Project Aro

Civil Engineering Preliminary Design Report

Miro Street Limited

Reference: 507237

Revision: 0

2019-10-31

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Document control record

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1 Project Overview

1.1 Introduction

Miro Street Limited are proposing a new residential development within the lot bound by Willis Street, Vivian Street and Victoria Streets in Wellington's city centre. The proposed development, titled project 'Aro', includes a combination of apartment and town house dwellings.

Aurecon NZ Limited (Aurecon) have been engaged by Miro Street Limited to undertake the design of civil engineering services in support of this development. This report provides an overview of the existing and proposed infrastructure for the resource consent application.

1.2 Site Description

The proposed development site is located within Te Aro in the Wellington City Central Business District. The site is bounded by Willis Street to the west, Victoria Street to the east and Vivian Street (State Highway 1) to the south. The site is approximately 0.41 ha with current access from Willis and Victoria Streets. Refer below to the locality plan below outlining the site extent.

Figure 1-1 Locality Plan (Source: WCC GIS)

The majority of the site is an existing carpark, with the exception of one building located in the south-western corner of the site. The existing topography slopes towards the north-eastern corner of the site with site elevation between 17.12m and 21.24m reduced level (RL).

The proposed residential facilities will take up much of the site, with the apartment block sitting on the north end of the site and blocks of townhouses within the southern area of the site. A trafficable lane shall run between Willis and Victoria streets on the southern side of the apartment block. There will be two pedestrian access routes running between the blocks of houses, perpendicular to the trafficable lane. Please refer to Figure 1-2 below showing the architectural conceptual layout.

Figure 1-2 Indicative layout (Source: Architecture Plus Limited Concept Design, August 2019)

1.3 Scope

Aurecon has been engaged by Miro Street Limited to design the civil infrastructure for the proposed development. This will cover, and is limited to, the following components;

- External pavements;
- Bulk Earthworks;
- Erosion and sediment control;
- Stormwater drainage, wastewater drainage and water reticulation;
- Indicative ducting layouts for power and communications.

The following sections outline the design parameters and conceptual design for these civil aspects.

2 Earthworks and External Pavements

The proposed development layout has been provided by Architecture Plus Limited and external pavement finishes and layouts have been provided by Local Collective. The current layouts show a combination of granite paving and concrete finished pavements.

The development will be serviced by a trafficable lane which will be accessed off both Willis and Victoria Streets. The design of any new vehicle crossings and kerb & channels associated with the new pavement areas will be carried out at the detailed design stage.

2.1 Pavement Design

2.1.1 Basis of Design

The following references and standards form the basis of the pavement design:

- Austroads Guide to Pavement Technology (2009)
- WCC Code of Practice for Land Development Part C: Road Design and Construction (2012)

2.1.2 Geotechnical Considerations

Geotechnical investigation for this development is being undertaken by Abuild Consulting Engineers Ltd. This investigation will provide recommendations on the subgrade California Bearing Ratio (CBR). Until testing results have been obtained, a minimum CBR of 7 has been assumed.

2.1.3 Indicative Pavement Profiles

It is proposed that three pavement profiles be developed for a 40-year design life period; two for each of the service lane pavement finishes and one for the pedestrian walkways.

Indicative pavement finishes will be similar to that shown in Table 2-1 below. This will be developed and optimised during detailed design as more geotechnical investigation is carried out and an understanding of the existing CBRs is obtained.

Table 2-1 Indicative Pavement Profiles

Road Type	Usage	Pavement thickness (excluding finishing)	Pavement finishing thickness
Pavement Type 1: Service lane (Concrete finish)	Delivery and service vehicles	350	125
Pavement Type 2: Service Lane (granite paving)	Delivery and service vehicles	400	100
Pavement Type 3: Pedestrian Walkway (granite paving)	Pedestrians only	200	100

2.2 Earthworks

A preliminary earthworks model has been created for the development layout provided by the project architect, Architecture Plus. The model includes flat building platforms to the Architects' specified levels. To ensure that stormwater can effectively be conveyed through the site, a minimum of 1:100 longitudinal grade has been established for the pavements. A cross fall of 1:80 minimum has also been maintained in the direction of stormwater channels and sump inlets.

It is noted that retaining walls will be required in order to achieve the required building platform levels for the townhouses fronting Victoria Street and the central portion of the apartment complex. These retaining walls fall outside the civil engineering design scope.

The proposed earthworks cut / fill is illustrated in Drawing 507237-0000-DRG-CC-0021. Cut and fill volumes have been estimated as the difference between the proposed subgrade level and the stripped ground surface. The following assumptions have been made:

- The stripped ground surface is the existing surface less an assumed 50mm thick existing asphaltic cement (AC) pavement layer;
- Pavement depths shall be as per the three pavement types presented in Table 2-1;
- The building platforms require excavation to 300mm below finished level to allow for shallow foundations and structural fill. To be confirmed during later design stages in conjunction with the appointed structural engineer.

The preliminary model indicates that the earthworks will require approximately 720m^3 cut and 1250m^3 fill. Subject to suitability, it is intended that all cut material will be used as fill. This will mean than approximately 530m^3 of fill material will need to be imported. It is noted that volumes are solid measure only i.e. no bulking factor has been applied.

Limited information is known regarding the existing ground conditions. The indicative earthworks volumes assume that suitable material is available once at sub-grade level. The quantities derived from the design model make no allowance for further undercut of soft or unsuitable materials and backfill with suitable material to sub-grade level.

An erosion and sediment control plan has been prepared for the management of earthworks during construction. It is intended that the erosion and sediment control plan will be adopted by the nominated Contractor. The erosion and sediment control concept and management shall be in accordance with the *Erosion and Sediment Control Guide for the Wellington Region* (Greater Wellington Regional Council, September 2002).

3 Stormwater

3.1 Existing Network

Based on review of the Wellington City Council (WCC) GIS Local Maps and the site survey undertaken by Aurecon, stormwater generated from the site currently discharges to five existing sumps located within the boundary of the site; two towards the north-west corner and three towards the north-east corner. Although it is not clear how these sumps connect into the existing network, based on the existing site topography it can be assumed that the majority of the catchment area (85%) drains towards Victoria Street and the north-western corner of the site (15%) drains towards Willis Street.

The information available on the WCC GIS Local Maps, also indicates the following gravity stormwater mains that exist adjacent to the development site:

- A 300mm diameter concrete stormwater main located along the western side of the Willis Street roadway. The indicative construction date for this main is 1971 with an approximate depth of 1.9m.
- A 375mm diameter concrete stormwater main located within the centre of the Victoria Street roadway. The indicative construction date for this main is 1962 with an approximate depth of 1.5m.

These existing services are illustrated below in Figure 3-1. No information is available regarding the condition of these assets.

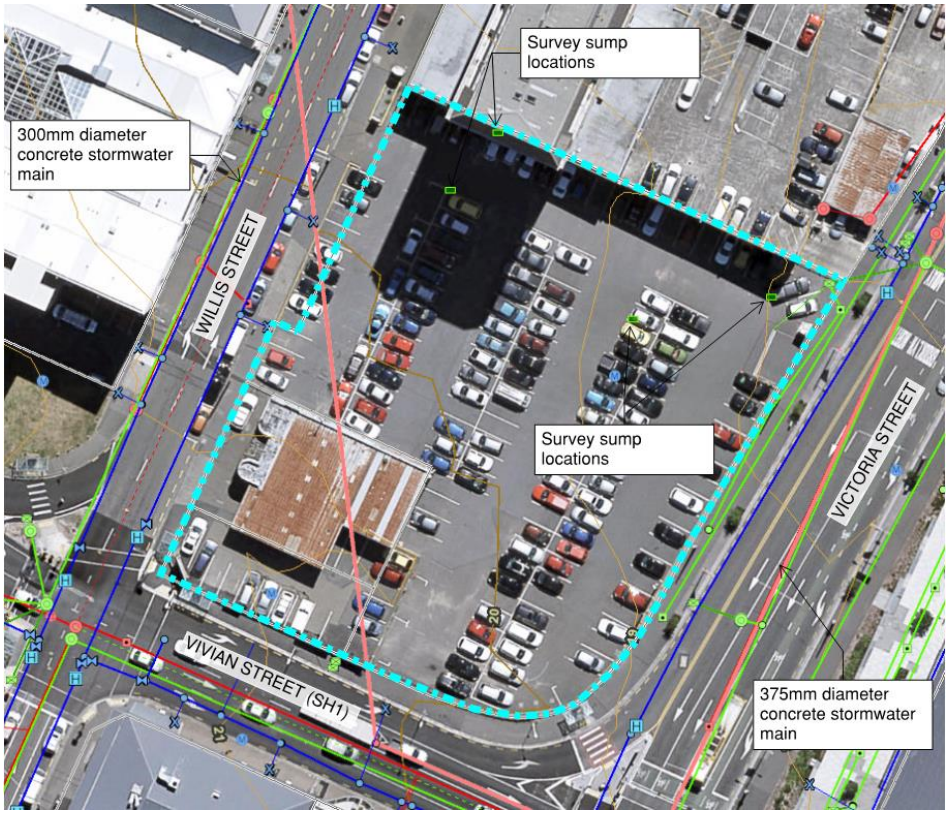


Figure 3-1 Stormwater Drainage Overview (Source: WCC GIS)

3.2 Basis of Design

The following references and standards will be used for the stormwater design:

- Wellington Regional Standard for Water Services (Wellington Water, 2019);
- Wellington City Council Code of Practice for Land Development;
- NZS 4404:2010 Land Development and Subdivision Infrastructure;
- E1 Surface Water 1st Edition Amendment 10 of the New Zealand Building Code;

- NIWA – High Intensity Rainfall Design System V4 (HIRDS)

3.3 Flood Risk

An indicative flood map has been provided by Wellington Water for the proposed development site. The map shows the 1 in 100-year flood depth with an allowance for climate change.

The map shows that most of the development site is currently not susceptible to flooding under a significant event, with the exception of a small portion of the south-western corner which may experience surface water up to 0.25m deep. The map also shows an overland flow path within Victoria Street adjacent to the development site. Wellington Water have noted that the mapping does not include freeboard, hence it recommends that finished levels of any habitable area be kept at least 200mm above the existing footpath level.

Refer to Appendix B for the Wellington Water 1 in 100-year flood map.

3.4 Design Flows

Stormwater flow calculations have been undertaken in accordance with the *Regional Standard for Water Services* (Wellington Water, 2019) using the Rational method for hydrological design. As per WCC requirements, the primary drainage system will be designed to convey a 10-year average recurrence interval (ARI) where an overland flow path the pass the 100-year ARI storm event can be provided.

The design rainfall intensities have been taken from HIRDS V4 database. Climate change is accounted for until 2100 and assumes a representative concentration pathway (RCP) of 8.5. Based on a ten-minute storm duration event, a design rainfall intensity of 92.5L/s can therefore be obtained.

The Rational method with the above rainfall intensities was used to estimate the stormwater runoff from the pavement and roof areas. Runoff coefficients used within this calculation are as follows:

Table 3-1 Proposed Runoff Coefficients

Area Type	Runoff Coefficient (C)
Roof	0.95
Pavement	0.95
Green / garden area	0.35

The site area is approximately 0.41ha. The majority of the developed site will be impervious area, but small garden areas are proposed. The peak design flows for the development are summarised in Table 3-2 below.

Table 3-2 Design Flow Rates

Area Type	Percentage Impervious	Area	Flow
Roof areas	100%	2,916m^2	71L/s
Pavement and gardens	75%	1,200m^2	23.5L/s
Total		4,116m2	94.5L/s

The total pre-development flows from the site are estimated to be 103L/s. This equates to a reduction of peak runoff of 8.5L/s as a result of the garden areas within the development.

3.4.1 Network Capacity

Wellington Water has been contacted to access the capacity of the network, but no response has been received to date. Given the area is currently impervious the stormwater runoff generated from the proposed development will be comparable to the existing SW flows generated from the site.

3.5 Proposed Network

The proposed layout and sizing of the stormwater drainage infrastructure is shown on design drawings 507237-0000-DRG-CC-0040 and 507237-0000-DRG-CC-0041. It is intended that one connection will be made to the existing 375mm diameter stormwater main located within Victoria Street. A combination of 160 OD, 250mm OD and 315mm OD PE100 SDR17 stormwater mains are proposed which will run along the trafficable lane and the two pedestrian access routes. It is noted that design pipe sizes may change during the detailed design stage.

Dish channels are proposed to direct surface runoff to sump intakes at regular spacing. Subsoils are also proposed behind the building retaining walls (designed by others) and through the central access way. All surface and subsoil drainage will go through trapped outlets before being discharged to the network.

Based on the architectural design, it is intended that roof runoff from the each of the townhouse blocks be directed in combined pipes within the corridor between the adjoining units. This stormwater drainage is indicated in the design drawings and design will be completed by a building services engineer. Manholes have been proposed for the end of each townhouse blocks to provide a point of connection.

4 Wastewater

4.1 Existing Network

Based on the information available on the Wellington City Council (WCC) GIS Local Maps, gravity wastewater mains that exist adjacent to the development site are inclusive of the following:

- A 225mm diameter concrete wastewater main located along the western side of the Willis Street roadway. The indicative installation date for this main is 1971 with an approximate depth of 2m;
- A 150mm diameter concrete wastewater main located within along western side and towards the centre of the Victoria Street roadway. The indicative installation date is 1962 with an approximate depth of 1.6m;

These existing services are illustrated below in Figure 4-1. There is no information available regarding the condition of these wastewater assets.

