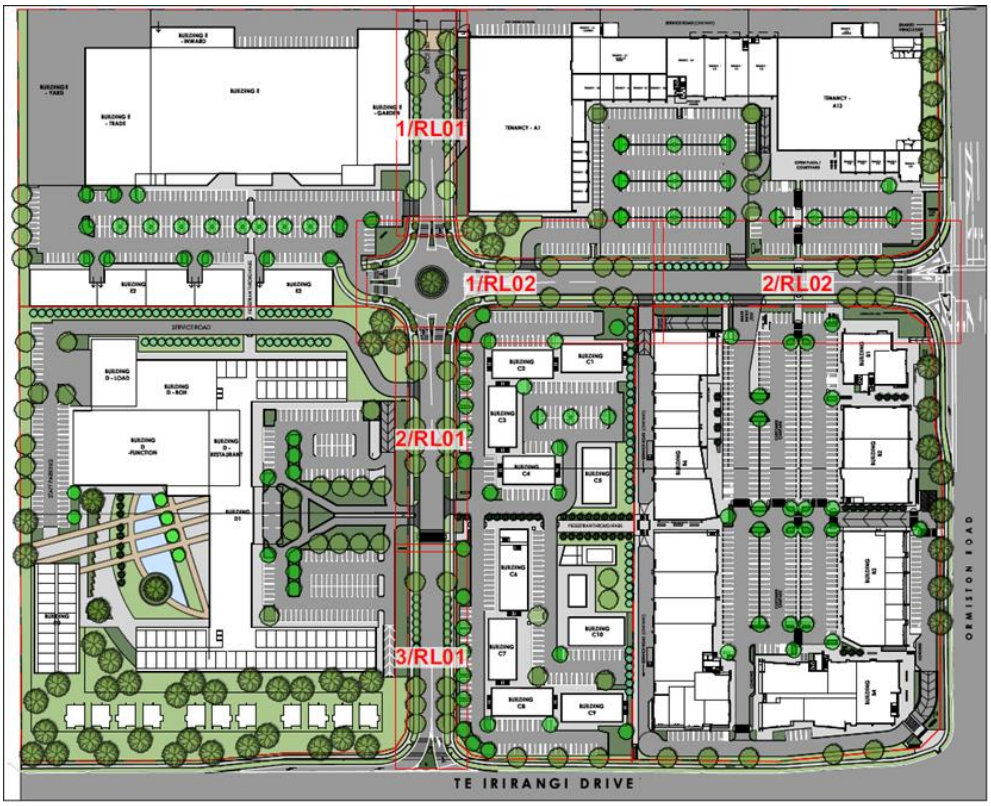
James Kirkpatrick Group Ltd



79 Ormiston Road, Flatbush

Plan Change – Infrastructure Capacity Assessment

AR & ASSOCIATES
CIVIL | ENVIRONMENT | PLANNING

P17-212-R01-RevA
4 May 2018

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Document Control Sheet

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A	DR	AR	AR	Preliminary	JKGL	04/05/18

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Executive Summary

The site at 79 Ormiston Road has been subdivided into 10 business lots, one joint owned accessway and one road to vest, with the construction of Florence Carter Avenue and associated infrastructure, which traverses across the site and links Ormiston Road with Te Irirangi Drive. The parent site is 16.5ha in area with each of the newly created lots ranging from 0.786 to 2.946ha in size.

James Kirkpatrick Group (JKG) propose to apply for a Plan Change to facilitate comprehensive development of the site, which involves a range of land uses including retail, supermarket, offices, residential apartments, travellers' accommodation, retirement living, hotel and large format retail. The exact nature and extent of the proposed development is yet to be defined.

A high-level assessment has been completed to determine infrastructure servicing capacity for the Plan Change application, covering wastewater, water supply, stormwater, utility services and roading.

Wastewater, water supply, stormwater and utility services are available to service the underlying subdivision. These services are in turn located within an established roading network in the immediate vicinity of the site. This infrastructure is fully operational and has been vested into Auckland Council.

The existing **wastewater** infrastructure available consists of a series of wastewater sewers that generally reticulate around the perimeter of the newly created lots and which are designed to be clear of Building footprints, basement parking areas and other potential structural impediments. This internal network is located largely within landscape garden setbacks, and discharges to a 250mm earthenware pipe that crosses Te Irirangi Drive. This pipe due to its size and corresponding catchment, is the most critical asset in terms of capacity. Peak wet weather flows were estimated based on two options for a range of tentative land uses across the site. The results confirm that the existing wastewater infrastructure is adequate to meet the demands of the arbitrary development options considered.

A comprehensive **water supply** network is available to service the site, including a series of 200mm PVC and 150mm PVC watermains along with 16 fire hydrants along the site's immediate road frontages. Based on historic pressure and flow testing conducted on the site, it is expected that a firefighting level of service of at least FW3 is likely to be achievable, based on SNZ PAS 4509:2008. Notwithstanding this, should the development require supplementary water supply (for domestic or firefighting purposes), this can be met with supplementary booster pump(s) within the individual lots.

The existing **stormwater** infrastructure for the underlying subdivision consists of a pipe network up to 1050mm in diameter, along with a series of biofiltration devices along Florence Carter Avenue, which connect to an existing 1050mm pipe that crosses Ormiston Avenue. As agreed with Auckland Council, stormwater infrastructure is designed for the 5-year ARI event (climate change) in this area, in order to achieve consistency with the underlying legacy council design requirements. An assessment of the downstream pipe network confirms that there is adequate capacity to service the contributing catchment for a maximum probable development scenario, based on the agreed design criteria.

The site is also subject to a Network Discharge Consent (Permit 25478) as modified through consent variation No.47993 (**Appendix D**), and is located in a SMAF1 area, with water quality treatment and SMAF1 retention / detention being the key stormwater mitigation outcomes for the site. For the road areas, these requirements have been addressed via biofiltration devices constructed as part of the

underlying subdivision. For the lot areas, the water quality and SMAF1 requirements will be addressed at source.

Utility services including electricity, gas and telecommunications have been provided as part of the underlying subdivision and are available for the development. These services can be upgraded should a specific need arise.

A comprehensive road network is available for the subdivision, including Ormiston Road and Te Irirangi Drive on the northern and eastern flanks of the site, and Florence Carter Avenue which links these roads internally through the site. This road network system is appropriate to service the underlying subdivision for the current zoning, and it is expected it will be suitable to support the proposed Plan Change application.

In conclusion, it is considered that the wastewater, water supply, stormwater, utility services and roading infrastructure currently available to service the site will adequately support the proposed Plan Change and intended tentative land uses for the development.

1 // Introduction

1.1 Background and Purpose

The site at 79 Ormiston Road has been subdivided into 10 business lots, one joint owned accessway and one road to vest, with the construction of Florence Carter Avenue and associated infrastructure, which traverses across the site and links Ormiston Road with Te Irirangi Drive. The parent site is 16.5ha in area with each of the newly constructed lots ranging from 0.786 to 2.946ha in size. Refer **Figure 1**.

