected by the contractor's engineer prior to commencement of earthwork activities. A Frequently Asked Question (FAQ) sheet will also be provided to

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neighbouring properties prior to the commencement of the earthworks.

Personnel Protective Equipment:

The risk of dermal exposure is relatively minimal, however PPE including protective gloves and coveralls shall be worn by earthworks contractors at all times during the excavation to further minimise exposure to the soils.

All earthmoving machinery (excavators and trucks) shall have air conditioned cabins to minimise inhalation of dust that may occur during the earthworks activities.

Operation of the Disposal Site

Upon completion of the disposal site's construction, a low permeability HDPE liner will be installed over the impacted soil to limit rainfall percolation. This will mitigate the potential exposure of groundwater from leachate which could generate if the liner was not installed. Furthermore, the liner will be overlain with a polythene sheet in order to prohibit plant root penetration of the liner to maintain its integrity and prohibit deep plant roots from entering contaminated soil.

There is a risk that excavation workers in the vicinity of the encapsulation cell could expose workers to the impacted soils if excavation was advanced through the liner. To mitigate the risk of exposure, the depth and area of the disposal site will be accurately surveyed and delineated on the site plan. This information will be incorporated on the Land Information Memorandum for the site and may be included on a consent notice. Any notice shall clearly state that the liner shall not be disturbed. Providing this advice is adhered to, the likelihood of exposure is low. Hazard warning markers will be placed between the liner and the topsoil as a further measure to protect the liner from inadvertent excavation works.

CONTACTS

Regulatory Bodies

The main regulatory authority contacts with an interest in this SMP include:

- Queenstown Lakes District Council – 03 441 0499
- Otago Regional Council – 0800 474 082
- Public Health South 0 03 450 9156

Emergency Services

New Zealand National Poisons Centre – 0800 764 766

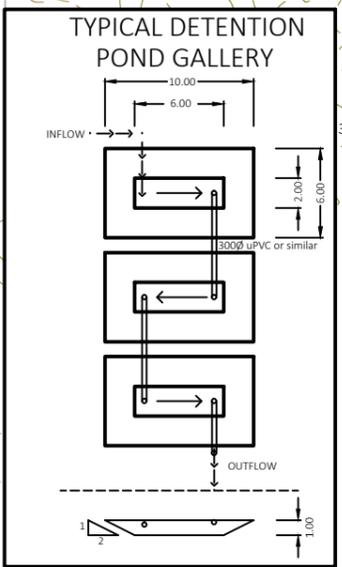
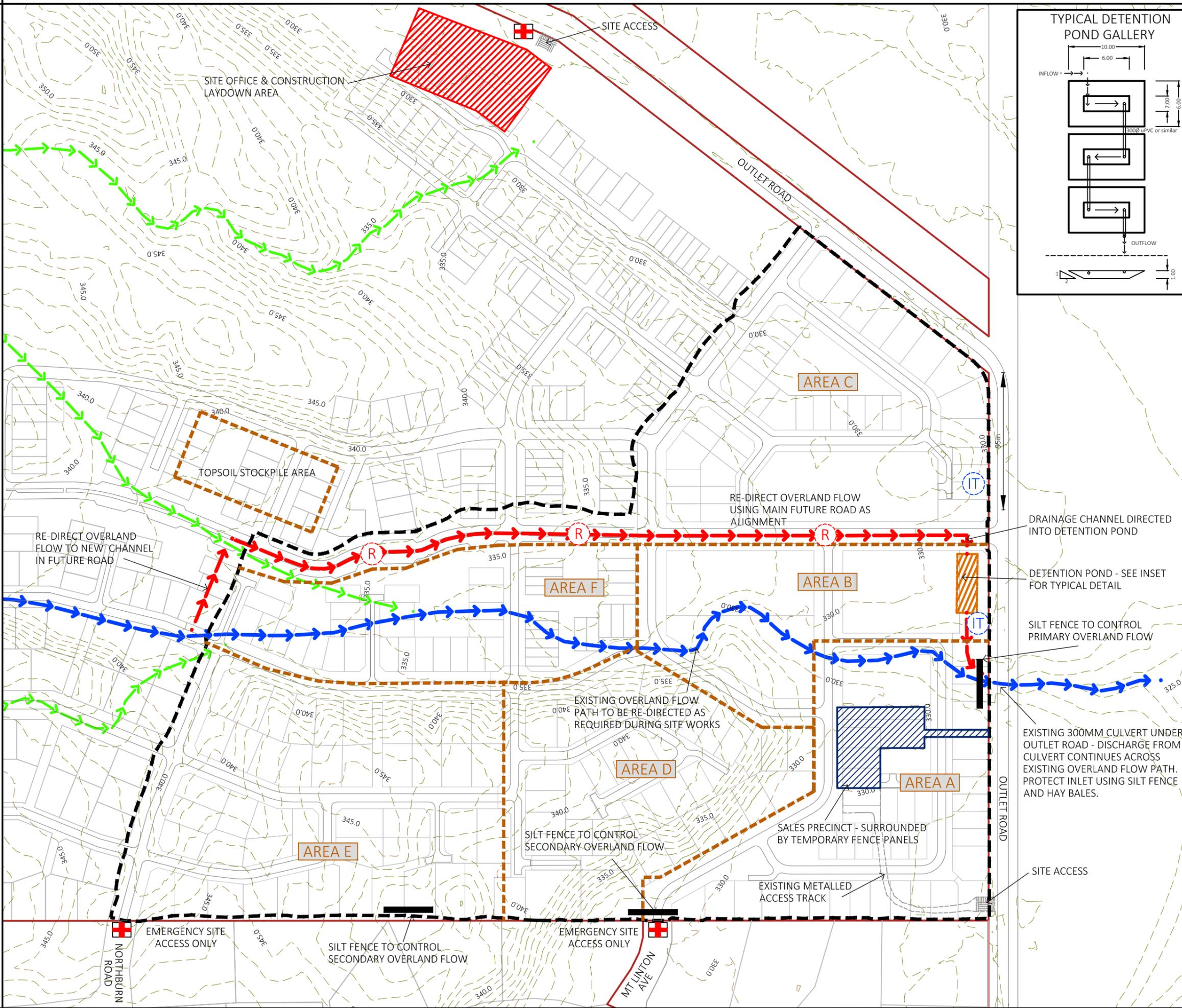
New Zealand Fire and Ambulance Services – 11