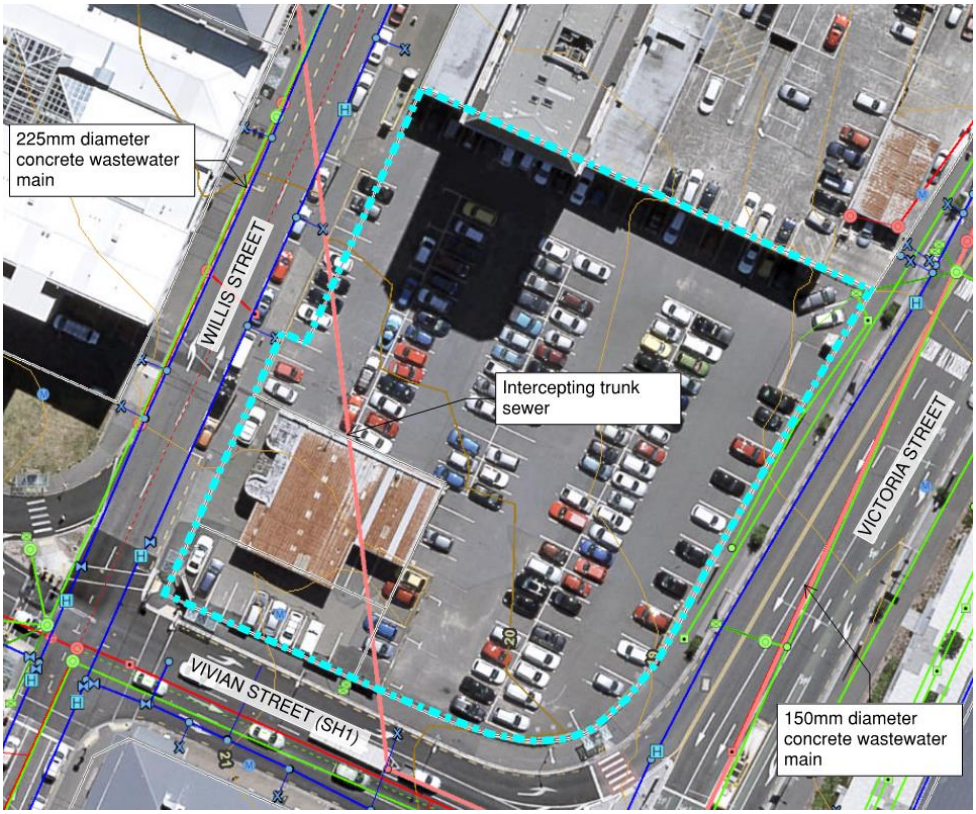


Figure 4-1 Wastewater Drainage Overview (Source: WCC GIS)

The WCC GIS Local Maps also show that an intercepting trunk sewer crosses the western side of the site. The depth to invert is approximately 10m below existing ground level and indicative installation date is 1937. As-built information provided to Aurecon by Wellington Water indicate that this sewer is oval in shape and has internal dimensions of 3 feet (0.91m) wide and 6 feet (1.83m) high. It is understood that the interceptor was of tunnelled construction.

Wellington Water have undertaken a condition and location survey of this sewer prior to any works beginning on the project site investigations.

4.2 Basis of Design

The following references and standards will be used in the wastewater design:

- Wellington Regional Standard for Water Services (Wellington Water, 2019);
- Wellington City Council Code of Practice for Land Development;
- NZS 4404:2010 Land Development and Subdivision Infrastructure;

- G13 Foul Water 2nd Edition Amendment 8 of the New Zealand Building Code.

4.3 Design Flows

The preliminary wastewater design flows for the development have been calculated in accordance with the methods outlined in the *Regional Standard for Water Services* (Wellington Water, 2019), which specified an average dry weather flow (ADWF) of 0.0023L/s per person.

Based on the proposed development plan, number of proposed units and an assumed population of 3.1 persons per dwelling (as the requirements of the Regional Standards), a maximum population of 316 can be assumed. This equates to a residential ADWF 0.73L/s. An additional commercial flow of 0.02L/s can also be assumed based on the equivalent population method presented within the Regional Standards. This results in a total ADWF of 0.75L/s.

The peak wet weather flow (PWWF) can therefore be estimated as 6.54L/s for the entire development. This is based on the area of the site and a calculated peaking factor of 8.6 as per the Regional Standard.

4.3.1 Network Capacity

Wellington Water have been contacted to assess the capacity of the existing network to accommodate the development design flows. They have confirmed that the local network mains have capacity for the development flows and have not indicated than any upgrades will be required.

4.4 Proposed Network

The proposed layout and sizing of the wastewater drainage infrastructure is shown on design drawings 507237-0000-DRG-CC-0040 and 507237-0000-DRG-CC-0041. It is intended that one connection will be made to the existing 150mm diameter wastewater main located within Victoria Street. A 160OD PE100 SDR17 drainage main is proposed which will run along the trafficable lane and the two pedestrian access routes. The drainage mains will be laid with suitable grade to ensure self-cleansing velocities can be achieved and in accordance with the minimum grades specified within G13 of the New Zealand Building Code.

Each of the town houses will have a separate lateral connection to the mains. Due to the proximity of the Willis Street fronting townhouses to the boundary, establishing a main along the dwelling frontage is not considered practical due to existing service constraints. It is therefore anticipated that wastewater flows from these dwellings be directed backwards and underneath the opposite units to connect into the proposed mains in within the pedestrian walkway.

5 Water Supply

5.1 Existing Network

Based on the information available on the Wellington City Council (WCC) GIS Local Maps, the following pressurised reticulation water mains exist adjacent to the development site:

- A 200mm diameter cast iron water main located along the eastern side of the Willis Street roadway. The indicative installation date for this main is 1960;
- A 150mm diameter cast iron water main located along the western side of the Willis Street roadway. The indicative installation date for this main is 1960;
- A 200mm diameter asbestos cement water main along within the western side of the Victoria Street roadway. The indicative installation date for this main is 1977;
- 150mm diameter cast iron water main located along the southern side of the Vivian Street (SH1) roadway. The indicative installation date for this main is 1928.

The WCC GIS Local Maps also shows the presence of multiple fire hydrants adjacent to the development site. This includes two hydrants on the 200mm Willis Street main and an additional two hydrants on the Victoria Street main.

These existing services are illustrated below in Figure 5-1.

No information is available regarding the condition of these assets.

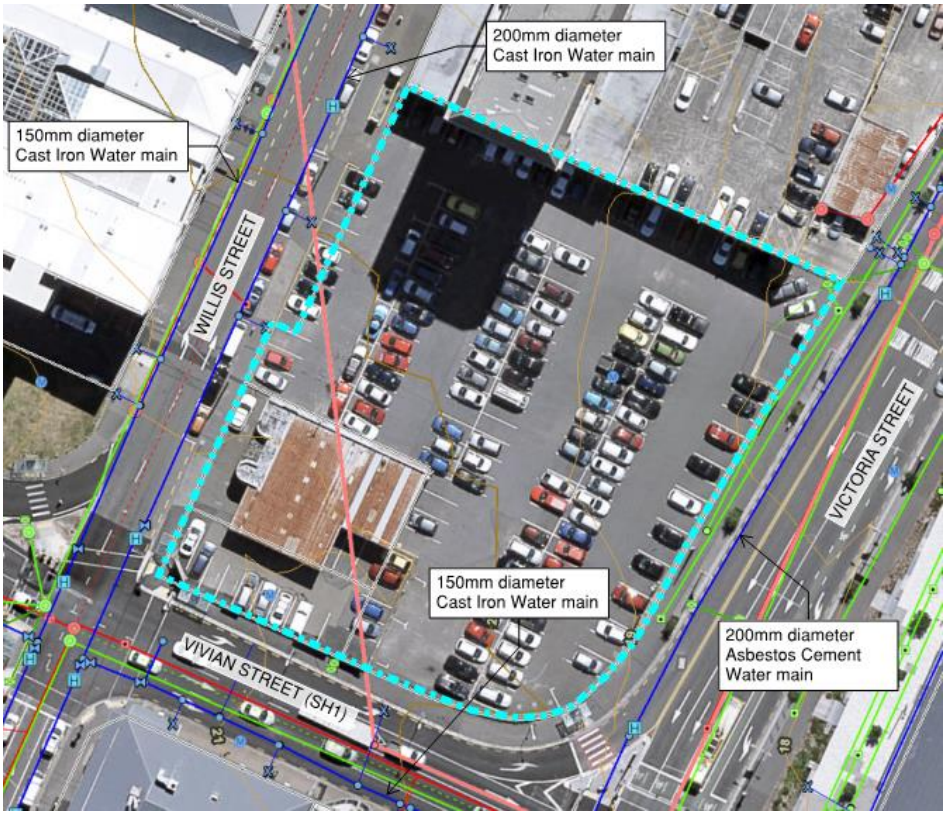


Figure 5-1 Water Supply Overview (Source: WCC GIS)

5.2 Basis of Design

The following references and standards will be used in the water reticulation design:

- Wellington Regional Standards for Water Services (Wellington Water, 2019);
- Wellington City Council Code of Practice for Land Development;

- NZS 4404:2010 Land Development and Subdivision Infrastructure;
- SNZ PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice;
- G12 Water Supply 3rd Edition Amendment 12 of the New Zealand Building Code.

5.3 Design Water Demand

5.3.1 Potable Demand

The preliminary water design flows for the development have been calculated in accordance with the methods outlined in the *Regional Standard for Water Services* (Wellington Water, 2019), which specifies a peak instantaneous residential demand of 0.0162L/s per person.

Based on the proposed development plan, number of proposed units and an assumed population of 3.1 persons per dwelling (as the requirements of the Regional Standards), a maximum population of 316 can be assumed. This equates to a residential design instantaneous demand of 5.1L/s. An additional commercial demand of 0.12L/s can also be assumed based on the equivalent population method presented within the Regional Standards. This results in a total potable water demand of 5.2L/s.

5.3.2 Fire Water Demand

The proposed development includes a fire water connection to the apartment complex to provide sprinkler flow. A building services engineer has yet to be appointed for this project, hence design flows have been estimated in accordance with SNZ PAS 4509:2008 *New Zealand Fire Service Firefighting Water Supplies Code of Practice*. It can be assumed that a sprinkler design flow of 25L/s will be required for an Ordinary Hazard (OH) building. This should be supplemented by the flows from the adjacent public hydrants, providing a total design fire flow of 50L/s.

5.3.3 Network Capacity

It is recommended that hydrant flow testing be undertaken to advise pressures and availability for fire flow within the network. This will be undertaken during later design stages to inform the detailed design.

Wellington Water has been contacted to assess whether there are any known constraints within the water supply network. Based on their preliminary in-house assessment, they do not believe there will be any water supply issues (capacity or pressure) for the proposed development. However, they will require the results of a physical hydrant flow test to approve the fire supply connection to the network.

5.4 Proposed Water Supply Infrastructure

5.4.1 Potable Water

The proposed layout and sizing of the water supply infrastructure is shown on design drawings 507237-0000-DRG-CC-0040 and 507237-0000-DRG-CC-0041. Three tee connections off the existing mains are proposed, two off the 200mm diameter cast iron main on Willis Street and one off the 200mm diameter asbestos cement main on Victoria Street. A 63OD PE100 SDR11 pressure main is proposed which will run along the trafficable lane and two pedestrian access routes. These mains will connect as ring mains to increase security of supply. A publicly vested rider main is also proposed, which will be located within the footpath on the eastern side of Willis Street to service the adjacent units.

Each of the town houses will have a separate lateral connection and service valve (Tobie). This will be a manifold connection with dual-check valve as per the Wellington Water approved products register.

5.4.2 Fire Supply

A separate tee connection is proposed to be made off the 200mm diameter asbestos cement main located on the western side of Victoria Street to provide fire supply. The size of this main will be confirmed by a building services engineer during the detailed design stage. A ductile iron fire supply pipe is recommended (depending on the proposed main diameter).

A backflow preventer will be required for this fire supply line and is proposed to be located within the apartment plant room at the western end of the complex. The backflow preventer will be designed in accordance with NZS 4541:2013 and the Wellington Water and Wellington City Council approved products register. As an internal building fixture, it is intended that this backflow preventer be incorporated into the building fire service design.

6 Other Services

6.1 Power

Wellington Electricity power records indicated that there are power cables that exist within the footpath of Willis Street, Vivian Street and Victoria Street adjacent to the development site. This includes a combination of active 11KV and 400V cables.

Assessment of capacity and approval for connections has not been undertaken, engagement with Wellington Electricity will be required at subsequent design stages.

6.2 Communications

Chorus communication records indicated that there are existing communications lines within the Willis Street and Vivian Street footpaths.

Assessment of capacity and approval for connections has not been undertaken, engagement with Chorus will be required at subsequent design stages.

6.3 Gas

Gas reticulation is not being provided in this development.

7 Other Considerations

7.1 Safety in Design

Safety in Design is to be addressed and mitigated as part of the detailed design process. This includes safety hazards that may present themselves during the installation/maintenance of the proposed development. Considerations include, but are not limited to the following aspects:

- Avoid the need to entre below ground structures for operational monitoring and maintenance activities;
- Protection from falling as per the New Zealand Building Code;
- Traffic and construction traffic movements;
- Potential for contaminated material to be encountered during earthworks;
- Minimising earthworks/trenching depths by using minimum grades for pipe networks.

7.2 Building Services Design

It is anticipated that a building services engineer will be appointed for further project stages. The service design presented in this report, including pipe layouts, sizing and flow rates may therefore change to reflect the confirmed building servicing requirements.

7.3 Structural Design

Confirmation is required from the structural engineer to assess required clearance between the proposed buildings and services. This assessment will be carried out when the foundation types are further defined and developed. Services will need to be kept out of the zone of influence from the foundations. It is assumed that the townhouses will have shallow foundations but the depth of the foundations is unknown.