James Kirkpatrick Group (JKG) now propose to apply for a Plan Change to facilitate comprehensive development of the site, which involves a range of land uses including retail, supermarket, offices, residential apartments, travellers' accommodation, retirement living, hotel and large format retail. The exact nature and extent of the proposed development is yet to be defined.

This report provides a high-level assessment and a technical basis to determine infrastructure servicing requirements for the proposed development and Plan Change application.

The items addressed include wastewater, water supply, stormwater utility services and roading infrastructure.

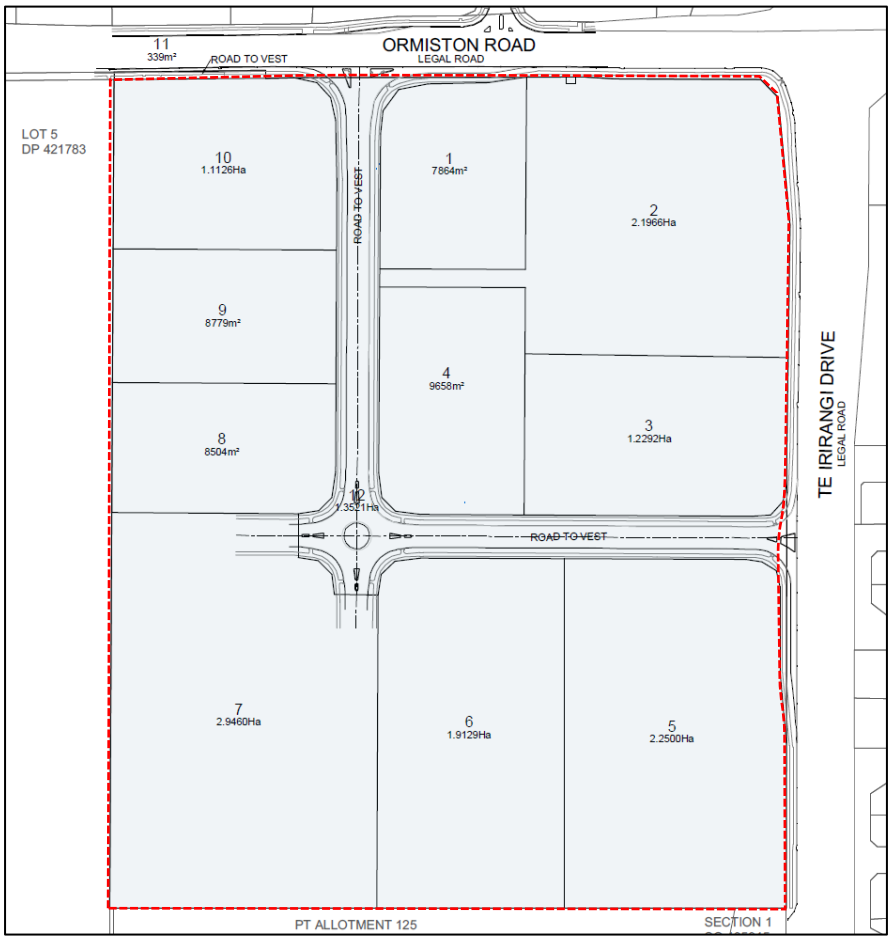

Figure 1 – Site and Subdivision Plan (Site outline shown in red)

1.2 Site Context

The site is located in the corner of Ormiston Rd and Te Irirangi Road, within a commercial/ industrial portion in the central part of the Flat Bush area. The current zoning of the site is Business- Light Industry under the Auckland Unitary Plan. The site surroundings are located within a well-established roading network, with water supply, wastewater, stormwater, power and telecommunications services available to the site and surrounding areas. **Figure 2** below shows the location of the site in the context of the wider area.