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Figure 1: Location of Remedial Areas and Encapsulation Cell



- ### NOTES
- The contractor shall be responsible for locating all existing services prior to commencement of works. The contractor shall make good at their own expense any damage to existing services
 - Levels are in terms of Dunedin Vertical Datum 1958
 - All works are to be installed as per the Specification for Construction.
 - Major contours at 5.0m interval
Minor contours at 1.0m interval

- ### LEGEND
- Blue arrow: EXISTING PRIMARY OVERLAND FLOW PATH
 - Green arrow: EXISTING SECONDARY OVERLAND FLOW PATH
 - Red arrow: RE-DIRECTED OVERLAND FLOW PATH
 - IT: IRRIGATION TOBY
 - Orange dashed line: EARTHWORKS AREA BDY
 - Black dashed line: LIMIT OF EARTHWORKS
 - Red cross: EMERGENCY ACCESS
 - R: ROCK CHECK DAM (Locations to be confirmed on site)
 - Black line: SILT FENCE

FOR CONSTRUCTION

PATERSONPITTSGROUP
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 www.ppgroup.co.nz
 0800 PPGROUP

WANAKA
 19 Reece Crescent
 or P.O. Box 283
 Wanaka 9343
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 E wanaka@ppgroup.co.nz

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Client & Location:
NORTHLAKE INVESTMENTS LTD
 Bulk Earthworks

Purpose & Drawing Title:
Site Management Plan For Bulk Earthworks & Stage 5 Remediation Works

Surveyed by:	PPG	Original Size:	Scale:
Designed by:	AGT	A3	1:2500 @ A3
Drawn by:	AGT		
Checked by:	MJB	DO NOT SCALE	
Approved by:	MJB		
Job No:	W4481-7	Sheet No:	108
Drawing No:	013	Revision No:	2
		Date Created:	13/07/2016

Southern Safety Services Limited
Traffic Management Plan – Short Form



Complete **short form** if simple activity and RCA permits. Refer to the NZ Transport Agency's Traffic control devices manual, part 8 Code of practice for temporary traffic management (CoPTTM), section E, appendix A for a guide on how to complete each field.

Organisations/ TMP reference	TMP reference: 766	Contractor: CIVIL CONSTRUCTION	Principal (Client): CIVIL CONSTRUCTION				
			RCA: QLDC				
Location details and road characteristics	Road names and suburb		House no. / RPs (From and to)	Road level	Permanent speed	AADT/Peak flows	
	Outlet Rd, Wanaka		1712/0.000 - 1712/1.309	LV	50KM	267	
	Aubrey Rd		620/3.111 – 620/3.652	L1	80KM		
Description of work activity	Rooding Upgrade along Outlet Rd Options for traffic Management include: <ul style="list-style-type: none"> - 1. Traffic lights - 2. Give Way System - 3. Stop and Go Please find attached layouts.						
Planned work programme							
Start date	04/07/16	Time	8.30am	End date	31/03/17	Time	17pm
Consider significant stages , for example: <ul style="list-style-type: none"> • road closures • detours • no activity periods. 	No delays expected						
Alternative dates if activity delayed	TBC						
Road aspects affected (delete either Yes or No to show which aspects are affected)							
Pedestrians affected?	N	Property access affected?	N	Traffic lanes affected?	Y		
Cyclists affected?	N	Restricted parking affected?	N	Delays or queuing likely?	N		
TSL/ Diagram (see TSL decision matrix for guidance)	TSL details as required Approval of Temporary Speed Limits (TSL) are in terms of Section 5 of Land Transport Rule: Setting of Speed Limits 2003, Rule 54001 (List speed, length and location)		Times (From and to)	Dates (Start and finish)	Diagram ref. no.s (Layout drawings or TMDs)		
Attended day/ night	A temporary maximum speed limit of 30 km/h is hereby fixed for motor vehicles travelling over the length of 400 m situated between 1712/0.000 - 1712/1.309		08.30 – 17.00	4/07/16 – 31/03/17	Layout 1		
Unattended day/ night	N/A)						
Contingency plan							
If long queues form or delays exceed 5mins (or any other period required by RCA), site to be disestablished or additional lanes made available.		Adjust TMD to suit unforeseen circumstances (eg weather or site overlaps with another work site).		Emergency services will be accommodated and access provided through the site as required.			