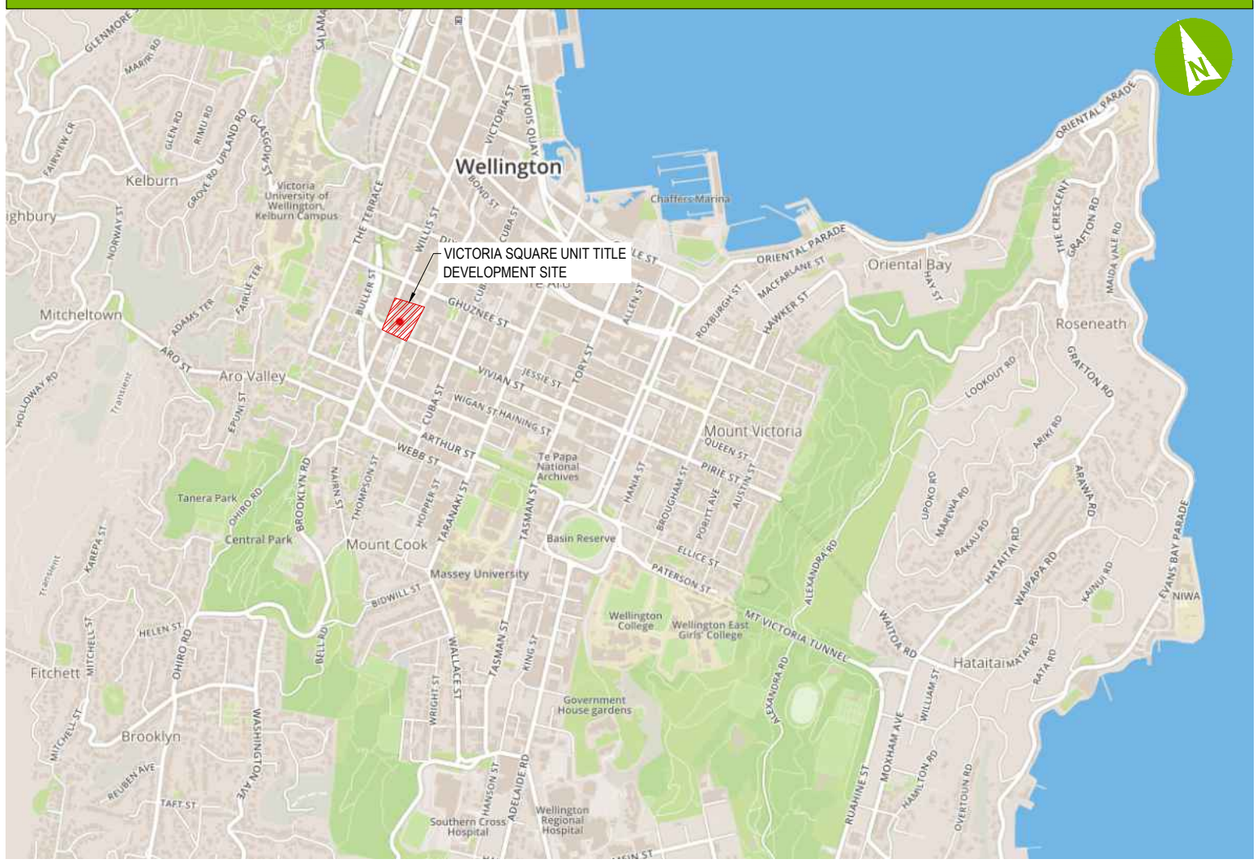
Appendix A
Preliminary Design Drawings

ARO
DRAWING INDEX AND SITE LOCATION

DRAWING INDEX

DRAWING NUMBER	DRAWING TITLE
505237-0000-DRG-CC-0000	DRAWING INDEX AND SITE LOCATION
505237-0000-DRG-UU-0001	TOPOGRAPHICAL SURVEY
505237-0000-DRG-CC-0002	GENERAL NOTES
505237-0000-DRG-CC-0003	SAFETY IN DESIGN RISK REGISTER SHEET 1 OF 2
505237-0000-DRG-CC-0004	SAFETY IN DESIGN RISK REGISTER SHEET 2 OF 2
505237-0000-DRG-CC-0010	EXISTING SITE LAYOUT AND SERVICES LOCATION
505237-0000-DRG-CC-0020	DESIGN CONTOURS
505237-0000-DRG-CC-0021	EARTHWORKS CUT/FILL
505237-0000-DRG-CC-0022	EROSION AND SEDIMENT MANAGEMENT PLAN
505237-0000-DRG-CC-0024	EROSION AND SEDIMENT MANAGEMENT STANDARD DETAILS
505237-0000-DRG-CC-0030	ROAD LONG SECTION
505237-0000-DRG-CC-0035	PAVEMENT DETAILS
505237-0000-DRG-CC-0040	PROPOSED SERVICES PLAN SHEET 1 OF 2
505237-0000-DRG-CC-0041	PROPOSED SERVICES PLAN SHEET 2 OF 2
505237-0000-DRG-CC-0045	PROPOSED SERVICES SHEET 1 OF 2
505237-0000-DRG-CC-0046	PROPOSED SERVICES SHEET 2 OF 2
505237-0000-DRG-CC-0050	STANDARD SERVICES DETAILS SHEET 1 OF 2
505237-0000-DRG-CC-0051	STANDARD SERVICES DETAILS SHEET 2 OF 2

SITE LOCATION



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CLIENT
MIRO STREET LIMITED

REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
NOT TO SCALE	A1
DRAWN	
T.MUNERI	
DESIGNED	
S.NOVIS	
REVIEWED	
A.HILLS	

CONSENT
NOT FOR CONSTRUCTION

APPROVED
DATE
G.MURISON

PROJECT	ARO
TITLE	DRAWING INDEX AND SITE LOCATION

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0000	A

LEGEND

BUILDING FACE	
GULLY TRAP	
FIRE HYDRANT	FH
WATER VALVE	
GAS VALVE	
SUMP	
MANHOLE	MH
LAMP HOLE	
FENCE	
WALL - TOP	
WALL - BOTTOM	
SLOT DRAIN	
FLOOR LEVEL	
SURVEY MARK	
CONCRETE	
TOP OF KERB	
SPOT HEIGHTS	
INTERCEPTOR SEWER MAIN	S

NOTES

1. SURVEY WORK UNDERTAKEN 19TH AUGUST 2019
2. UNDERLYING BOUNDARIES HAVE BEEN CALCULATED TO BE IN TERMS OF CADASTRAL SURVEY STANDARDS AND HAV E BEEN VERIFIED THROUGH THE LOCATION OF RELATED BOUNDARY AND SURVEY MARKS ON SITE. FURTHER FIELDWORK TO MONUMENT THE BOUNDARIES WILL STILL BE REQUIRED FOR THE PREPARATION OF THE CADASTRAL SURVEY DATASET, AS PART OF THE SUBDIVISION.
3. THE VERTICAL SITE BENCHMARK FOR THIS SURVEY IS: IS 1 SO 496531 - R.L.= 20.06
   ORIGIN OF LEVELS : LP II DP 83064
   REDUCED LEVEL : 17.31 (SOURCE: DP 398354)
   DATUM: : WELLINGTON DATUM 1953
   CHECKED TO : SP II DP 84982 & BENCHMARK S.P. DP 398354

   THE HORIZONTAL BENCHMARK FOR THIS SURVEY IS: LP IV DP 41011 (6TH ORDER)
   EASTING : 399,643.735
   NORTHING : 800,836.681
   DATUM: : NZGD 2000 – WELLINGTON CIRCUIT
   CHECKED TO : IS 4 SO 385451 (6TH ORDER) & AD 12 SO 491068
4. NOT ALL GROUND FEATURES SURVEYED DUE TO PARKED VEHICLES HINDERING VISIBILTY AND ACCESS
5. THIS SURVEY HAS NOT INCLUDED SITE MARKING OF THE BOUNDARY POSITIONS UNLESS OTHERWISE INDICATED
6. AERIAL IMAGERY SOURCED FROM LINZ DATA SERVICE FOR RE-USE UNDER CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL
7. "SPOT HEIGHT" POSITIONS ARE SHOWN IN THE FOLLOWING FORMAT X36.24 AND ARE EXPRESSED IN METRES IN TERMS OF THE SITE DATUM FOR THE SURVEY.
   THE HEIGHTS OF THESE POSITIONS HAVE AN ACCURACY RELATIVE TO THE SITE DATUM AS FOLLOWS:
   HARD SURFACES EG CONCRETE, ASPHALT +/- 0.030M @ 95% CONFIDENCE LEVEL.
   SOFT SURFACES EG GRASS +/- 0.050M @ 95% CONFIDENCE LEVEL.
8. CONTOURS SHOWN ON THIS SURVEY ARE INTERPOLATED FROM SURVEYED "SPOT HEIGHT" POSITIONS. THEREFORE THE LOCATION AND VALUES OF THE CONTOUR MODEL IS DEPENDENT ON THE DENSITY OF THE SURVEYED SPOT HEIGHTS. THIS SURVEY DEPICTS A CONTOUR INTERVAL OF 0.25M WITH AN ACCURACY RELATIVE TO THE HEIGHT DATUM OF +/- 0.125M AT A 95% CONFIDENCE LEVEL.
9. IF STRUCTURES ARE DESIGNED SO THAT THEY WILL EXTEND TO THE MAXIMUM LIMITS OF SUNLIGHT ACCESS ENVELOPES, IT IS RECOMMENDED THAT SPOT HEIGHTS ONLY, SPECIFICALLY TAKEN AT THE CORRESPONDING POSITION ON THE BOUNDARY, BE USED TO DETERMINE COMPLIANCE. NOTE: THIS MAY REQUIRE ADDITIONAL SURVEY WORK.
10. ASIDE FROM THE SANITARY SEWER TRUNK MAIN, NO UNDERGROUND SERVICES HAVE BEEN SHOWN. ENSURE THAT AN UNDERGROUND SERVICES PLAN IS OBTAINED FROM A CIVIL ENGINEER BEFORE DESIGN OR CONSTRUCTION COMMENCES.

aurecon

CLIENT: MIRO STREET LIMITED

REV	DATE	REVISION DETAILS	APPROVED
A	03/09/19	ISSUE FOR INFORMATION	G.MURISON
B	11/10/19	BOUNDARY AMENDMENT AND SEWER INTERCEPTOR ADDITION	G.MURISON

SCALE	1:200
SIZE	A1
DRAWN	T.SOUTHEY
DESIGNED	R.KEITH
CHECKED	J.LYNCH
APPROVED	G.MURISON
DATE	10/2019

INFORMATION
NOT FOR CONSTRUCTION

PROJECT: ARO

TITLE: TOPOGRAPHICAL SURVEY - 19TH AUGUST 2019

DRAWING No.	PROJECT No.	WBS	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	UU	0001	B

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH THE PROJECT DRAWINGS AND SPECIFICATIONS AND CURRENT WELLINGTON CITY COUNCIL STANDARDS AND SPECIFICATIONS. ANY CONFLICT BETWEEN THE PROJECT DOCUMENTS AND COUNCIL STANDARDS SHALL BE RAISED WITH THE ENGINEER FOR RESOLUTION, PRIOR TO CONSTRUCTION.
2. THE EXTENT OF WORKS SHALL BE CONFIRMED ON SITE BY THE ENGINEER.
3. ALL DIMENSIONS SHOWN ON THESE DRAWINGS ARE METRIC.
4. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION.
5. DIMENSIONS ARE NOT TO BE SCALED FROM THE DRAWINGS.
6. THE CONTRACTOR SHALL REFER ANY DISCREPANCIES OR AMBIGUITIES BETWEEN DOCUMENTS TO THE ENGINEER FOR RESOLUTION PRIOR TO COMMENCING WORK.
7. ALL WORK SHALL BE UNDERTAKEN SAFELY AND IN A MANNER MEETING ALL OBLIGATIONS UNDER THE HEALTH AND SAFETY AT WORK ACT.
8. THE CONTRACTOR SHALL PROVIDE FOR SPECIALIST EQUIPMENT AS NECESSARY AND SAFE ENVIRONMENTS FOR ANY INSPECTIONS REQUIRED TO BE MADE BY THE ENGINEER OR HIS/HER REPRESENTATIVES ON SITE.
9. AERIAL IMAGERY SHOWN ON THESE PLANS IS SOURCED FROM LINZ UNLESS STATED OTHERWISE.

LEVEL AND SETOUT NOTES

1. REFER TO DRAWING 507237-0000-DRG-UU-0100 FOR TOPOGRAPHIC SURVEY AND NOTES.

EXISTING SERVICES NOTES

1. "THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ON THESE DRAWINGS ARE APPROXIMATE ONLY AND BASED ON INFORMATION PROVIDED BY LOCAL AUTHORITIES AND/ OR NETWORK UTILITY OPERATORS AND/OR WELLINGTON CITY COUNCIL LOCAL MAPS.

   NO LIABILITY IS ACCEPTED FOR THE ACCURACY OR COMPLETENESS OF THE PLOTTED SERVICES. OTHER UNDERGROUND OR OVERHEAD SERVICES MAY EXIST THAT ARE NOT SHOWN ON THE DRAWINGS."
2. PRIOR TO COMMENCING ANY WORK INVOLVING EXCAVATION OR PENETRATIONS (PILING, DRILLING ETC) THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL SERVICES USING NETWORK UTILITY AUTHORITY DATA AND HAVE ALL SERVICES MARKED OUT ACCURATELY ON SITE USING UTILITY AUTHORITY ON SITE LOCATION SERVICES PRIOR TO COMMENCING ANY GROUND DISTURBANCE.
3. PRIOR TO COMMENCING ANY EXCAVATION OR PENETRATION WORK IN ANY PART OF A LEGAL ROAD OR OTHER PUBLIC AREA THE CONTRACTOR SHALL APPLY FOR AND UPLIFT CORRIDOR ACCESS PERMITS AND MEET ALL ASSOCIATED REQUIREMENTS OF THE CONTROLLING AUTHORITY.
4. PRIOR TO COMMENCING PIPE, CABLE OR DUCT LAYING ACTIVITIES, THE CONTRACTOR SHALL POTHOLE ALL POTENTIAL SERVICE CONFLICTS AND ANY UNLEVELLED MAINS AT CONNECTION POINTS AND NOTIFY THE ENGINEER, TO ALLOW HIM/HER TO ACCURATELY LOCATE AND LEVEL THE SERVICES EXPOSED AND IF NECESSARY UNDERTAKE DESIGN MODIFICATIONS TO THE ALIGNMENT OR LONG SECTION OF THE NEW WORK.
5. THE CONTRACTOR SHALL APPLY FOR AND UPLIFT ALL UTILITY PERMITS/CONSENTS, AND SATISFY ANY UTILITY AUTHORITY REQUIREMENTS PRIOR TO UNDERTAKING ANY EXCAVATION OR UTILITY INSTALLATION WORK.
6. ALL STATUTORY AUTHORITIES SHALL BE NOTIFIED PRIOR TO ANY EXCAVATION OR EARTHWORKS TAKING PLACE IN PUBLIC PLACES AND RELEVANT NETWORK UTILITY OPERATORS NOTIFIED WHEN WORKING IN PROXIMITY TO THEIR SERVICES.
7. WHEN WORKS WILL AFFECT ROAD ACCESS OR ACCESS TO PRIVATE PROPERTIES, THE PROPERTY OWNERS SHALL BE GIVEN AT LEAST 5 DAYS' NOTICE OF THE NATURE AND DURATION OF ANY IMPACTS AND ALL EMERGENCY SERVICES SHALL BE NOTIFIED.
8. ANY EXCAVATION NEAR ANY EXISTING UTILITY CABLE OR PRESSURE SERVICE (EG GAS, WATER OR SEWER RISING MAIN) SHALL BE ADVISED TO THE RELEVANT NUO AT LEAST TWO DAYS PRIOR TO COMMENCING ANY WORK AND WHERE REQUIRED SHALL BE UNDERTAKEN WITH OVERSIGHT BY A NUO REPRESENTATIVE.
9. NUO'S SHALL BE GIVEN AT LEAST TWO DAYS NOTICE PRIOR TO ANY EXCAVATION NEAR THEIR UTILITY SERVICES, OR FOR THE PROVISION OF ANY NUO ASSISTANCE.
10. WHERE THE TERM NB (NOMINAL BORE) IS USED FOR PIPE DIAMETERS IT INDICATES APPROXIMATE OUTSIDE DIAMETERS FOR PE PIPES AND APPROXIMATE INSIDE DIAMETERS FOR ALL OTHER PIPE TYPES.
11. WELLINGTON ELECTRICITY TO BE NOTIFIED AT LEAST TWO DAYS PRIOR TO EXCAVATION NEAR 33KV OR HV POWER CABLES. HAND DIGGING WILL BE REQUIRED WITHIN 1M.