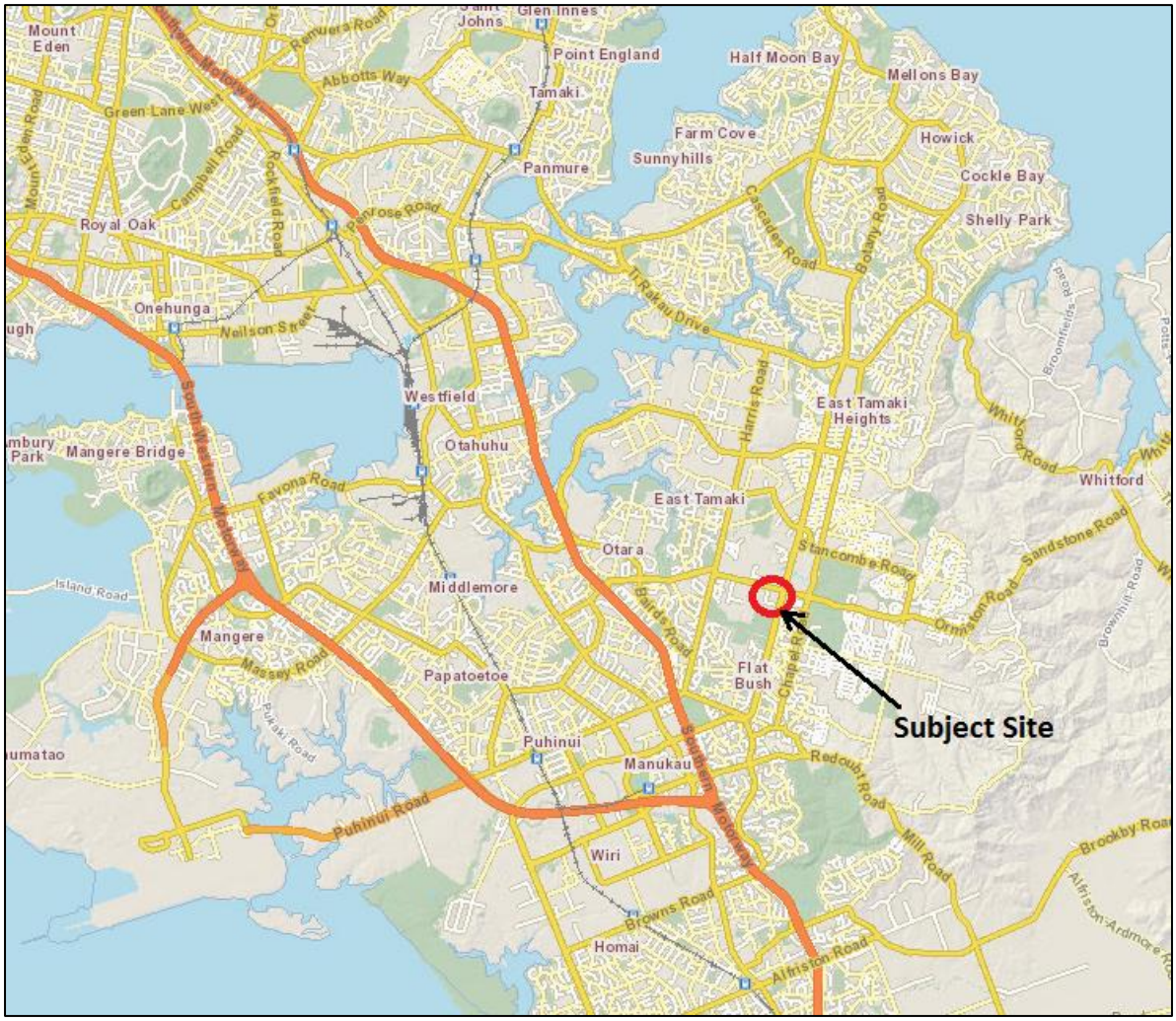

Figure 2 - Site Location

2 // Site Description

2.1 Location and Completed Works

The site is located at the corner of Ormiston Road and Te Irirangi Drive in Flatbush and is 16.5ha in area. The vacant site generally slopes north towards Ormiston road, with a relatively flat terrain. The site has been subdivided into 10 business lots which vary in size and includes access roads, utility services and all three waters infrastructure which are now live and have now been vested into Auckland Council.

Refer to **Figure 3** below for road layout and existing contours.

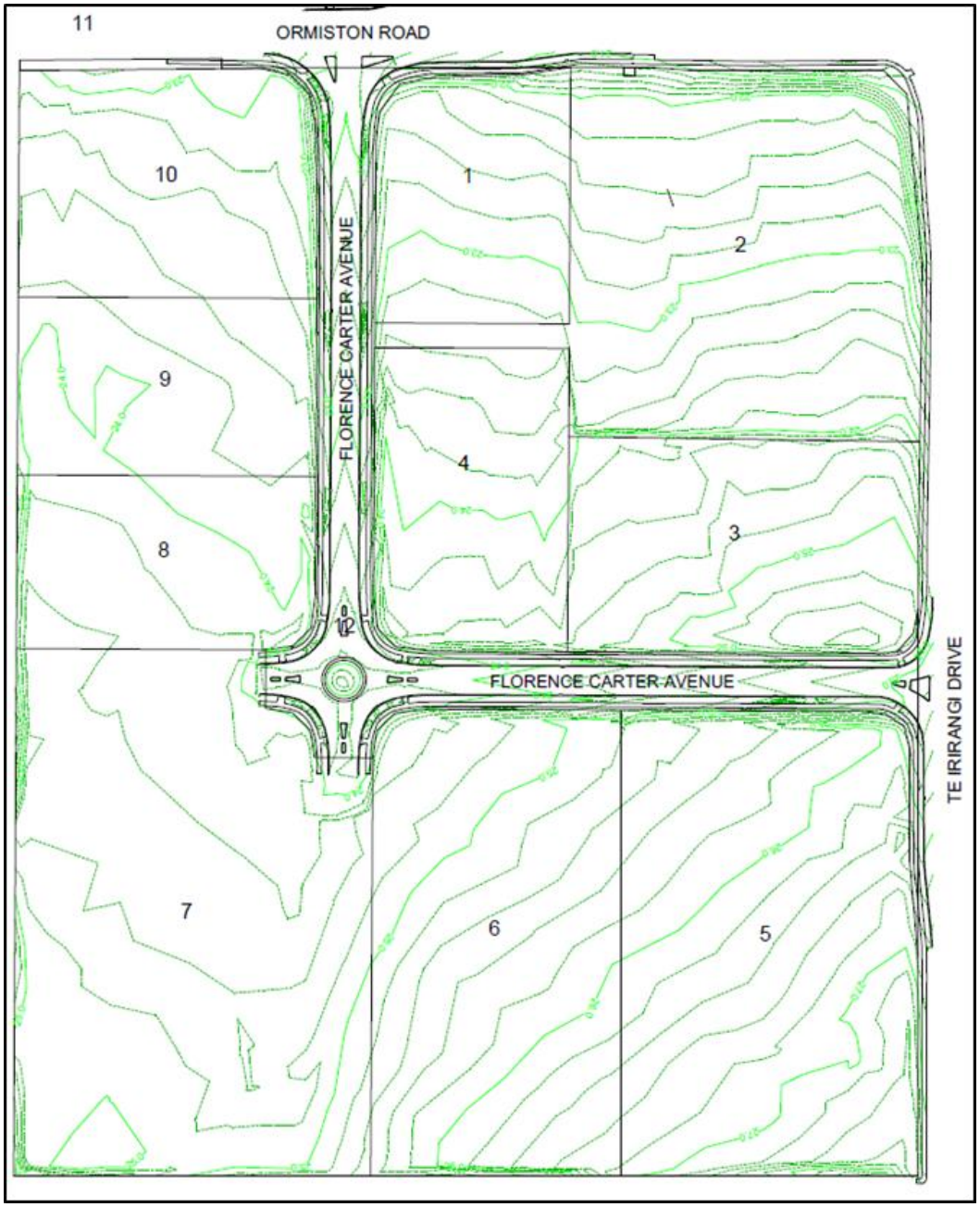

Figure 3 - As-Built Contours and Lot / Road Layout (Source: Candor3)

3 // Existing Infrastructure

As part of the previously completed subdivision works, the newly created lots are fully serviced for stormwater, wastewater, water supply and utility services, with internal lots being accessed via the newly constructed and vested Florence Carter Avenue which links up to both Ormiston Road and Te Irirangi Drive. As-built infrastructure plans are included in **Appendix B**.

3.1 Wastewater

A comprehensive wastewater network has been provided for as part of the previously completed subdivision works. This comprises of 225mm PVC wastewater lines on Florence Carter Avenue, Ormiston Road, and Te Irirangi Drive. The wastewater from site is discharged across Te Irirangi Drive via a 250mm earthenware pipe, which in turn discharges to a 825mm RCRRJ trunk sewer downstream.

Figure 4 below shows the indicative layout of the existing public infrastructure based on Auckland Council's Geomaps. Internal wastewater infrastructure is shown on the water supply as-builts (**Appendix B**).