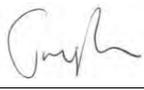
Add additional contingencies:

Contact details

	Name	24/7 contact number	CoPTM ID	Qualification	Expiry date
Principal	CIVIL CONSTRUCTION / Jan Zdara	027 430 1670			
TMC	Tony Francis – QLDC	021 849 912	15470	L1 STMS	27/07/18
Engineers' representative					
Contractor	CIVIL CONSTRUCTION / Jan Zdara	027 430 1670			
STMS	Trevor Page	021 033 8340	83400	L1 STMS	12/06/18
TC					
Others as required					

TMP preparation (or approval if STMS delegated authority to approve TMPs)

Delete the option that does not apply (either prepared or approved)

Prepared By	Trevor Page	04/07/16		83400	L1 STMS	12/06/18
	Name	Date	Signature	ID no.	Qualification	Expiry date

This TMP meets CoPTM requirements

Number of diagrams attached

TMP returned for correction						
	Name	Date	Signature	ID no.	Qualification	Expiry date

Engineer/TMC to complete following section when approval or acceptance required

Approved by TMC or engineer (delete one)						
	Name	Date	Signature	ID no.	Qualification	Expiry date
Acceptance by TMC (if required)						
	Name	Date	Signature	ID no.	Qualification	Expiry date

Qualifier for engineer or TMC approval

Approval of this TMP authorises the use of any regulatory signs included in the TMP or attached traffic management diagrams. This TMP is approved on the following basis:

1. To the best of the approving engineer's/TMC's judgment this TMP conforms to the requirements of CoPTM.
2. This plan is approved on the basis that the activity, the location and the road environment have been correctly represented by the applicant. Any inaccuracy in the portrayal of this information is the responsibility of the applicant.
3. The STMS for the activity is reminded that it is the STMS's duty to postpone, cancel or modify operations due to the adverse traffic, weather or other conditions that affect the safety of this site.

TMP or generic plan reference	
--------------------------------------	--

On-site record must be retained with TMP for 12 months.

ON-SITE RECORD

To be used if information below not covered in company documentation.

Location details	Road names(s):	House number/RPs:		Suburb:	
STMS (in charge)					
	Name	ID Number	Expiry date	Signature	Date and time
TC/STMS-NP (delegation)					
	Name	ID Number	Expiry date	Signature	Date and time

Site monitoring

Site to be monitored 2 hourly and inspection documented below. If site control delegated to a TC/STMS-NP the STMS must inspect the site once each day.

Monitoring	High-visibility garment worn by	Signs positioned OK?	Conflicting signs covered?	Correct delineation?	Minimum lane widths met?	Positive TTM?	Footpath standards met?	Cycle lane standards met?	Traffic flows OK?	Adequate property access?	Comment	Date	Time	Signed by
Site set up														
2 hourly														
2 hourly														
2 hourly														
2 hourly														
2 hourly														
2 hourly														
Site removal														

Temporary speed limit – it is a legal requirement to record the placement and location of TSLs.

Date installed:	TSL speed:	Placement (RPs or street numbers):	Length of TSL (m):	Date removed:
Time:		From: To:		Time:
Date installed:	TSL speed:	Placement (RPs or street numbers):	Length of TSL (m):	Date removed:
Time:		From: To:		Time:
Date installed:	TSL speed:	Placement (RPs or street numbers):	Length of TSL (m):	Date removed:
Time:		From: To:		Time:
Date installed:	TSL speed:	Placement (RPs or street numbers):	Length of TSL (m):	Date removed:
Time:		From: To:		Time:



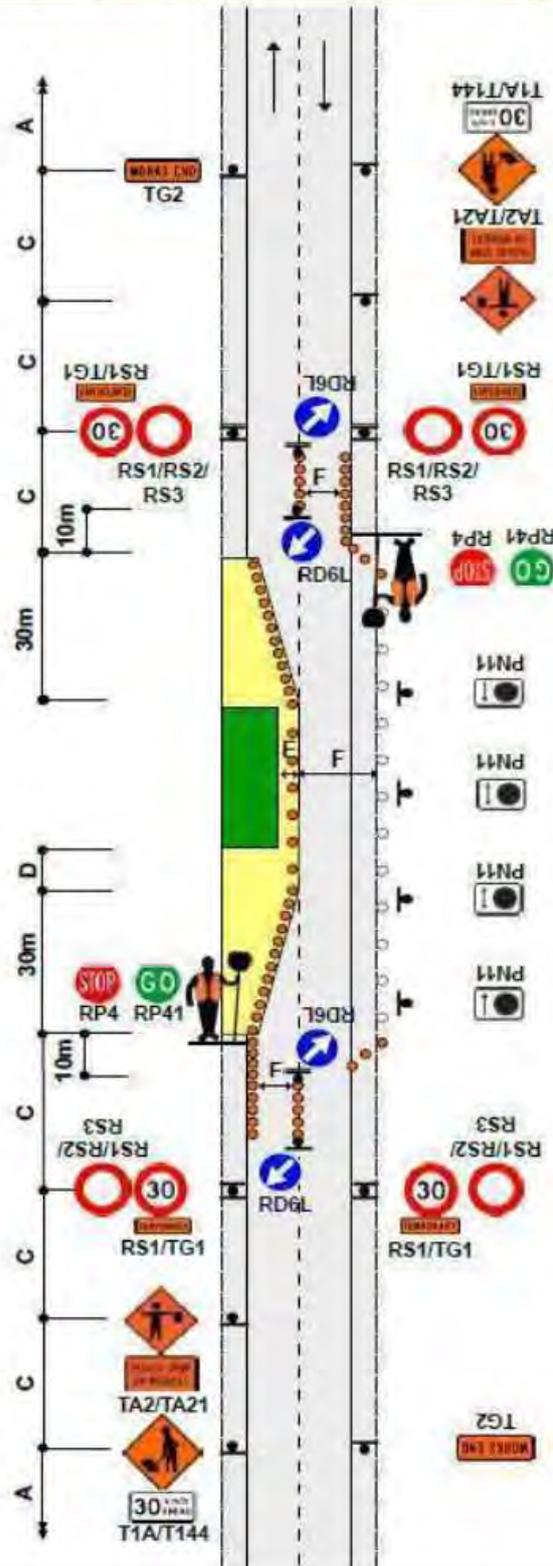
Static operations

TWO-WAY TWO-LANE ROAD
Single-lane alternating flow
Manual traffic control (STOP/GO or STOP/SLOW)