ROADING NOTES

1. ALL PAVEMENT MATERIALS AND WORK STANDARDS TO BE IN ACCORDANCE WITH CURRENT NZTA STANDARDS AND SPECIFICATIONS.
2. TEMPORARY TRAFFIC MANAGEMENT TO BE IN ACCORDANCE WITH NZTA CODE OF PRACTICE FOR TEMPORARY TRAFFIC MANAGEMENT WITH WELLINGTON CITY COUNCIL AMENDMENTS
3. THE CONTRACTOR SHALL UNDERTAKE BENKELMAN BEAM TESTS ON THE FINISHED BASECOURSE ON ALL NEW ROADS AND PROVIDE RESULTS TO THE ENGINEER. (MINIMUM DEFLECTION STANDARDS ARE COVERED IN THE SPECIFICATIONS).
4. FULL DEPTH PAVEMENT CONSTRUCTION SHALL EXTEND BEHIND ALL KERB AND CHANNEL FOR A DISTANCE WHICH IS THE GREATER OF 150MM OR TO THE OUTER EDGE OF ANY SIDE SUBSOIL DRAIN.
5. "ALL DENOTED PAVEMENT THICKNESSES ARE PROVISIONAL. ALLOW ENGINEER TO UNDERTAKE CONFIRMATORY SUBGRADE TESTING AT THE FOLLOWING LEVELS.

   • IN FILLS; WHEN THE FILL HAS BEEN BROUGHT TO THE UNDERSIDE OF THE DESIGN SUBBASE.
   • IN CUTS; WHEN THE CUT HAS BEEN TAKEN TO THE UNDERSIDE OF THE DESIGN BASECOURSE.

   MODIFY PAVEMENT THICKNESSES WHERE INSTRUCTED BY ENGINEER FOLLOWING ABOVE TESTING."
6. REGULAR COMPACTION TESTING OF ROAD PAVEMENT LAYERS SHALL BE CARRIED OUT BY AN APPROVED INDEPENDENT TESTING ORGANISATION AND COMPACTION RESULTS WITH LOCATION AND LEVEL REPORTED TO THE ENGINEER PROGRESSIVELY THROUGH THE WORKS. NON-CONFORMANCES SHALL BE IMMEDIATELY NOTIFIED TO THE ENGINEER AND REMEDIAL WORKS AGREED. A SIGNED COMPLETION REPORT SHALL BE PROVIDED TO THE ENGINEER BY THE TESTING ORGANISATION ON COMPLETION OF THE WORKS.
7. REPAIR ALL DAMAGE TO ADJACENT EXISTING FEATURES INCLUDING ROADS, KERBS, PATHS DRAINS ETC CAUSED BY THE WORKS.
8. ROAD MARKING AND SIGNAGE SHALL BE IN ACCORDANCE WITH CURRENT NZTA MANUAL OF TRAFFIC SIGNS AND MARKINGS. ALL SIGNS TO BE VIP GRADE REFLECTIVITY.
9. ALL EDGE MARKER POSTS REMOVED TO UNDERTAKE WORKS SHALL BE REPLACED WITH NEW POSTS
10. THE CONTRACTOR SHALL PROTECT AND REINSTATE ALL ROAD FURNITURE. ANY ITEMS DAMAGED SHALL BE REPLACED AT THE CONTRACTORS COST.
11. YELLOW 'HAZARD' TACTILE TILES SHALL BE INSTALLED AT ALL KERB CROSSING POINTS. THEY SHALL CONFORM WITH AS/NZS 1428:4 AND LTSA RTS 14.

EARTHWORKS NOTES

1. "CONTRACTOR TO NOTIFY ENGINEER AFTER CLEARING AND STRIPPING TO ENABLE JOINT INSPECTION OF EXPOSED SOILS.
   A) IN AREAS TO BE FILLED OVER, PROOF ROLL THE STRIPPED NATURAL SOILS AND PRIOR TO COMMENCEMENT OF BULK FILLING:
   • AGREE WITH THE ENGINEER, THE EXTENT OF ANY SOFT OR UNSUITABLE SOILS AND EXCAVATE AND REPLACE ALL SUCH AREAS WITH APPROVED FILL COMPACTED TO SPECIFICATION STANDARDS.
   • PLACE SUBSOIL DRAINS AS PER THE DESIGN OR AS AGREED WITH THE ENGINEER.
   B) IN AREAS TO BE EXCAVATED, AGREE ANY ZONES OF MATERIAL UNSUITABLE FOR REUSE AS COMPACTED FILL AND ARRANGE TO EXCAVATE SUCH AREAS TO WASTE."
2. UTILISATION OF UNSUITABLE SOILS ON SITE OR DISPOSAL OFF-SITE TO BE AGREED ON SITE WITH ENGINEER OR AS INDICATED WITHIN THE SCHEDULE OF QUANTITIES.
3. UNLESS SPECIFIED OTHERWISE THE CONTRACTOR SHALL UTILISE SUITABLE CLEAN GRANULAR NON-COMPRESSIBLE MATERIAL EXCAVATED FROM CUT AREAS FOR USE AS ENGINEERED FILL. MATERIAL USED IN THE TOP 2.0M OF FILL SHALL HAVE A MAXIMUM PARTICLE SIZE AFTER COMPACTION NOT EXCEEDING 150MM. OVERSIZE MATERIAL MAY BE UTILISED WITHIN A WELL GRADED MATRIX AT GREATER DEPTH SUBJECT TO THE ENGINEER'S APPROVAL, OR DISPOSED OF AWAY FROM THE SITE.
4. FILLS SHALL BE PLACED IN LAYERS APPROPRIATE TO THE COMPACTION PLANT BEING USED AND COMPACTION REQUIREMENTS OF THE SPECIFICATION BUT IN NO CASE SHALL LOOSE LAYERS EXCEED 200MM THICK.
5. BULK EARTHWORKS SHALL MEET THE REQUIREMENTS OF NZ STANDARDS IN ADDITION TO THE REQUIREMENTS OF THIS CONTRACT SPECIFICATION. WHERE APPARENT AMBIGUITIES OR CONTRADICTIONS BETWEEN THE PROJECT SPECIFICATIONS AND STANDARDS, THE CONTRACTOR SHALL IMMEDIATELY REQUEST A CLARIFICATION FROM THE ENGINEER. FILL SHALL BE PLACED AND COMPACTED AT MOISTURE CONTENTS WITHIN A RANGE OF +/- 2% OF OPTIMUM AS DERIVED BY THE STANDARD PROCTOR TEST, SO AS TO ACHIEVE THE MINIMUM SPECIFIED COMPACTION STANDARDS.
6. THE CONTRACTOR SHALL ENGAGE AN APPROVED INDEPENDENT GEOTECHNICAL TESTING ORGANISATION TO UNDERTAKE COMPACTION TESTING AND REPORTING, AS REQUIRED BY THE SPECIFICATION. REPORTS COVERING THE TESTING SHALL BE PROVIDED TO THE ENGINEER PROGRESSIVELY THROUGH THE PROJECT WITH CLEAR DETAILS OF NON- COMPLIANCES, CORRECTIVE ACTIONS TAKEN AND FOLLOW UP TESTING TO CONFIRM THE SUCCESS OF REMEDIATION WORKS.
7. ENGINEER MAY ARRANGE FOR INDEPENDENT VERIFICATION TESTING TO BE UNDERTAKEN AT ANY TIME AND THE CONTRACTOR SHALL FACILITATE SUCH TESTING BY PROVIDING PLANT AS REQUESTED AND A SAFE ZONE FOR THE FIELD TEST ACTIVITIES.
8. EARTHWORKS PROFILES SHALL BE TRANSITIONED UNIFORMLY BETWEEN PRESCRIBED SLOPES.
9. "IMPORTED BULK FILL MATERIAL, WHERE REQUIRED, SHALL COMPLY AS A MINIMUM WITH THE FOLLOWING REQUIREMENTS:

   • MINIMUM CBR.>18%
   • PLASTICITY INDEX < 12%
   • % PASSING 0.0075MM SIEVE <20%
   • MAXIMUM PARTICLE SIZE IN TOP 2.0M OF FILL NOT TO EXCEED 150MM.

   A SAMPLE OF THE PROPOSED MATERIAL SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO ITS USE AND ONCE APPROVED, A 1M3 SAMPLE OF THE APPROVED MATERIAL SHALL BE SUPPLIED AND RETAINED ON SITE BY THE CONTRACTOR, FOR COMPARISON PURPOSES."
10. CONTRACTOR SHALL ADVISE ENGINEER AFTER BULK EARTHWORKS COMPLETION AND PRIOR TO ROAD COMMENCEMENT AND TOPSOIL PLACEMENT, TO ENABLE PROOF ROLLING OF THE SURFACE AND A VISUAL QUALITY CHECK TO BE MADE. THE ENGINEER MAY ALSO ARRANGE FOR A POST EARTHWORKS TOPOGRAPHICAL SURVEY TO BE UNDERTAKEN TO ENABLE EARTHWORKS QUANTITIES TO BE CONFIRMED.
11. WHERE THE EARTHWORKS HAVE BEEN CUT TO ROAD SUBGRADES THE CONTRACTOR SHALL ALLOW TO UNDERTAKE BENKELMAN BEAM TESTING OF THE SUBGRADE TO ASSIST THE ENGINEER IN CONFIRMING OR MODIFYING PAVEMENT THICKNESSES.
12. ON COMPLETION OF BULK EARTHWORKS, RESPREAD TOPSOIL TO A COMPACTED THICKNESS OF 100MM OVER ALL AREAS DISTURBED BY THE WORKS, OR TO GREATER THICKNESS WHERE INSTRUCTED BY THE ENGINEER.
13. "THE CONTRACTOR SHALL PROVIDE SEDIMENT AND ENVIRONMENTAL MANAGEMENT ON AND AROUND ALL AREAS OF EARTHWORKS AND STOCKPILES AND RETAIN RESPONSIBILITY FOR ITS MANAGEMENT AND PERFORMANCE UNTIL ALL EARTHWORKED AREAS HAVE BEEN ADEQUATELY GRASSED/ STABILISED.
    "

ENVIRONMENTAL MANAGAMENT NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENVIRONMENTAL MANAGEMENT FOR THE DURATION OF THE PROJECT. THIS SHALL INCLUDE FOR MANAGEMENT OF EARTHWORKS METHODS, SITE RUNOFF AND DISCHARGES, EROSION AND SEDIMENT, WIND-BLOWN DUST, NOISE, AND PROTECTION OF ARCHAEOLOGICAL TREASURES AND FLORA AND FAUNA AS APPROPRIATE.
2. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR, VIA A SUITABLY EXPERIENCED PERSON, HAS SUBMITTED TO THE ENGINEER, AN ENVIRONMENTAL MANAGEMENT PLAN OR SERIES OF PLANS COVERING OVERALL ENVIRONMENTAL MANAGEMENT AND GAINED APPROVAL FOR THE PROPOSED WORKS. WHERE APPLICABLE THE PLANS SHALL ALSO BE SUBJECT TO THE APPROVAL OF THE CONTROLLING TERRITORIAL AUTHORITIES.
3. SITE ACCESSES ONTO PUBLIC ROADS SHALL BE ESTABLISHED TO THE REQUIREMENTS OF THE CONTROLLING ROADING AUTHORITY (ENGINEER CAN INSERT THE COUNCIL HERE) AND ACCESS TO AND FROM THE SITE SHALL BE SOLELY VIA THE APPROVED ACCESS POINT.
4. WASHDOWN FACILITIES AND A ROAD CLEANING REGIME SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF WORKS AND MAINTAINED FOR THE DURATION OF THE WORKS. ALL VEHICLES LEAVING THE SITE SHALL BE WASHED. EXTERNAL ROADS SHALL BE KEPT CLEAN OF DUST AND DEBRIS.
5. SEDIMENT AND EROSION MANAGEMENT DEVICES SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES AND SHALL BE MAINTAINED THROUGHOUT AND BEYOND THE CONSTRUCTION WORKS UNTIL ADEQUATE SOIL GRASSING AND STABILISATION HAS BEEN ESTABLISHED.
6. SEDIMENT AND EROSION CONTROL FACILITIES SHALL INCORPORATE FENCING AND OTHER MEASURES NECESSARY TO MAINTAIN WORKER AND PUBLIC SAFETY AT ALL TIMES.
7. IF SEDIMENT AND EROSION CONTROL FACILITIES ARE FOUND TO BE DEFICIENT OR OTHERWISE NOT CONSISTENTLY ACHIEVING DESIRED OUTCOMES THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION TO CORRECT THE PROBLEMS WHICH MAY INCLUDE MODIFICATIONS TO OR REPLACEMENT OF ORIGINAL FACILITIES. ALL MODIFICATIONS OR CHANGES TO THE SYSTEMS SHALL BE BASED ON DESIGN BY A SUITABLY QUALIFIED PERSON ENGAGED BY THE CONTRACTOR AND EXCEPT FOR URGENT WORKS, SHALL BE PROVIDED TO THE ENGINEER FOR CONSIDERATION PRIOR TO THEIR IMPLEMENTATION.
8. AT ALL TIMES RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AROUND AREAS BEING DISTURBED AND AREAS BEING DISTURBED AT ANY TIME SHALL BE MINIMISED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REGULARLY INSPECTING EROSION AND SEDIMENT CONTROL FACILITIES AND RECORDING THE INSPECTIONS AND CONDITION. AS A MINIMUM ALL DEVICES SHALL BE INSPECTED WEEKLY AND AFTER SIGNIFICANT RAIN EVENTS. SEDIMENT PONDS, FENCES AND THE LIKE SHALL BE CLEANED WHEN CAPACITY IS REDUCED BY 25% OR IF INSTRUCTED BY THE ENGINEER OR TERRITORIAL AUTHORITY.
10. SEDIMENT AND EROSION CONTROL DEVICES SHALL BE REMOVED FROM SITE AND THE AREAS OCCUPIED BY THEM, TIDIED TO A STABILISED PRE-EXISTING OR DESIGN CONTOUR WHEN IT IS ACCEPTED BY THE ENGINEER THAT THE AREAS OF DISTURBANCE HAVE ACHIEVED ACCEPTABLE STABILISATION.