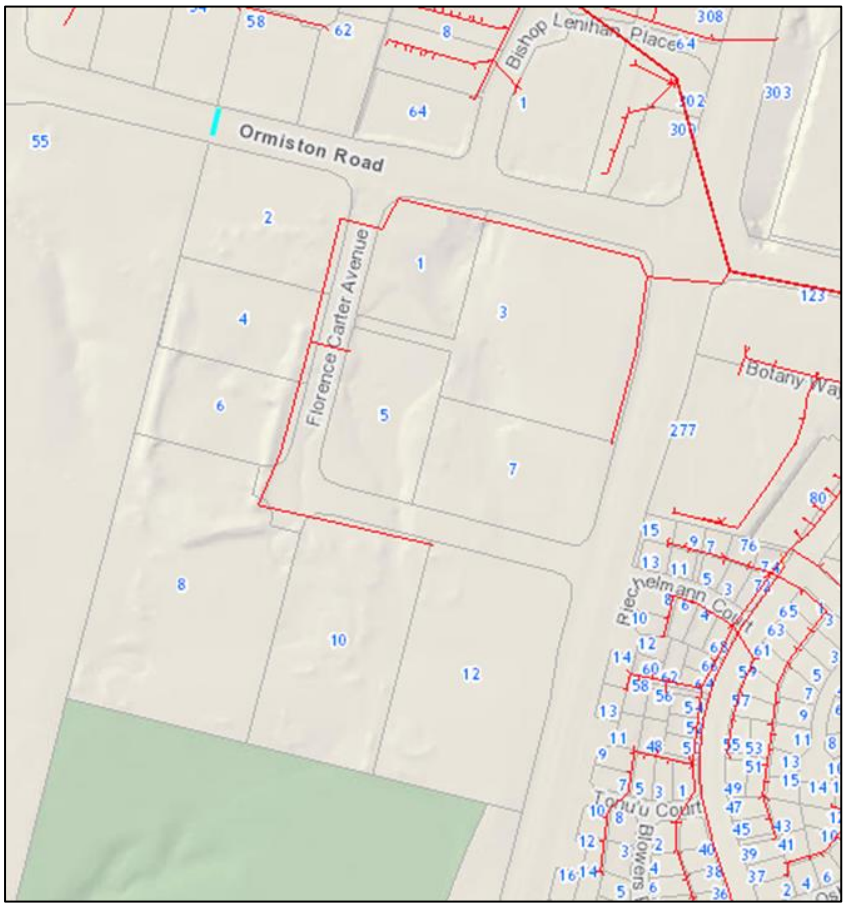

Figure 4 - Existing Wastewater Infrastructure

3.2 Water Supply

There is a comprehensive water supply network available to service the site, which was constructed as part of the underlying subdivision. This consists of a 200mm PVC watermain on the site's Ormiston Road and Te Irirangi Drive frontages, and 200mm PVC and 150mm PVC watermains running either side of Florence Carter Avenue, along with 16 fire hydrants along the site's immediate frontages to these roads. **Figure 5** below shows the indicative layout of the existing public infrastructure based on Auckland Council's Geomaps. Internal water supply infrastructure is shown on the wastewater as-builts (**Appendix B**).

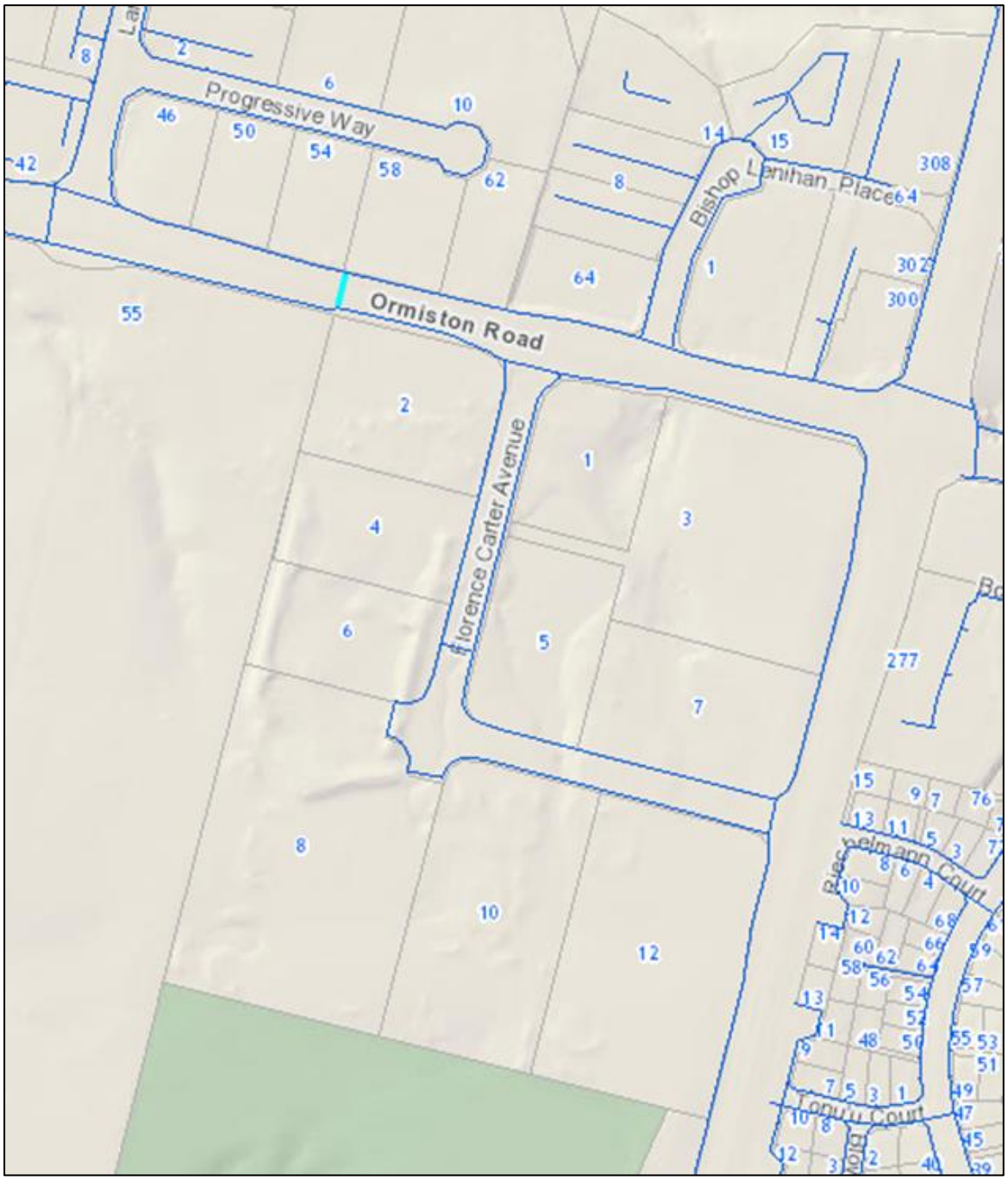

Figure 5 - Existing Water Supply Infrastructure

3.3 Stormwater

The site is subject to a Network Discharge Consent (**Appendix D**), and is part of the Otara Creek/ Flat Bush Stormwater Catchment which is approximately 3477Ha, as shown in **Figure 6** below.

Figure 6 - Wider Stormwater Catchment

The site is located within a SMAF1 area, meaning that detention and retention is required to be provided for the protection of downstream watercourses against channelised stream erosion.

The recent subdivision works included the construction of a network of pipes within Florence Carter Avenue and connecting to the existing infrastructure in Ormiston Road. The size of the internal network is up to 1050mm in diameter and contains a number of biofiltration devices which address SMAF1 requirements for the road reserve areas.