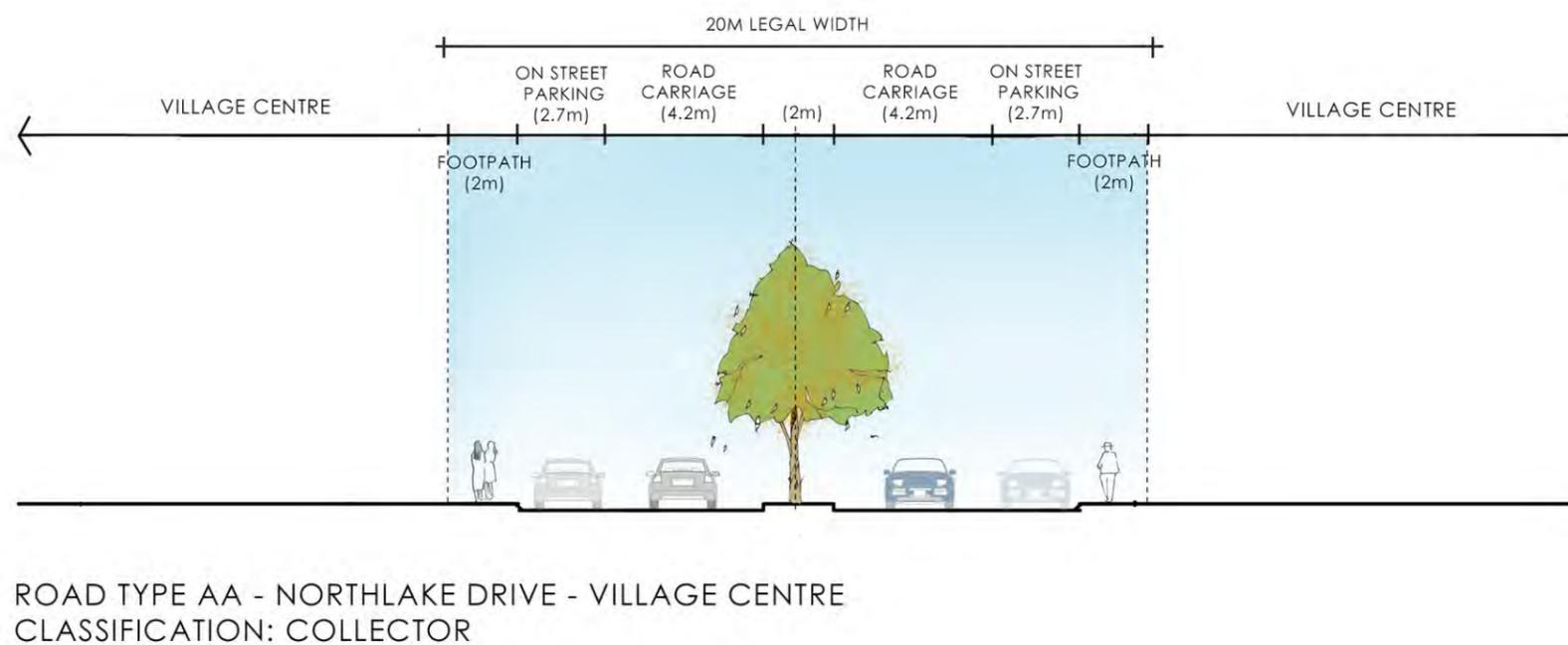
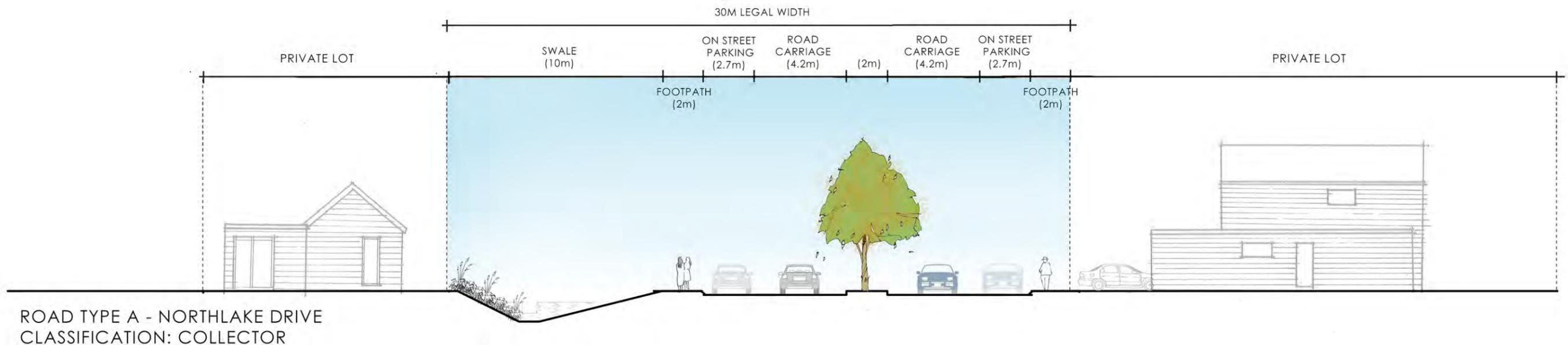
F2.14
Level 1

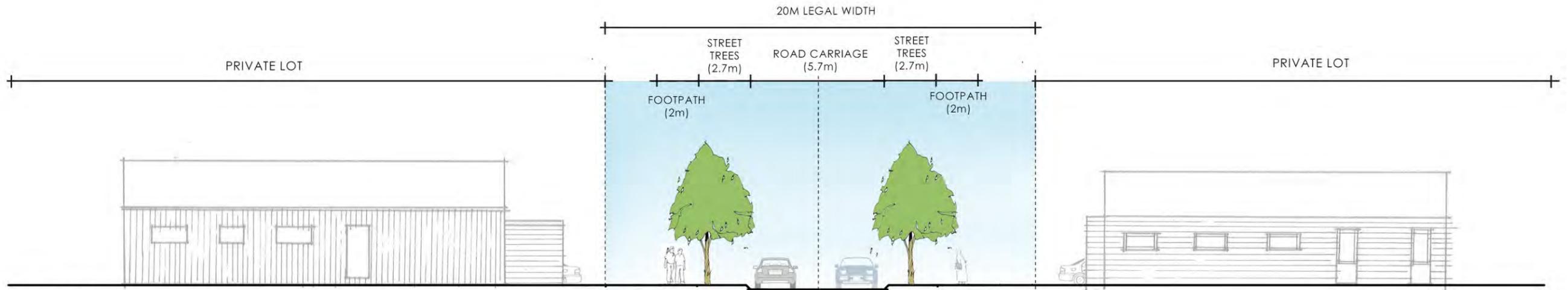
Notes

1. Extend or place extra advance warning signs towards on-coming traffic beyond any expected traffic queues
2. A 30m return taper at the end of the closure is mandatory
3. Cones are required on edge of live lane opposite closure if road is not well defined
4. Use PN11 no stopping signs, if necessary
5. MTC with RP4/RP41 STOP/GO or RP4/RP42 STOP/SLOW paddle located between 1st and 2nd cone closest to the working space
6. Minimum 5 cones in cone threshold at:
 - 2.5m centres - less than 65km/h
 - 5m centres - more than 65km/h
7. Refer to C10.2.3 MTC essentials for further information
8. The T144 30km/h AHEAD sign is optional