PIPEWORK-GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH THE PROJECT DRAWINGS AND SPECIFICATIONS AND CURRENT WELLINGTON CITY COUNCIL STANDARDS AND SPECIFICATIONS. ANY CONFLICT BETWEEN THE PROJECT DOCUMENTS AND COUNCIL STANDARDS SHALL BE RAISED WITH THE ENGINEER FOR RESOLUTION, PRIOR TO CONSTRUCTION.
2. ALL TRENCH EXCAVATION, SHORING AND DEWATERING SHALL COMPLY WITH ALL WORKPLACE HEALTH AND SAFETY REQUIREMENTS.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, CERTIFICATION , APPROVAL AND CONSTRUCTION OF ALL TEMPORARY WORKS INCLUDING BOTH STRUCTURAL ENGINEERING AND GROUNDWATER CONTROL. SUITABLY QUALIFIED PROFESSIONALS CARRYING ACCEPTABLE LEVELS OF PROFESSIONAL INDEMNITY INSURANCE SHALL BE PROPOSED TO THE ENGINEER BEFORE WORK COMMENCEMENT AND THE USE OF ANY PERSONS UNDERTAKING THIS TYPE OF WORK SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
4. EXISTING SERVICES REQUIRED TO BE RETAINED SHALL BE MAINTAINED AND PROTECTED.
5. FOR PIPE BEDDING, SURROUND AND BACKFILL DETAILS REFER TO DETAIL SHEETS.
6. TRENCH OPENING AND REINSTATEMENT SHALL MEET THE MINIMUM STANDARDS SET BY THESE CONTRACT DOCUMENTS ALONG WITH ALL REQUIREMENTS OF WELLINGTON CITY COUNCIL OR NZTA WHERE REQUIRED.
7. WHERE THE TERM NB (NOMINAL BORE) IS USED FOR PIPE DIAMETERS IT INDICATES APPROXIMATE OUTSIDE DIAMETERS FOR PE PIPES AND APPROXIMATE INSIDE DIAMETERS FOR ALL OTHER PIPE TYPES
8. "PLUG AND STAKE ENDS OF PIPE LATERALS WITH 100 BY 50X50MM WOODEN PEG MARKERS EXTENDING A MINIMUM OF 500MM ABOVE FINISHED SURFACE LEVEL. EXPOSED END OF MARKERS SHALL BE PAINTED AS FOLLOWS:

   • SEWER/WASTEWATER--- RED
   • STORMWATER--- GREEN
   • WATER SUPPLY --- BLUE
   "
9. EXCEPT WHEN WELDED (OR FUSION) JOINTED PE OR STEEL PIPES ARE SPECIFIED ALL PIPES USED SHALL BE RUBBER RING JOINTED.
10. WHERE PIPES ARE LAID IN FILL THE FILL SHALL BE PLACED TO FINAL SURFACE LEVELS BEFORE TRENCHING IS COMMENCED. THE FILL SHALL BE PLACED IN LAYERS NOT EXCEEDING 200MM LOOSE THICKNESS AND COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS FOR EARTHWORKS. A CERTIFICATE PROVIDED BY THE CONTRACTOR'S INDEPENDENT TESTING AGENCY CONFIRMING THE FILL MEETS THE SPECIFIED COMPACTION STANDARDS SHALL BE PROVIDED BEFORE ANY PIPE LAID IN NEW FILL WILL BE APPROVED BY THE ENGINEER OR ACCEPTED BY THE CONTROLLING AUTHORITY.
11. ALL WORK ON LIVE PIPES OR APPURTENANCES SHALL BE CARRIED OUT BY COUNCIL APPROVED CONTRACTORS.
12. ALL SERVICE CLEARANCE DISTANCES AND BACKFILL PROVISIONS, TO BE IN ACCORDANCE WITH SERVICE PROVIDERS WELLINGTON CITY COUNCIL, CHORUS AND WELLINGTON CITY COUNCIL RECOMMENDATIONS.
13. EXISTING SERVICES REQUIRED TO BE RETAINED SHALL BE MAINTAINED AND PROTECTED.
14. ALL WORK ASSOCIATED WITH CONNECTING TO LIVE COUNCIL MAINS SHALL BE CARRIED OUT BY COUNCIL APPROVED CONTRACTORS.
15. SERVICE CLEARANCE DISTANCES, BACKFILL PROVISIONS AND SURFACE REINSTATEMENT TO BE IN ACCORDANCE WITH SERVICE AUTHORITY WELLINGTON CITY COUNCIL REQUIREMENTS.
16. THE MAJORITY OF MATERIAL WON FROM THE TRENCH EXCAVATION SHOULD BE SUITABLE FOR REUSE AS BACKFILL MATERIAL APART FROM ANY OVERSIZE OR OVERWET MATERIAL. BEDDING AND SURROUND MATERIAL HAVING A MAXIMUM STONE SIZE NOT EXCEEDING 25MM SHALL BE USED FOR A HEIGHT OF 150MM ABOVE ANY PIPE. MAXIMUM PARTICLE SIZE OF MATERIAL ABOVE THIS HEIGHT SHALL NOT EXCEED 75MM. STOCKPILED BACKFILL MATERIAL SHALL BE PROTECTED FROM WET WEATHER THAT MAY CAUSE IT TO BECOME OVERWET.
17. BACKFILL IN ALL ROAD LOCATIONS SHALL UTILISE IMPORTED CLEAN QUARRIED MATERIAL ESSENTIALLY FREE OF SILTS AND CLAYS. BEDDING AND SURROUND MATERIAL SHALL BE USED TO A HEIGHT OF 150MM MINIMUM ABOVE PIPE SOFFITS. MAXIMUM AGGREGATE SIZE TO 300MM ABOVE PIPES SHALL NOT EXCEED 40MM AND FOR THE BALANCE DEPTH TO THE UNDERSIDE OF THE ROAD PAVEMENT MATERIAL OF PARTICLE SIZE NOT EXCEEDING 65MM MAY BE USED. REFER SPECIFICATIONS.
18. TRENCHES SHALL BE BACKFILLED IN LAYERS OF LOOSE THICKNESS APPROPRIATE TO THE TYPE OF COMPACTION PLANT BEING USED BUT NOT GREATER THAN 200MM. BACKFILLING SHALL BE COMPACTED TO THE MINIMUM DRY DENSITIES SPECIFIED. THE MOISTURE CONTENT AT WHICH BACKFILL IS PLACED AND COMPACTED SHALL BE MAINTAINED WITHIN THE RANGE OF +/-2% OF THE OPTIMUM MOISTURE CONTENT
19. COMPACTION TESTING SHALL BE CARRIED OUT AT REGULAR DEPTH AND DISTANCE INTERVALS BY AN APPROVED TESTING AUTHORITY. THE CONTRACTOR SHALL PROVIDE DETAILS OF TEST RESULTS TO THE ENGINEER PROGRESSIVELY AS WORK IS UNDERTAKEN. NON-CONFORMING AREAS SHALL BE ADVISED IMMEDIATELY TO THE ENGINEER, RECTIFICATION MEASURES AGREED AND THE RECTIFICATION WORK CARRIED OUT IMMEDIATELY BY THE CONTRACTOR.
20. "THE USE OF THE CLEGG IMPACT HAMMER MAY BE APPROVED BY THE ENGINEER FOR TRENCH COMPACTION MANAGEMENT PROVIDED IT IS DONE REGULARLY IN LIFTS NOT EXCEEDING 200MM COMPACTED THICKNESS AND CALIBRATED AGAINST FIELD DENSITY TESTING AT LEAST TWICE DAILY. INDICATIVE COMPARATIVE CLEGG IMPACT VALUES (CIV) WITH DRY DENSITY RESULTS ARE:

    • 98% MAX DRY DENSITY (STD TEST) = 35 CIV
    • 95% MAX DRY DENSITY = 32 CIV
    • 90% MAX DRY DENSITY = 25 CIV
    "

PIPEWORK-WATER NOTES

1. COVER OVER MAINS FROM FINISHED SURFACE LEVELS SHALL BE NOT LESS THAN 600MM WITHIN BERM AND SIMILAR LANDSCAPE AREAS AND 750MM WITHIN CARRIAGEWAY OR OTHER TRAFFICKED AREAS.
2. EXISTING TOBIES THAT WILL NO LONGER BE IN USE ARE TO BE REMOVED.
3. NEW MANIFOLD BOX LOCATIONS SHALL BE AT THE CENTRE OF EACH LOT AND CENTRED 500MM FROM THE LOT FRONT BOUNDARY.
4. ANY PITTED COPPER PIPES AND TOBIES IDENTIFIED DURING PROJECT BUT NOT CALLED UP FOR REPLACEMENT IN THE SCHEDULE OF PRICES SHALL BE ADVISED TO ENGINEER FOR INSTRUCTION.
5. THRUST BLOCKS AND ANCHOR BLOCKS ARE TO BE USED AT ALL VERTICAL AND HORIZONTAL CHANGES IN ALIGNMENT AND AT VALVE AND HYDRANT POSITIONS. ALL IN ACCORDANCE WITH WELLINGTON CITY COUNCIL SPECIFICATIONS.
6. THE TEST HEAD FOR ALL WATER RETICULATION SHALL BE 1.5 TIMES MAXIMUM OPERATIONAL HEAD. TEST HEAD SHOULD NOT EXCEED 1.1 TIMES THE PIPE RATING
7. "THRUST BLOCKS, VALVE SEATING BLOCKS ETC SHALL MEET THE FOLLOWING CRITERIA:

   • CONCRETE STRENGTH 20MPA AT 28 DAYS.
   • CONCRETE SHALL BE KEPT CLEAR OF FLANGES.
   • CONCRETE SHALL BE SEPARATED FROM PVC AND PE PIPES BY A PLASTIC SEPARATING MEMBRANE.
   • CONCRETE SHALL BE STOPPED SHORT OF THE MAXIMUM PIPE DIAMETER TO ENABLE FUTURE REMOVAL OF THE PIPE.
   "

PIPEWORK-DRAINAGE NOTES

1. CONTRACTOR TO CONFIRM ALL LEADS ENTERING DRAINS AS LIVE OR OTHERWISE AND CONNECT ALL LIVE OR UNCERTAIN LEADS ONTO THE NEW MAINS.
2. ADJUST MANHOLE LID LEVELS TO TIE INTO PROPOSED SURFACE LEVELS.
3. WHERE MANHOLES ARE NOT DIMENSIONED ON THE DRAWINGS THEY SHALL BE 1050 DIAMETER.
4. ALL DRAINAGE MH'S, CHAMBERS ETC SHALL BE BENCHED/HAUNCHED TO THE REQUIREMENTS OF WELLINGTON CITY COUNCIL.
5. GRADES ARE SHOWN AS BETWEEN CENTRES OF MHS. WHERE A SINGLE INVERT LEVEL IS GIVEN IT IS AT THE CENTRE OF THE MH. WHERE TWO INVERTS ARE GIVEN THEY ARE AT THE INLET AND OUTLET WALL.
6. THE ALLOTMENT END OF ALL PIPE LATERALS SHALL BE SEALED WITH A PROPRIETARY END CAP OR VALVE CAPABLE OF WITHSTANDING TEST PRESSURES.
7. 100 AND 150 DIA CONNECTIONS TO EXISTING PIPES OF UP TO 225 DIA SHALL BE BY USE OF PROPRIETARY Y JUNCTIONS. CONNECTIONS TO LARGER DIAMETER MAINS SHALL UTILISE SADDLE CONNECTIONS.

ABANDONED SERVICES NOTES

1. ALL ABANDONED PIPES UNDER PROPOSED BUILDINGS SHALL BE REMOVED AND THE TRENCH BACKFILLED WITH HARDFILL COMPACTED IN LAYERS TO AT LEAST 95% RELATIVE DENSITY.
2. ALL ABANDONED PIPES SHALL BE PLUGGED AT EACH END WITH A PLUG OF WET CONCRETE THAT FILLS THE PIPE END AND SPILLS AROUND AND OVER THE PIPE END BY AT LEAST 100MM.
3. ABANDONED MANHOLES/PITS IN ROADS/PAVEMENTS/FOOTPATH AREAS SHALL HAVE THEIR BASE BROKEN OUT TO AVOID PONDING IN THE PIT AND THE UPPER PART OF THE WALL BROKEN DOWN TO AT LEAST 600MM BELOW FINISHED SURFACE. THE PIT SHALL THEN BE FILLED WITH COMPACTED AP65 SUBBASE MATERIAL TO THE UNDERSIDE OF THE DESIGNED ROAD/FOOTPATH PAVEMENT. THE PAVEMENT SHALL THEN BE FORMED OVER THE TOP.
4. ABANDONED MANHOLES/PITS IN NON ROAD AREAS SHALL HAVE THEIR BASE BROKEN OUT TO AVOID PONDING IN THE PIT AND THE UPPER PART OF THE WALL BROKEN DOWN TO AT LEAST 600MM BELOW FINISHED ROAD SURFACE. THE PIT SHALL THEN BE FILLED WITH COMPACTED AP65 SUBBASE MATERIAL TO 600MM FROM THE FINAL SURFACE. THE TOP ZONE SHALL THEN BE COVERED WITH COMPACTED FILL AND TOPSOIL AND DRESSED TO MATCH ADJACENT SURFACE FINISHES.