Stormwater discharge from the site is to a 1050mm pipe across Ormiston Road, and ultimately to Otara Creek and the Manukau Harbour. **Figure 7** below shows the indicative layout of the existing public infrastructure based on Auckland Council's Geomaps. This does not show the internal network but is shown in **Figure 8**. Internal stormwater infrastructure is shown on the stormwater as-builts (**Appendix B**).

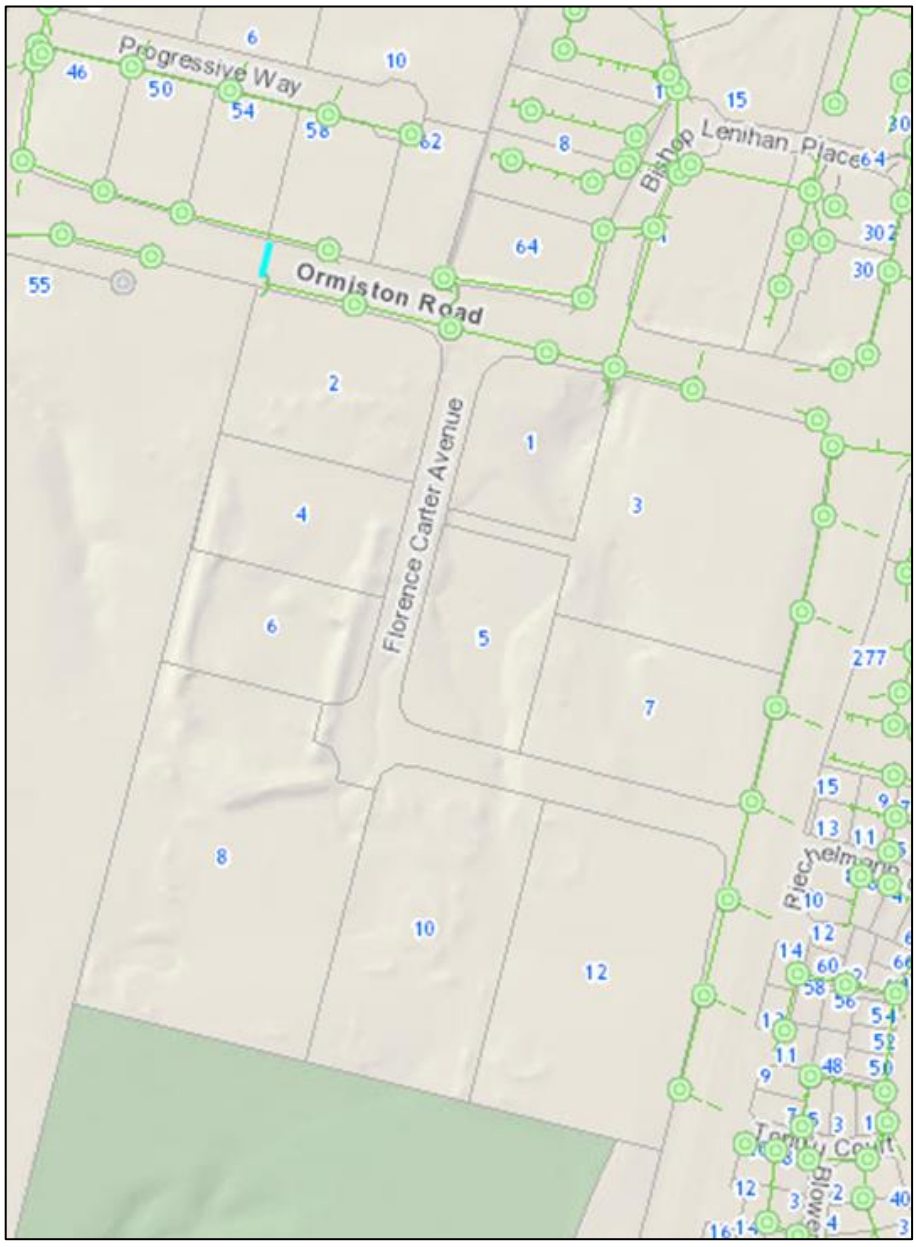

Figure 7 - Existing Stormwater Infrastructure

3.4 Utility Services

Electricity, Gas and Telecommunications services have been provided as part of the underlying subdivision and are available for each of the recently created lots.

3.5 Roading

Traffic Design Group has conducted investigations and previously reported on transportation and roading matters, and the reader is referred to those reports. This assessment therefore only provides a high level comment on the adequacy of the road system created as part of the underlying subdivision.

The subdivision is accessed by Florence Carter Avenue which starts at Ormiston Road and ends at Te Irirangi Drive. Florence Carter Avenue consists of a 23.6m wide road reserve, 12.2m wide road dual carriageway and 1.8m wide footpaths on both sides. The road and associated drainage shown below in **Figure 8** below.