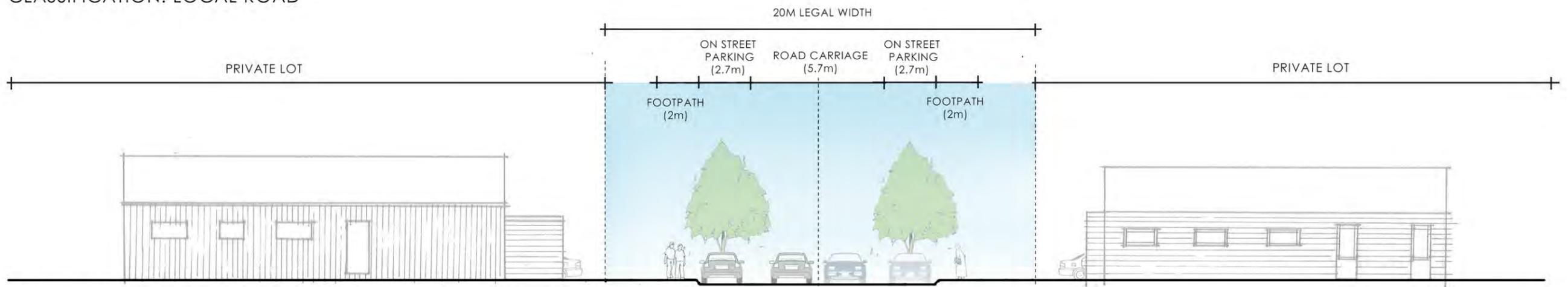


Appendix 3: BDG Indicative Road Cross Sections

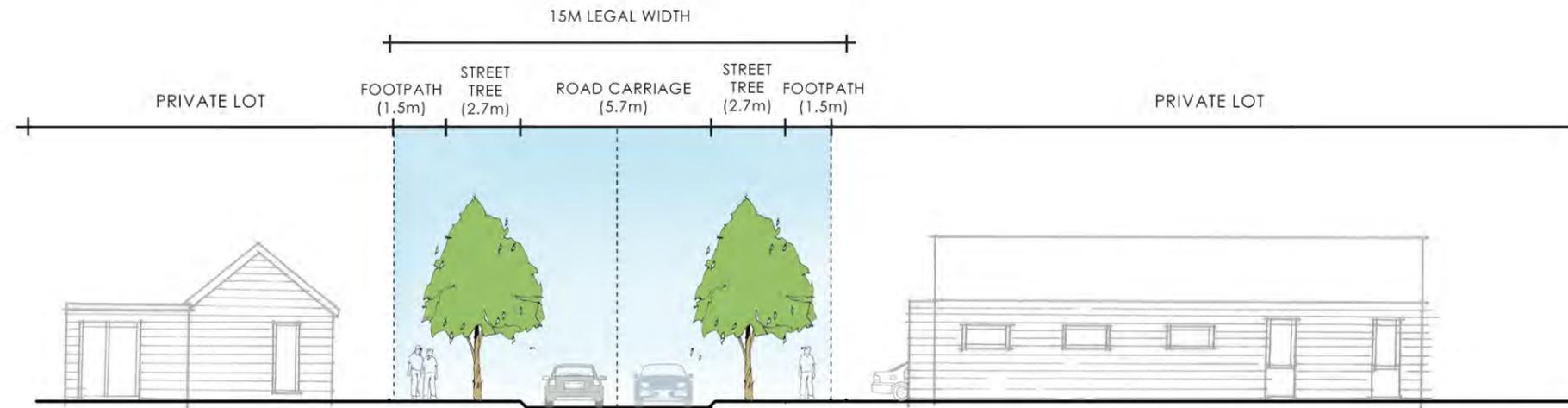




ROAD TYPE B - WITH STREET TREES (20M LEGAL WIDTH)
CLASSIFICATION: LOCAL ROAD



ROAD TYPE B - WITH ON STREET PARKING (20M LEGAL WIDTH)
CLASSIFICATION: LOCAL ROAD

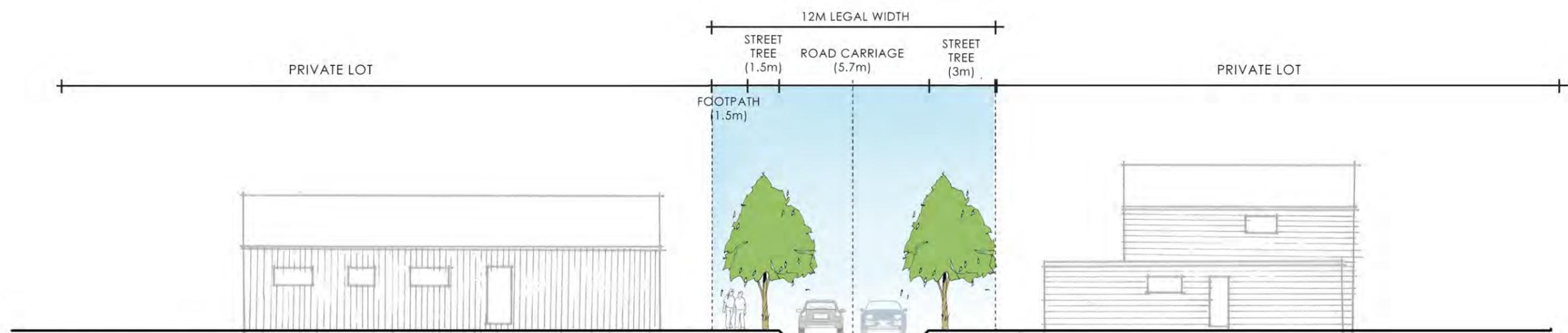


ROAD TYPE B - WITH STREET TREES (15M LEGAL WIDTH)