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REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
NOT TO SCALE	A1

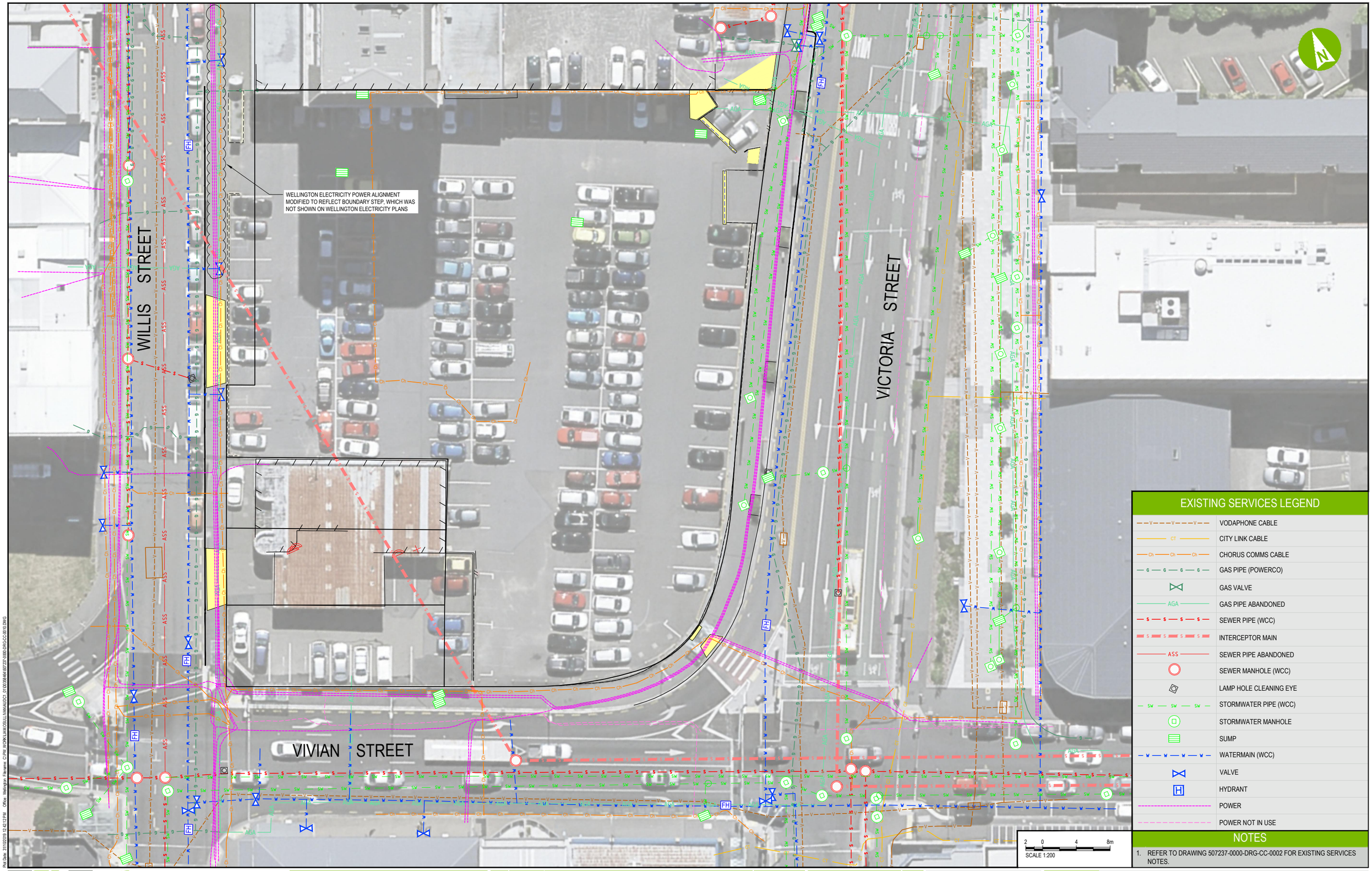
DRAWN: J.SOUTHEY
DESIGNED: S.NOVIS
REVIEWED: A.HILLS

CONSENT
NOT FOR CONSTRUCTION

APPROVED
DATE
G.MURISON

PROJECT: ARO
TITLE: GENERAL NOTES

DRAWING No.: 507237 - 0000 - DRG - CC - 0002 - A
(PROJECT No. - AREA - TYPE - DISC - NUMBER - REV)



EXISTING SERVICES LEGEND

V V V	VODAPHONE CABLE
CT	CITY LINK CABLE
Ch Ch Ch	CHORUS COMMS CABLE
G G G G	GAS PIPE (POWERCO)
	GAS VALVE
AGA	GAS PIPE ABANDONED
S S S S	SEWER PIPE (WCC)
S S S S	INTERCEPTOR MAIN
ASS	SEWER PIPE ABANDONED
	SEWER MANHOLE (WCC)
	LAMP HOLE CLEANING EYE
SW SW SW	STORMWATER PIPE (WCC)
	STORMWATER MANHOLE
	SUMP
W W W W	WATERMAIN (WCC)
	VALVE
FH	HYDRANT
	POWER
	POWER NOT IN USE

NOTES

1. REFER TO DRAWING 507237-0000-DRG-CC-0002 FOR EXISTING SERVICES NOTES.

Plot Date: 31/10/2019 12:42:12 PM Office: Wellington Filename: C:\PW_WORK\LIAM.OSULLIVAN\AUDC1 01\D0368464\507237-0000-DRG-CC-0010.DWG

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REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
1:200	A1

DRAWN: I.HOLMES
DESIGNED: S.NOVIS
REVIEWED: A.HILLS

CONSENT
NOT FOR CONSTRUCTION

APPROVED
DATE
G.MURISON

PROJECT: ARO

TITLE: EXISTING SERVICES

DRAWING No.: PROJECT No. 507237 – AREA 0000 – TYPE DRG – DISC CC – NUMBER 0010 – REV A

NOTES

1. REFER TO DRAWING 507237-0000-DRG-CC-0002 FOR STANDARD NOTES.
2. DESIGN LAYOUT PROVIDED BY LOCAL COLLECTIVE ON 11/10/2019.
3. DESIGN CONTOURS AT 0.05m INTERVALS.
4. DESIGN OF ALL STAIRS TO BE BY LANDSCAPE ARCHITECT.
5. REFER TO DRAWING 507237-0000-DRG-CC-0030 FOR ROAD LONGITUDINAL SECTION.
6. BUILDING PLATFORM FINISHED LEVELS TO BE CONFIRMED BY ARCHITECTS. TO BE 200MM ABOVE EXISTING FOOTPATH LEVEL AS PER WELLINGTON WATER ADVICE

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CLIENT

MIRO STREET LIMITED

REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
1:200	A1

DRAWN: T.MUNERI
DESIGNED: S.NOVIS
REVIEWED: A.HILLS

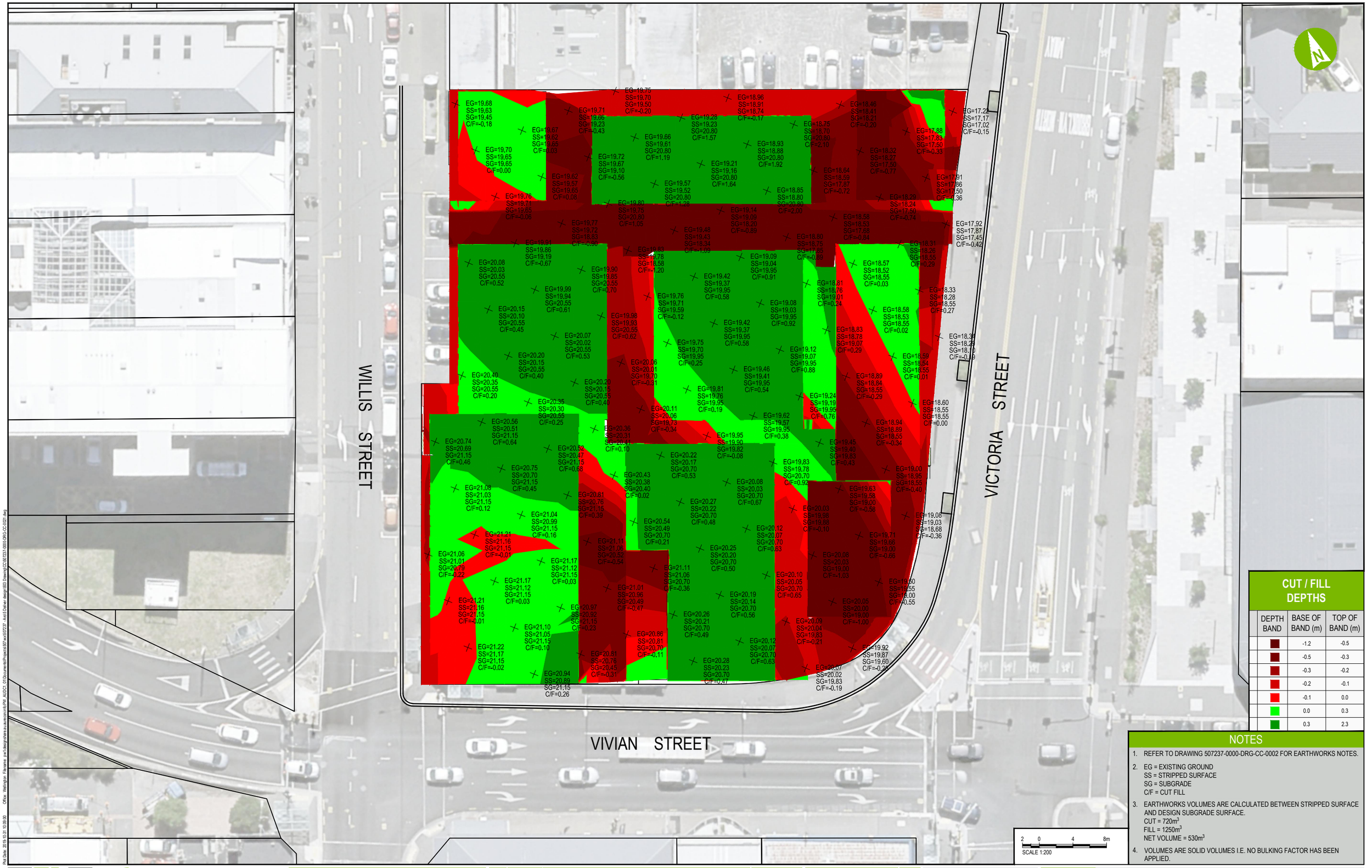
CONSENT
NOT FOR CONSTRUCTION

APPROVED
DATE
G.MURISON

PROJECT: ARO

TITLE: DESIGN CONTOURS

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0020	A



CUT / FILL DEPTHS

DEPTH BAND	BASE OF BAND (m)	TOP OF BAND (m)
	-1.2	-0.5
	-0.5	-0.3
	-0.3	-0.2
	-0.2	-0.1
	-0.1	0.0
	0.0	0.3
	0.3	2.3

NOTES

1. REFER TO DRAWING 507237-0000-DRG-CC-0002 FOR EARTHWORKS NOTES.
2. EG = EXISTING GROUND
   SS = STRIPPED SURFACE
   SG = SUBGRADE
   C/F = CUT FILL
3. EARTHWORKS VOLUMES ARE CALCULATED BETWEEN STRIPPED SURFACE AND DESIGN SUBGRADE SURFACE.
   CUT = 720m^3
   FILL = 1250m^3
   NET VOLUME = 530m^3
4. VOLUMES ARE SOLID VOLUMES I.E. NO BULKING FACTOR HAS BEEN APPLIED.

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CLIENT: MIRO STREET LIMITED

REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
1:200	A1

DRAWN: T.MUNERI
DESIGNED: S.NOVIS
REVIEWED: A.HILLS

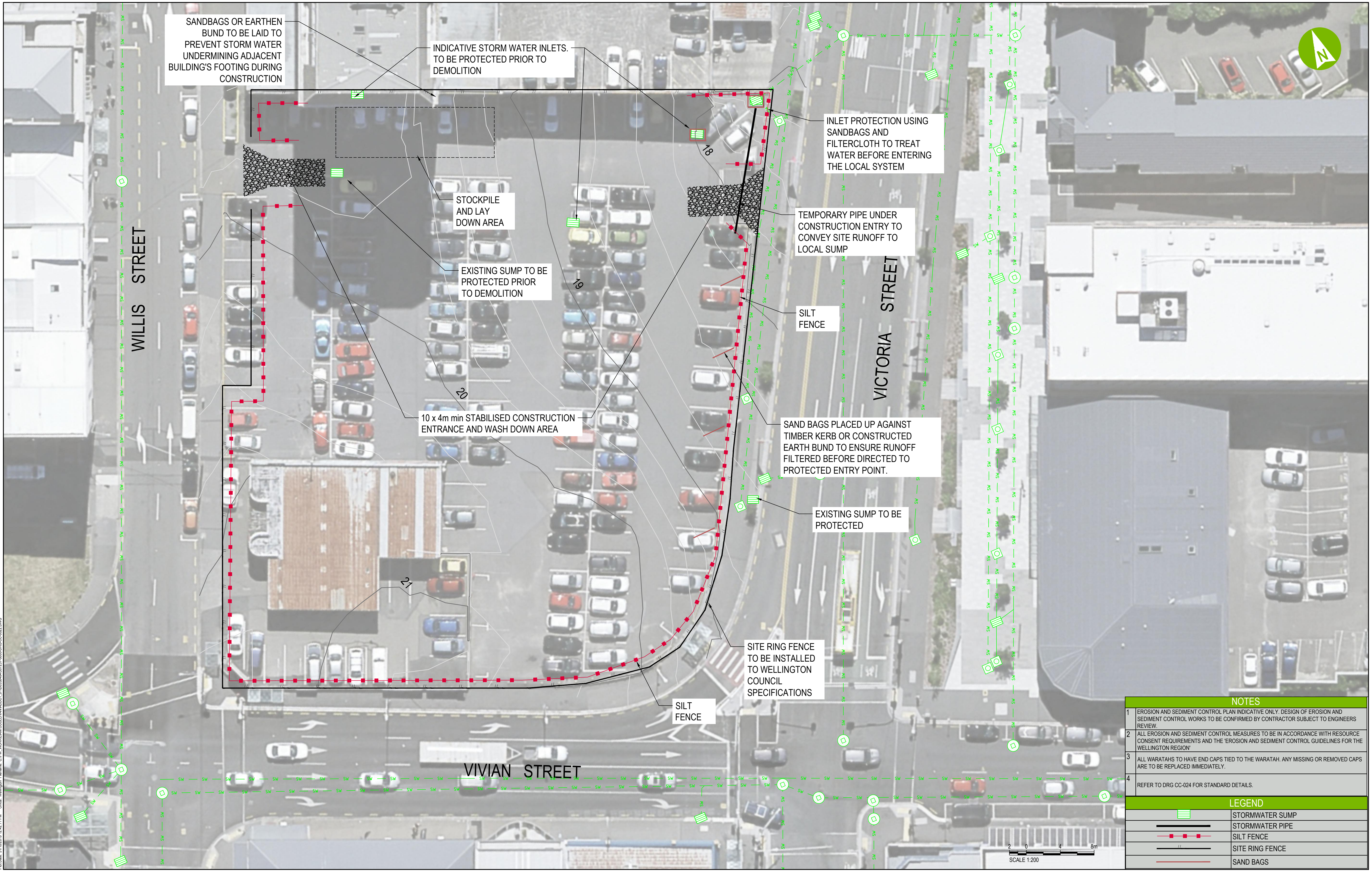
CONSENT
NOT FOR CONSTRUCTION

APPROVED
DATE
G.MURISON

PROJECT: ARO

TITLE: EARTHWORKS CUT/FILL

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0021	A



NOTES

1	EROSION AND SEDIMENT CONTROL PLAN INDICATIVE ONLY. DESIGN OF EROSION AND SEDIMENT CONTROL WORKS TO BE CONFIRMED BY CONTRACTOR SUBJECT TO ENGINEERS REVIEW.
2	ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE IN ACCORDANCE WITH RESOURCE CONSENT REQUIREMENTS AND THE 'EROSION AND SEDIMENT CONTROL GUIDELINES FOR THE WELLINGTON REGION'
3	ALL WARATAHS TO HAVE END CAPS TIED TO THE WARATAH. ANY MISSING OR REMOVED CAPS ARE TO BE REPLACED IMMEDIATELY.
4	REFER TO DRG CC-024 FOR STANDARD DETAILS.