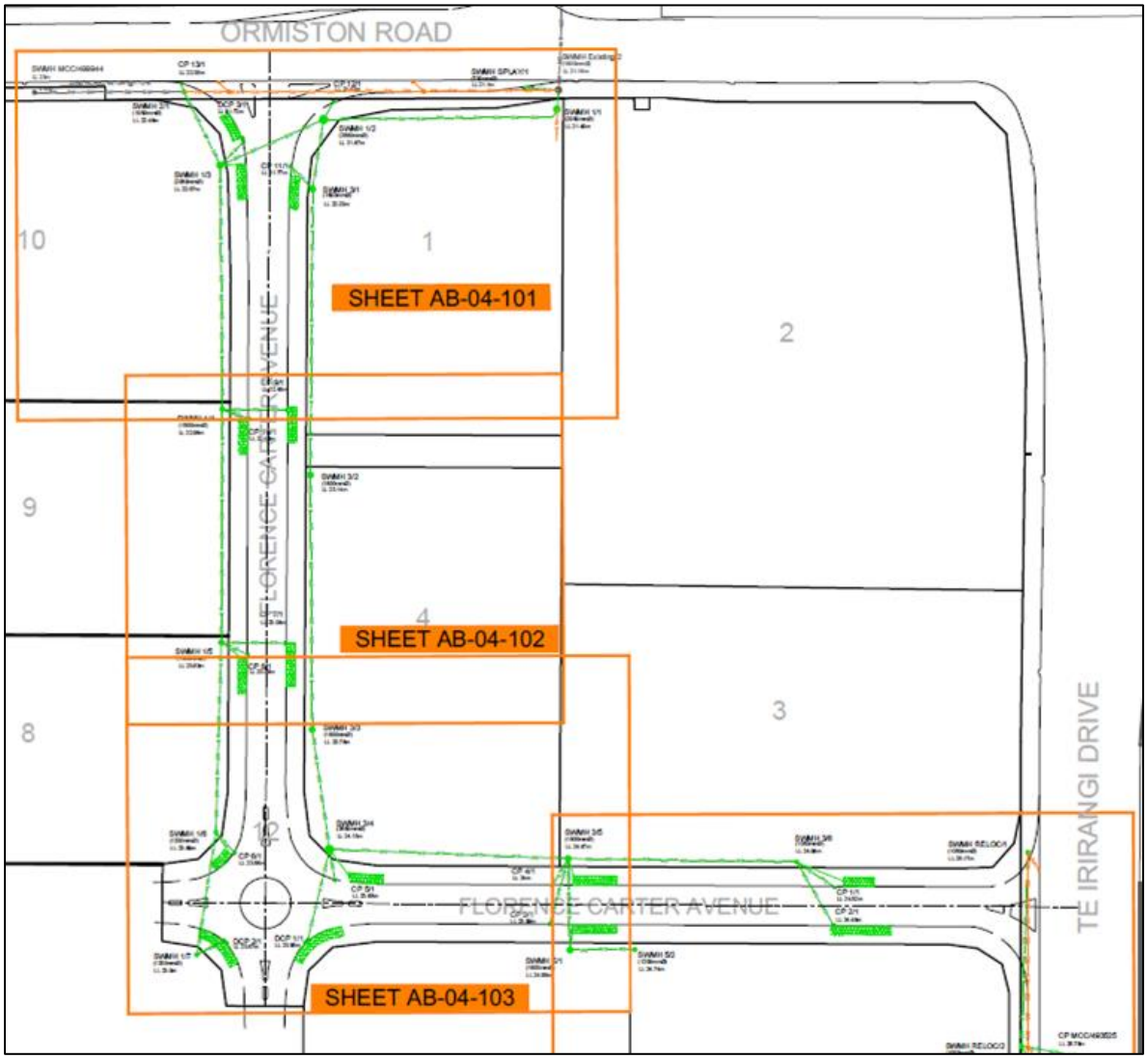

Figure 8 - Roading Plan with Drainage

4 // Infrastructure Capacity Assessment

An infrastructure capacity assessment was undertaken on the existing services to identify whether any potential infrastructure restrictions exist for the proposed Plan Change application. Stormwater, wastewater, water supply, utilities and roading have been addressed in this section of the report.

4.1 Wastewater

A high-level wastewater capacity assessment has been completed to determine the likely wastewater flows and associated capacity of downstream infrastructure. A number of potential scenarios and land use combinations were examined based on based on in consultation with Watercare. The exact nature and extent of the proposed development is still unknown. For purposes of this analysis, the site has been divided into 5 blocks (labelled A, B, C, D and E as shown in **Figure 9** below).

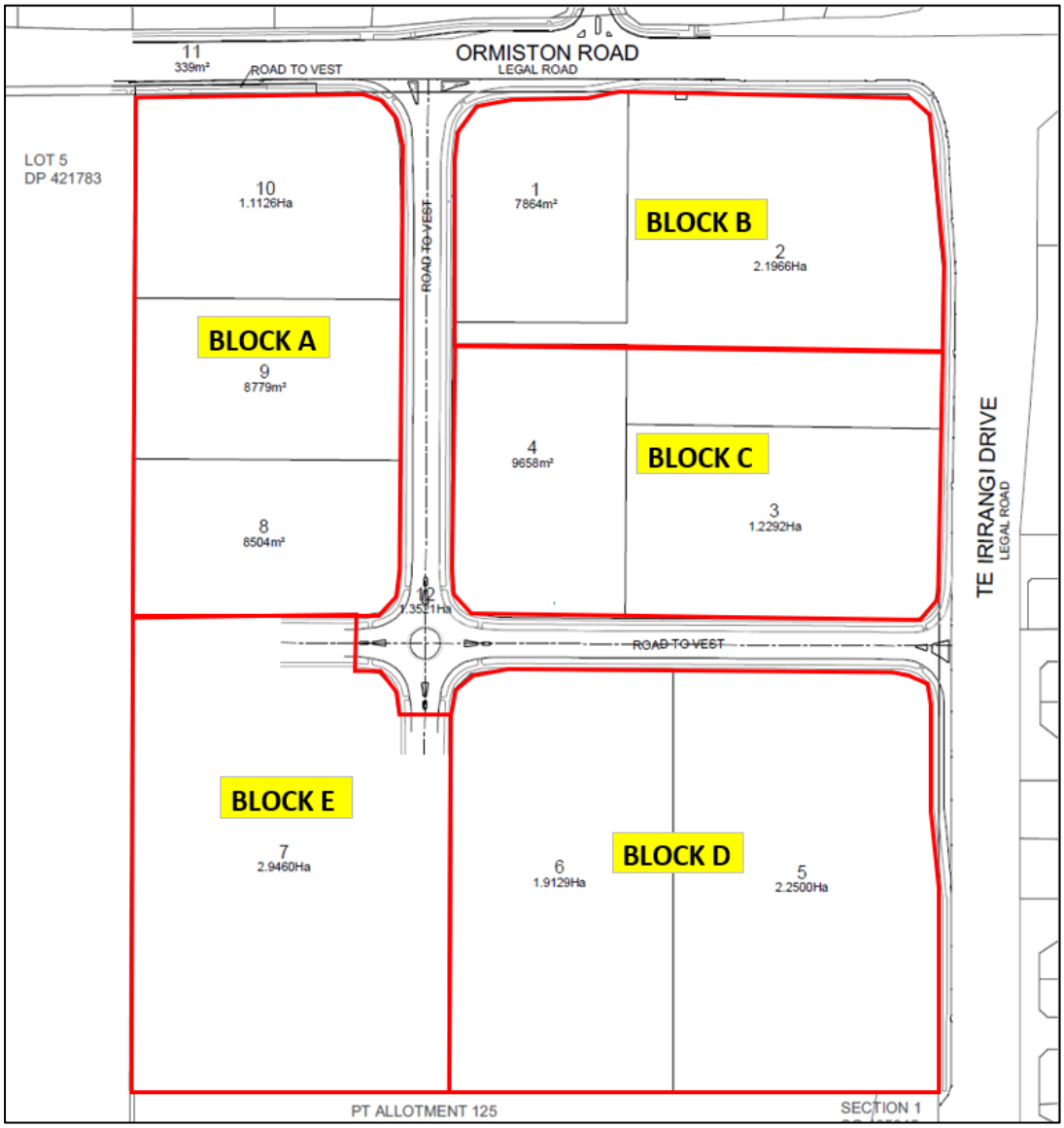

Figure 9 – Proposed Development Blocks

For purposes of this assessment, the following land uses have been tentatively assigned for each block (Table 1).

	BLOCK A	BLOCK B	BLOCK C	BLOCK D	BLOCK E
Retail	✓	✓			
Supermarket	✓				
Office		✓			
Residential Apartments		✓	✓		
Traveller's Accommodation			✓		
Retirement Units				✓	
Hotel				✓	
Large Format Retail					✓

Table 1 – Tentative Land Use Types

The infrastructure capacity assessment was based on the assumption that the 250mm earthenware pipe that crosses Te Irirangi Drive is the most critical asset (due to its size and corresponding catchment) and is thus assumed to be the limiting factor. The assessed capacity of this pipe is 43 L/s (refer Appendix A – Calculations) and as such any development options on the site will need to ensure that this flow is not exceeded.