CLASSIFICATION: LOCAL ROAD

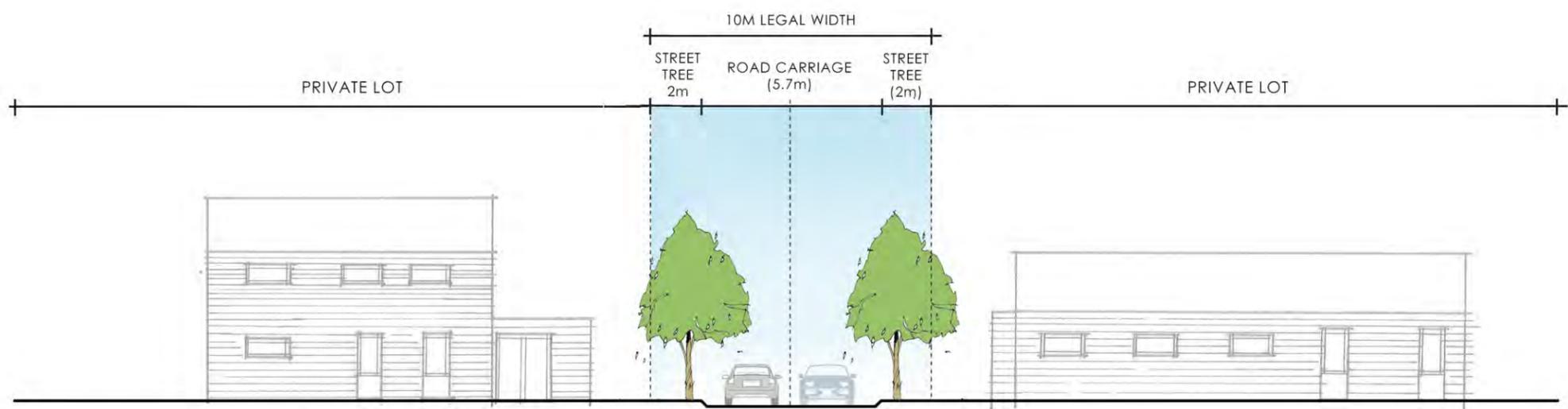


ROAD TYPE B- WITH ON STREET PARKING (15M LEGAL ROAD)
CLASSIFICATION: LOCAL ROAD





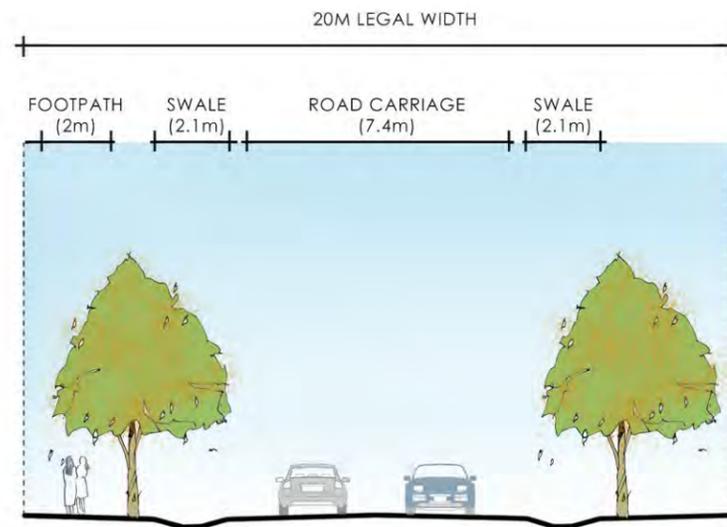
ROAD TYPE C - WITH STREET TREES
CLASSIFICATION: LANE



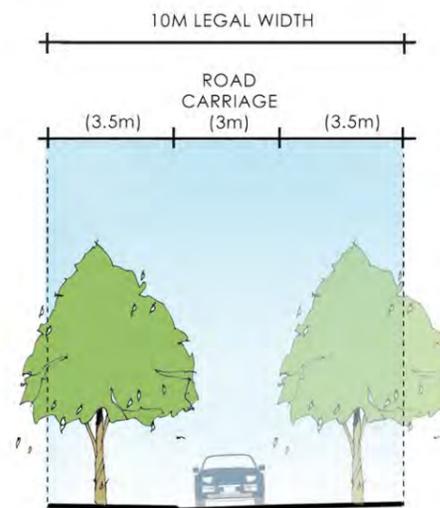
ROAD TYPE D - TRAFFIC LANE + PASSING BAYS/ON STREET PARKING
CLASSIFICATION: LANE