LEGEND

- STORMWATER SUMP
- STORMWATER PIPE
- SILT FENCE
- SITE RING FENCE
- SAND BAGS

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REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
1:200	A1

DRAWN: H. WILCOX
DESIGNED: H. WILCOX
REVIEWED: A.HILLS

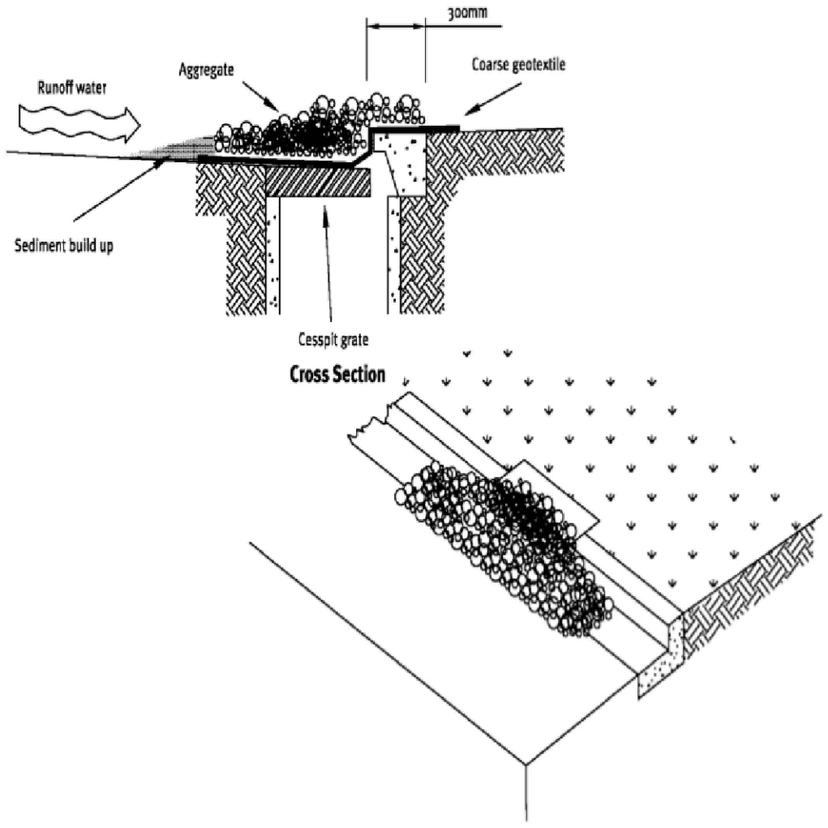
CONSENT
NOT FOR CONSTRUCTION

APPROVED: G.MURISON
DATE

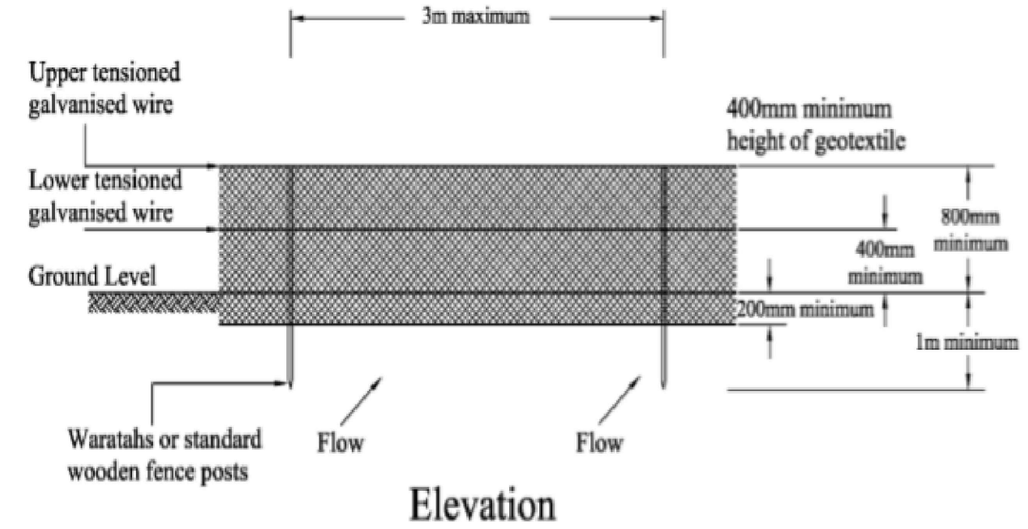
PROJECT: ARO

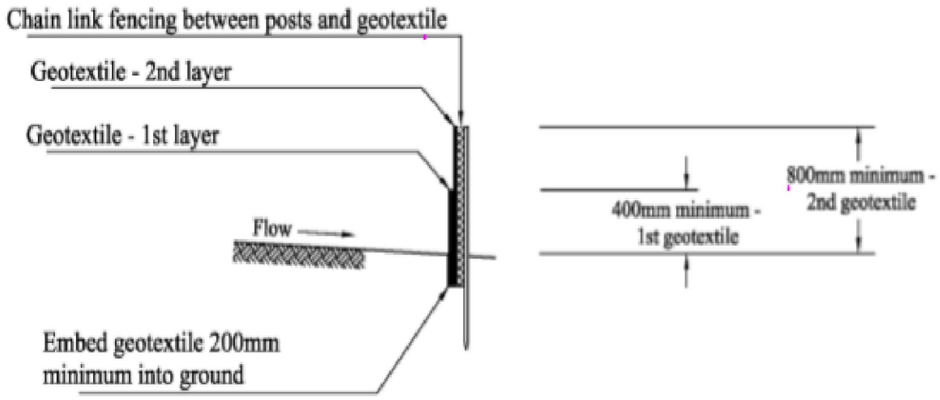
TITLE: EROSION AND SEDIMENT MANAGEMENT PLAN

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0022	A



KERB SIDE SUMP INLET PROTECTION STANDARD DETAIL





SUPER SILT FENCE STANDARD DETAIL

NOTES	
1	STANDARD DETAILS TAKEN FROM' EROSION AND SEDIMENT CONTROL GUIDELINES FOR THE WELLINGTON REGION'. REFER TO THIS DOCUMENTS FOR MORE DETAIL. PLANS FOR REFERRAL ONLY. DETAILED EROSION AND SEDIMENT CONTROL SUBJECT TO ENGINEERS REVIEW.

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CLIENT
MIRO STREET LIMITED

REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
NOT TO SCALE	A1

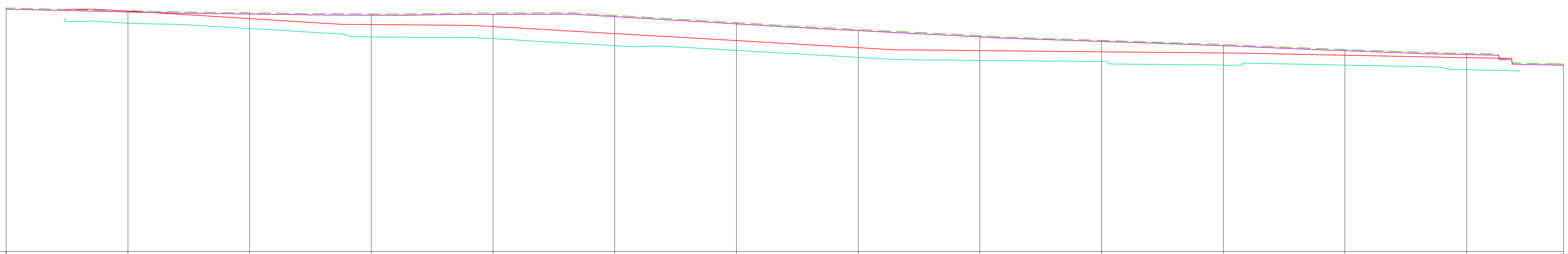
DRAWN
H. WILCOX
DESIGNED
H. WILCOX
REVIEWED
A.HILLS

CONSENT
NOT FOR CONSTRUCTION

APPROVED	DATE
G.MURISON	

PROJECT	ARO
TITLE	EROSION AND SEDIMENT MANAGEMENT STANDARD DETAILS

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0024	A



SCALE: H 1:100 1:100
Datum 10.000

DESIGN SURFACE		19.892	19.584	19.339	19.258	18.968	18.679	18.390	18.267	18.219	18.172	18.077	17.978	
EXISTING SURFACE		19.906	19.821	19.776	19.811	19.717	19.418	19.139	18.887	18.693	18.518	18.313	18.155	
DEPTH		-0.015	-0.238	-0.437	-0.553	-0.749	-0.739	-0.749	-0.620	-0.474	-0.346	-0.236	-0.177	
STRIPPED SURFACE		19.856	19.771	19.726	19.761	19.667	19.368	19.089	18.837	18.643	18.468	18.263	18.105	
SUBGRADE SURFACE		19.397	19.178	18.834	18.761	18.465	18.279	17.990	17.867	17.819	17.670	17.674	17.480	
DEPTH		-0.460	-0.593	-0.892	-1.000	-1.202	-1.089	-1.099	-0.970	-0.824	-0.798	-0.589	-0.625	
CHAINAGE	0.000	5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	63.969

LONGITUDINAL SECTION : WILLIS STREET TO VICTORIA STREET

SECTION A 0020
1:100

1 0 2 4m
SCALE 1:100

NOTES
1. REFER TO DRAWING 507237-0000-DRG-CC-0002 FOR STANDARD NOTES.
2. REFER TO DRAWING 507237-0000-DRG-CC-0020 FOR LAYOUT.

Plot Date: 2019-10-31 10:09:00 Office: Wellington Filename: pw:\\designshare.au.aurecon.info:PW_AUDC1_01\Documents\Projects\507xxx\507237 - Aro5 Deliver design\03 Drawing\CC\507237-0000-DRG-CC-0030.dwg

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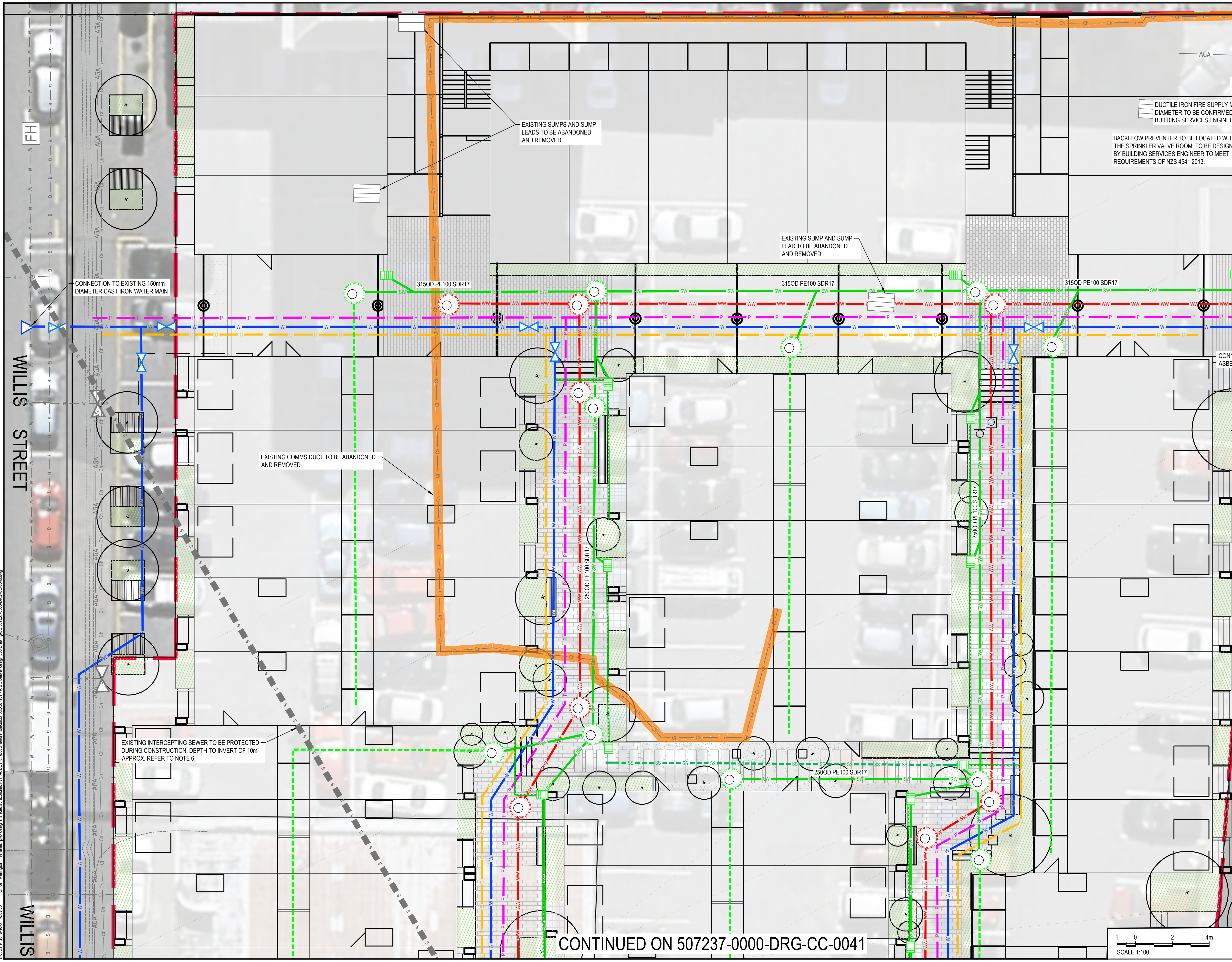
CLIENT	REV	DATE	REVISION DETAILS	APPROVED
MIRO STREET LIMITED	A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE: 1:100
SIZE: A1
DRAWN: T.MUNERI
DESIGNED: S.NOVIS
REVIEWED: A.HILLS
CONSENT
NOT FOR CONSTRUCTION
APPROVED: G.MURISON DATE
PROJECT: ARO
TITLE: ROAD LONG SECTION