With the above in mind, the peak wet weather wastewater flows (PWWWF's) were calculated for two arbitrary development density options / scenarios, as summarised in Table 2 below. The wastewater flows were obtained based on Watercare's Water & Wastewater Code of Practice but adapted to suit the various land uses, based on a series of discussions and correspondence with Watercare engineers (Appendix C). The tabulation in Table 2 below presents the arbitrary scenarios for the different blocks proposed, on which wastewater flows have been calculated.

		BLOCK A		BLOCK B		BLOCK C		BLOCK D		BLOCK E	
		Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
RETAIL	# Food-related shops	3	3	17	17						
	# Non-food related shops	3	3	17	17						
SUPERMARKET	# Supermarket Units	1	1								
OFFICE	Floor Area [m^2]			11265							
RESIDENTIAL APARTMENTS	# Units <65m^2						385				
	# Units >=65m^2				450						
TRAVELLER'S ACCOMM.	# Traveller's Accommodation Units					770					
RETIREMENT LIVING	# Retirement Units								800		
HOTEL	# Rooms							800			
LARGE FORMAT RETAIL	# L.F. Retail Premises									1	1

Table 2 – Arbitrary Land Use and Development Density Scenarios – Blocks A to E

The PWWF's for options 1 and 2 above have been estimated at 22.0L/s and 21.6 L/s respectively, as presented in **Appendix A** – Calculations. Based on this assessment it is concluded that the existing downstream infrastructure, at 43L/s estimated capacity, will be adequately sized to cope with the demands likely to arise from the arbitrary options considered.

4.2 Water Supply

Pressure & flow tests were conducted by Novaflo Tec Services Ltd in 2015 before the upgraded water supply network was constructed, which suggested that a flow of in excess of 50L/s with 770 kPa residual pressure was achievable at the time from a single hydrant. The newly upgraded water supply infrastructure would have improved these flow conditions considerably, and on this basis we would expect that a firefighting level of service of at least FW3 may well be achievable with the existing infrastructure (based on the requirements of SNZ PAS 4509:2008).

Notwithstanding this, at the time that the building footprints, typologies and intended land uses are defined at each lot, it is expected that specific design will take place and if there is a need for further water supply capacity, this will be supplied with supplementary booster pump(s) or alternative option within the individual lots.

4.3 Stormwater

4.3.1 Network Discharge Consent and SMAF1 Requirements

As mentioned above, the site is subject to a Network Discharge Consent (**Appendix D**). Preliminary work undertaken by AR & Associates in 2016 explored options to adopt low impact design and peak flow attenuation to manage stormwater runoff from roof and carpark areas within the lots, in order to meet the requirements of the NDC.

A letter from Auckland Council (dated 9th August 2016) confirmed the requirements set out by the NDC were successfully met by the concept assessment completed by AR & Associates at the time. The letter also confirms that peak flow attenuation is no longer a requirement for the development, as per variation to Flat Bush Consent 25478 processed and approved in 2015, resulting in water quality treatment and SMAF1 retention / detention being the key stormwater mitigation outcomes for the site.

Therefore, in order to achieve the requirements of the NDC and SMAF1 controls within the lot areas, at-source stormwater management solutions should be provided within the lots, in accordance with the relevant council guidelines (including TP10 and GD04) and the design philosophy proposed by AR & Associates in 2016.

On the other hand and as indicated earlier, the road reserve areas have been provided with bioretention devices as part of the underlying subdivision works. These systems offer stormwater quality treatment capability as well as retention and detention, thereby addressing SMAF1 objectives and the requirements of the NDC.

4.3.2 Infrastructure Capacity

As agreed with Auckland Council, the stormwater infrastructure constructed as part of the underlying subdivision was designed to accommodate rainfall event of 1 in 5 years, as per the requirements of the legacy Manukau City Council, in order to maintain consistency with the design criteria adopted for the downstream infrastructure. The assessment of stormwater infrastructure capacity scoped herein is therefore based on these criteria (i.e. 5-year ARI event with allowance for climate change and no on-site peak flow attenuation), although we note council's current design criteria is for primary infrastructure to be designed for the 10-year ARI (climate change) event.

As part of this assessment, a TP108 analysis based on a 1 in 5-year storm (climate change) on the subject site was undertaken with the existing 1050mm diameter pipe as the point of analysis. As shown in the stormwater as-builts (**Figure 10** and **Appendix B**), the 1050mm diameter concrete pipe services the development which includes runoff from the whole site including a small amount of road carriageway from Ormiston Road.

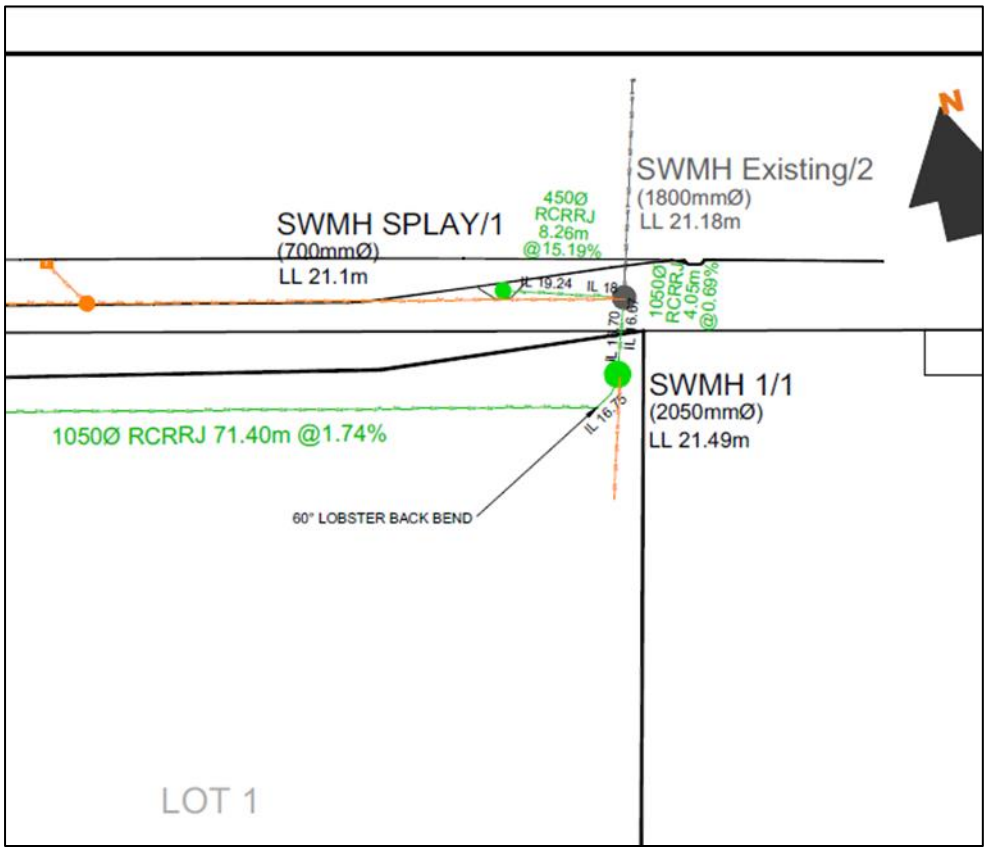

Figure 10 - SW Pipe- Point of Analysis (Source: Candor3)