Note: The above typical cross section for Road Type D is in accordance with NZS4404:2010 Figure E11 suitable for servicing 1-20 dwelling units. Where this typical cross section is utilised to service less dwelling units there will be a reduction in legal road width and movement lane width in accordance with NZS4404:2010 Table 3.2





ROAD TYPE E - SEMI RURAL OUTLET ROAD



ROAD TYPE F - ACCESS ROADS

Appendix 4: Road Classification Table

Road Classification Table																			
		Place Context				Design Environment					Link Context								
Road Number	NZS4404 Cross Section Ref	Design Decision Road Type	Area	Land Use	Local Attributes	Locality Served	Target Operating Speed (km/h)	Min. Road Width (m)	Design Decision Road Width (m)	Max. Grade	Provision of Footpath for Pedestrians	Design Decision Provision of Footpath for Pedestrians	Passing, parking, loading and shoulder	Design Decision Provision of Recessed Carparking	Cyclists	Min. Movement Lane (excl. shoulder) (m)	Design Decision Movement Lane (excl. shoulder) (m)	Design Decision Turning Head Type	Classification
Road 1 (extension)	E13	Type A	Suburban	Live and Play	Primary access to housing	Up to 800 du	50	20	30	10.00%	2.0m each side	2.0m on each side	Parking is separate and recessed. See 3.3.6 Public transport is likely (see clause 3.3.1.4, 3.3.1.5)	Recessed parking	Separate provision where local authority defined cycle route	2 x 4.2	2 x 4.2m	NA	Connector / collector (= 8000vpd)
Road 8 (extension)	E12	Type B - 15m	Suburban	Live and Play	Primary access to housing	1 to 200 du	40	15	15	12.50%	1.5m one side or 1.5m each side where more than 20 du or more than 100m in length	1.5m on each side	Shared parking in the movement lane up to 100 du, separate parking required over 100 du	No recessed parking	Shared (In movement lane)	5.5 - 5.7	5.7	NA	Local Road (= 2000vpd)
Road 11	E12	Type B - 20m	Suburban	Live and Play	Primary access to housing	1 to 200 du	40	15	20	12.50%	1.5m one side or 1.5m each side where more than 20 du or more than 100m in length	1.5m on each side	Shared parking in the movement lane up to 100 du, separate parking required over 100 du	No recessed parking	Shared (In movement lane)	5.5 - 5.7	5.7	NA	Local Road (= 2000vpd)
Road 12	E12	Type B - 20m	Suburban	Live and Play	Primary access to housing	1 to 200 du	40	15	20	12.50%	1.5m one side or 1.5m each side where more than 20 du or more than 100m in length	1.5m on each side	Shared parking in the movement lane up to 100 du, separate parking required over 100 du	No recessed parking	Shared (In movement lane)	5.5 - 5.7	5.7	NA	Local Road (= 2000vpd)
Road 13	E11	Type C - 12m	Suburban	Live and Play	Access to houses/ townhouses	1 to 20 du	20	9	12	16.00%	Shared (In movement lane)	1.5m on one side only	Shared (In movement lane)	No recessed parking	Shared (In movement lane)	5.5 - 5.7	5.7	NA	Lane (= 200vpd)
Access 7	E9	Type F - 10m	Suburban	Live and Play	Access to houses/ townhouses	1 to 3 du or 1 to 6 du	10	3.6m for up to 3 du or 4.5m for up to 6 du	10	20.00%	Shared (In movement lane)	Shared (In movement lane)	Allow for passing up to every 50m	No recessed parking & no passing required	Shared (In movement lane)	2.75 - 3.0	3.0	Y Shape	Lane (this would normally be a private road or private way)
Access 8	E9	Type F - 10m	Suburban	Live and Play	Access to houses/ townhouses	1 to 3 du or 1 to 6 du	10	3.6m for up to 3 du or 4.5m for up to 6 du	17 - 10	20.00%	Shared (In movement lane)	Shared (In movement lane)	Allow for passing up to every 50m	No recessed parking. Passing to be provided in courtyard / turning area	Shared (In movement lane)	2.75 - 3.0	3.0	T Shape	Lane (this would normally be a private road or private way)
Access 9	E9	Type F - 10m	Suburban	Live and Play	Access to houses/ townhouses	1 to 3 du or 1 to 6 du	10	3.6m for up to 3 du or 4.5m for up to 6 du	17 - 10	20.00%	Shared (In movement lane)	Shared (In movement lane)	Allow for passing up to every 50m	No recessed parking. Passing to be provided in courtyard / turning area	Shared (In movement lane)	2.75 - 3.0	3.0	T Shape	Lane (this would normally be a private road or private way)