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0030	A



CONTINUED ON 507237-0000-DRG-CC-0041

PROPOSED SERVICES LEGEND

WW — WW	SEWER PIPE
	SEWER MANHOLE
SW	STORMWATER PIPE
	STORMWATER PIPE (BY OTHERS)
	STORMWATER DISH CHANNEL
	STORMWATER MANHOLE
	STORMWATER SUMP
SS — SS	SUBSOIL DRAIN
	LAMP HOLE CLEANING EYE
W	WATER MAIN
	WATER VALVE
	THRUST BLOCK
P — P	POWER DUCT
C — C	COMMUNICATIONS DUCT
	EXISTING COMMS DUCT TO BE ABANDONED

NOTES

1. REFER TO DRAWING 507237-0000-DRG-CC-0002 FOR STANDARD NOTES.
2. ALL PROPOSED WATER MAINS ARE TO BE 63 OD PE100 PN16 UNLESS SHOWN OTHERWISE. TO BE CONFIRMED BASED ON HYDRANT TESTING.
3. ALL PROPOSED WASTEWATER MAINS ARE TO BE 160 OD PE100 SDR17 UNLESS SHOWN OTHERWISE.
4. ALL POWER AND COMMUNICATIONS DUCTS TO BE 100mm NB uPVC UNLESS SHOWN OTHERWISE.
5. LATERAL CONNECTIONS NOT SHOWN FOR CLARITY. LOCATIONS TO BE CONFIRMED BY BUILDING SERVICES ENGINEER.
6. REQUIREMENTS FOR WORKING ABOVE SEWER INTERCEPTOR TO BE CONFIRMED WITH WELLINGTON WATER PRIOR TO CONSTRUCTION. IT IS ANTICIPATED THAT NO STOCKPILES, CRANES OR OTHER HEAVY CONSTRUCTION EQUIPMENT SHALL BE POSITIONED WITHIN A 3.0m WIDE CORRIDOR ALONG THE PIPE ALIGNMENT. NO PILE RAMMING, VIBRATION OR OTHER IMPACT PERMITTED TO A DEPTH 0.5m BELOW THE EXISTING GROUND LEVEL. NO VIBRATION COMPACTION DIRECTLY OVER THE 3.0m WIDE PIPE CORRIDOR.
7. SERVICE AND PIPE ALIGNMENTS ARE INDICATIVE ONLY AND TO BE CONFIRMED IN CONJUNCTION WITH BUILDING SERVICES ENGINEER.
8. ALL STORMWATER SUMPS TO HAVE TRAPPED OUTLETS.

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CLIENT: MIRO STREET LIMITED

REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
1:100	A1

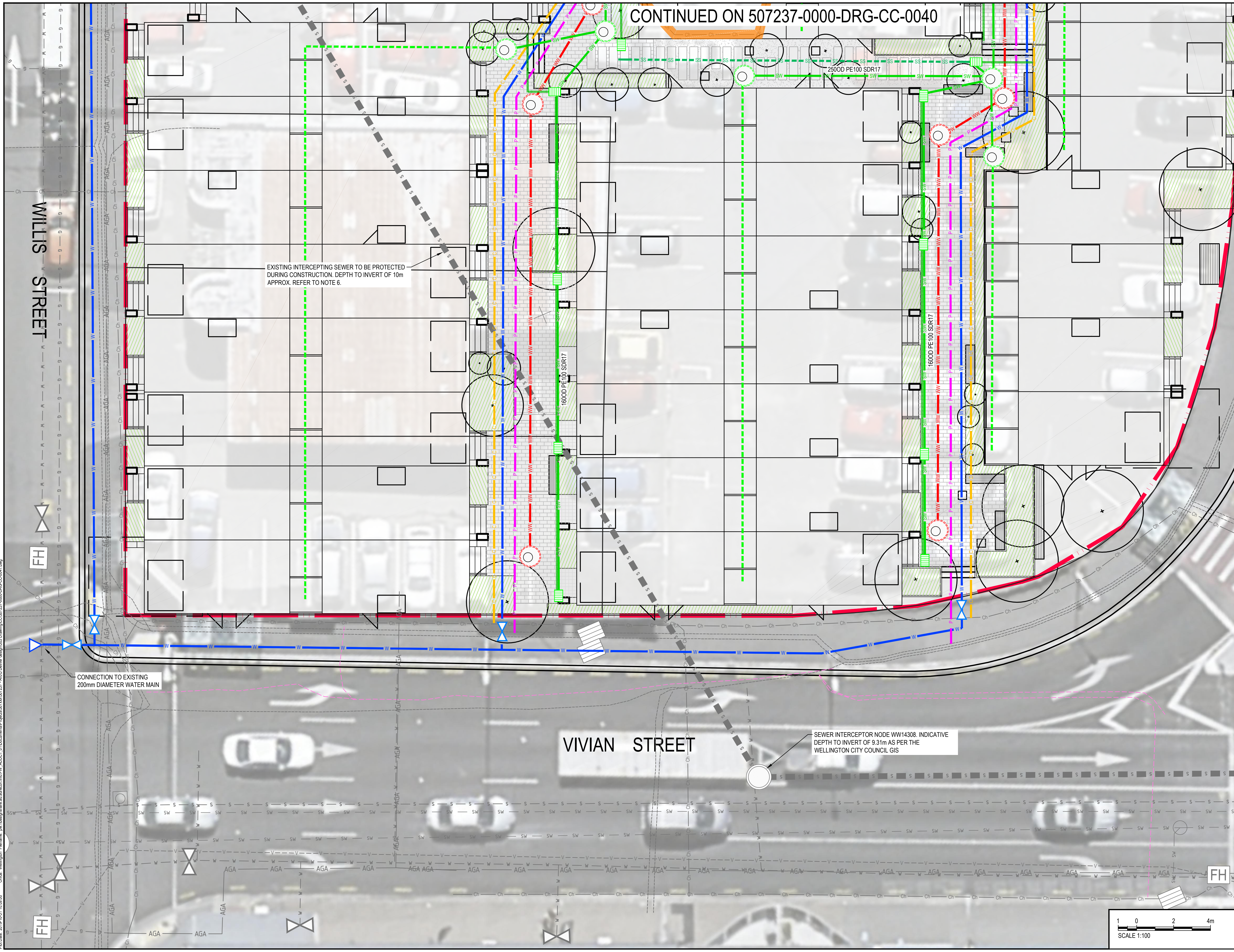
DRAWN: T.MUNERI
DESIGNED: S.NOVIS
REVIEWED: A.HILLS

CONSENT
NOT FOR CONSTRUCTION

APPROVED: G.MURISON
DATE:

PROJECT: ARO
TITLE: PROPOSED SERVICE PLAN -SHEET 1 OF 2

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0040	A



PROPOSED SERVICES LEGEND

WW	SEWER PIPE
	SEWER MANHOLE
SW	STORMWATER PIPE
	STORMWATER PIPE (BY OTHERS)
	STORMWATER DISH CHANNEL
	STORMWATER MANHOLE
	STORMWATER SUMP
SS	SUBSOIL DRAIN
	LAMP HOLE CLEANING EYE
W	WATER MAIN
	WATER VALVE
	THRUST BLOCK
P	POWER DUCT
C	COMMUNICATIONS DUCT
	EXISTING COMMS DUCT TO BE ABANDONED

NOTES

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8. ALL STORMWATER SUMPS TO HAVE TRAPPED OUTLETS.

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CLIENT: MIRO STREET LIMITED

REV	DATE	REVISION DETAILS	APPROVED
A	31/10/19	ISSUE FOR RESOURCE CONSENT	G.MURISON

SCALE	SIZE
1:100	A1

DRAWN: T.MUNERI
DESIGNED: S.NOVIS
REVIEWED: A.HILLS

CONSENT
NOT FOR CONSTRUCTION

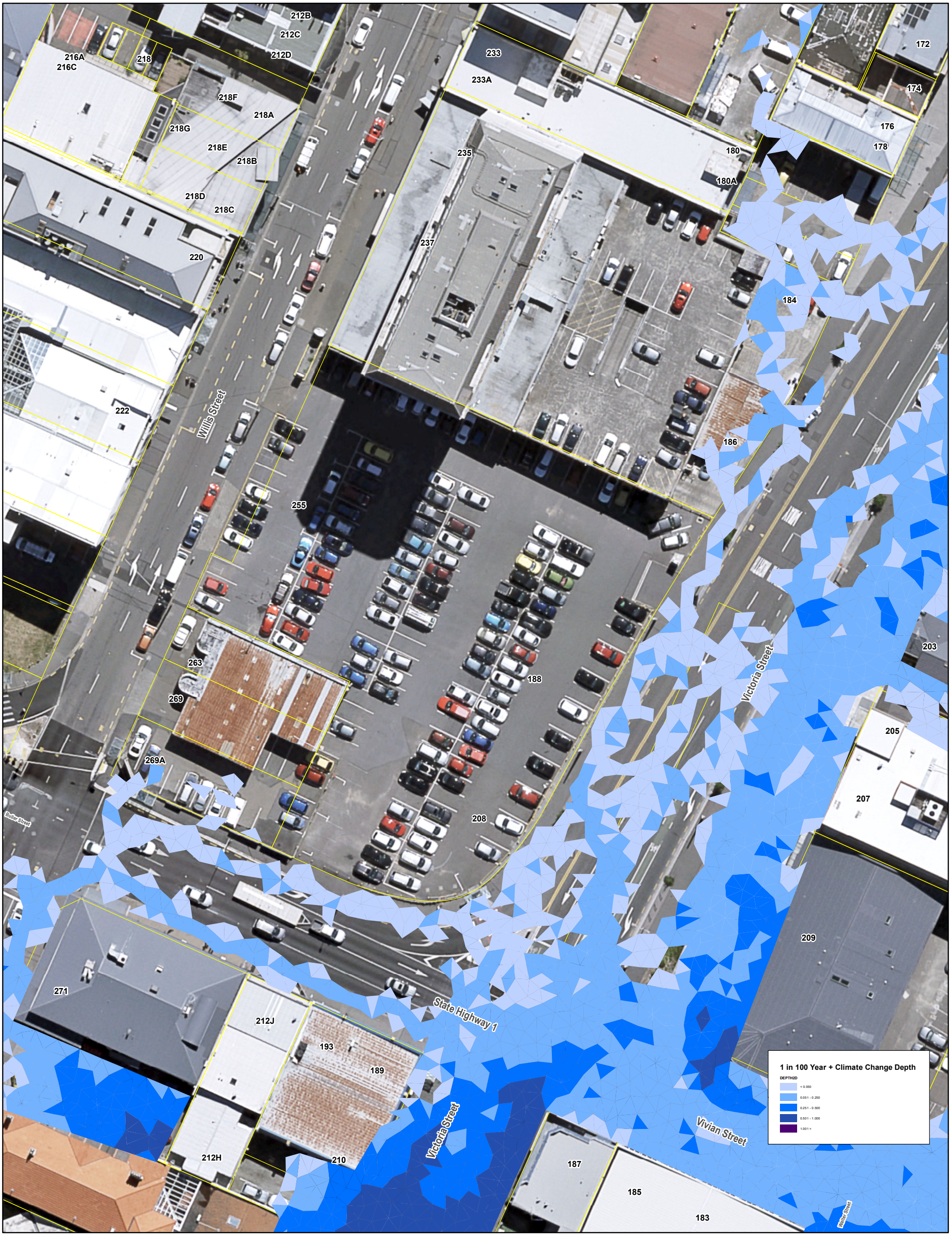
APPROVED: G.MURISON
DATE

PROJECT: ARO

TITLE: PROPOSED SERVICE PLAN- SHEET 2 OF 2

DRAWING No.	PROJECT No.	AREA	TYPE	DISC	NUMBER	REV
	507237	0000	DRG	CC	0041	A

Appendix B
1 in 100-year Flood Map



FILENAME: \\WW-0006-WV-FL01\Groups\Drainage & Water\Network Model\Model_Results_flood_maps_NEW.mxd PLOT DATE: 18/09/2019 8:59:12 AM User Name: MAitchison

DATA STATEMENT

Cadastral information derived from Land Information New Zealand's Landonline Cadastral Database. CROWN COPYRIGHT RESERVED.

Property boundaries may not be survey-accurate, and can only be verified by a licensed cadastral surveyor.

Assets, contours, water and drainage information shown is approximate and must not be used for detailed engineering design.

Other data has been compiled from a variety of sources and its accuracy may vary.

Wellington Water cannot guarantee the completeness of the information displayed.

Aerial Photography flown in 2013 and produced by NZAM under the Creative Commons New Zealand v3.0 license.

This map is drawn on the New Zealand Transverse Mercator projection, using New Zealand Geodetic Datum 2000.

Southern CBD
Draft Model Results
1% AEP

N

1:500 @ A3

0 5.5 11 16.5 22 27.5 m

Wellington Water

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Bringing ideas to life

Aurecon offices are located in:
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