For the purposes of this analysis, we have assumed that the entire site is zoned commercial and is 90% impervious, in order to represent a Maximum Probable Development (MPD) condition. An analysis using TP108 (for peak flows) and Colebrook White, pipe capacity tables gave the following results shown in **Table 3** below:

Pipe	Pipe gradient (%)	Capacity (m3/s)	Calculated Peak Flow -1 in 5 year (m3/s)	Capacity OK?
SWL1 (1050 dia)	0.690	2.335	1.634	Yes

Table 3 – SW Pipe Analysis

The existing downstream public stormwater network from the site therefore has sufficient capacity to cater for the catchment.

4.4 Utility Services

As previously discussed, the site has access to power, telecom and gas. These can be upgraded in the future should the need arise.

4.5 Roading

Traffic Design Group has conducted investigations and previously reported on transportation and roading matters, and the reader is referred to those reports. This assessment therefore only provides a high level comment on the adequacy of the road system created as part of the underlying subdivision.

As part of the previously completed works on this subdivision, Florence Carter Avenue has been constructed and vested into council as a public road. This road, which starts on Ormiston Road and ends at Te Irirangi Drive, has been designed to commercial / industrial standards in accordance with Auckland Council requirements for the underlying zone, being the most stringent standard, and is therefore considered to be adequate to service the site, both under the existing zoning and to support the proposed Plan Change application.

Should there be a need to accommodate special access needs to any of the lots, this will need to be assessed as part of the individual development of that lot.

5 // Conclusion

This report supports the Plan Change Application at 79 Ormiston Road, Flatbush.

The site has access to stormwater, wastewater, water supply and power, telecommunications and gas utility services. A public road has been constructed as part of the subdivision works and has been vested to Auckland Council.

Based on the assessment contained in this report, it is considered that the wastewater, water supply, stormwater, utility services and roading infrastructure currently available to service the site will adequately support the proposed Plan Change and intended tentative land uses for the development.

Appendix A – Engineering Calculations

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CIVIL | ENVIRONMENT | PLANNING

James Kirkpatrick Group Limited
79 Ormiston Road, Flat Bush

Engineering Calculations

CONTENTS:

Calculations By:	DR
Checked By:	AR
Job No.	P17-212-Clc01-RevA
Date:	04/05/2018
Revision:	A

AR & ASSOCIATES
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CALCULATION SHEET

Project:	79 Ormiston Road, Flat Bush	Job No:	P17-212-Clc01-RevA	Sheet:	1
Description:	Engineering Calculations	Designed:	DR		
Date:	04/05/2018	Checked:	AR		

A Wastewater

Wastewater flows have been obtained based on Watercare's Water & Wastewater CoP, but adapted to suit a range of land uses (as per discussions with Watercare). The tabulation below presents a number of arbitrary scenarios for the different blocks proposed.

			BLOCK A		BLOCK B		BLOCK C		BLOCK D		BLOCK E	
			Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
RETAIL	PF:	# Food-related shops	3	3	17	17						
	3	# Non-food related shops	3	3	17	17						
SUPERMARKET		# Supermarket Units	1	1								
OFFICE		Floor Area [m^2]			11265							
RESIDENTIAL APARTMENTS		# Units <65m^2						385				
	3	# Units >=65m^2				450						
TRAVELLER'S ACCOMMODATION		# Traveller's Accommodation Units					770					
		# Residents / Accommodation Unit					1.5					
	PF:	Occupancy					80%					
RETIREMENT LIVING		# Retirement Units								800		
	PF:	# Residents / Retirement Unit								1.3		
	3	Total # Residents	0	0	0	0	0	0	0	1040	0	0
		Litres / Day / Resident								135		
		PWWF L/D	0	0	0	0	0	0	0	421200	0	0
HOTEL		# Rooms							800			
LARGE FORMAT		# L.F. Retail Premises									1	1
		TOTAL L/D	38900	38900	134100	917100	498960	462000	1200000	421200	30000	30000
		TOTAL L/s	0.45	0.45	1.55	10.61	5.78	5.35	13.89	4.88	0.35	0.35
		GRAND TOTAL OPTION 1 L/s	22.02									
		GRAND TOTAL OPTION 2 L/s	21.64									

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CALCULATION SHEET

Project:	79 Ormiston Road, Flat Bush	Job No:	P17-212-Clc01-RevA	Sheet:	2
Description:	Pipe Capacity Checks	Designed:	DR		
Date:	04/05/2018	Checked:	AR		

B **Pipe Capacity Check - Wastewater**

The capacity of the downstream infrastructure is constrained by the existing 250mm earthenware pipe that crosses Te Irirangi Drive adjacent to the NE corner of the site. The tabulation below estimates the capacity of this pipe, based on available informaiton on invert levels.

Upstream MH	*Downstream MH*	*Upstream MH IL (m)*	*Downstream MH IL (m)*	*Pipe Length (m)*	*Pipe Gradient (m/m)*	*Pipe Diameter (mm)*	*Colebrook-White 'k'*	*Flow Velocity (m/s)*	***Pipe Capacity (m^3/s)***	
463939	465923	16.96	16.67	58.50	0.0050	250	1.5	0.864	**0.042**	*Note 1*

Note 1: The downstream invert level of the existing 250mm earthenware wastewater pipe in question is unknown. For purposes of this analysis, a conservative approach is therefore taken where an assumed IL has been calculated such as to achieve a minimum gradient of 0.5% for the pipe.

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CALCULATION SHEET

Project:	79 Ormiston Road, Flat Bush	Job No:	P17-212-Clc01-RevA	Sheet: 3
Description:	TP108 Analysis	Designed:	DR	
Date:	04/05/2018	Checked:	AR	

C **TP108 CHECK**

Catchment Name: **79 Ormiston Road, Flat Bush** Calcs: **TP108 Manual Method**

79 Ormiston Road, Flat Bush

Elevation (m)	h (m)	x (m)	Delta x (m)	h_{avg} (m)	A avg (m²)
19					
20	1	84	84	0.5	42
21	2	111	27	1.5	40.05
22	3	206	95	2.5	237.75
23	4	234	29	3.5	100.1
24	5	254	20	4.5	89.1
25	6	431	177	5.5	974.6
26	7	436	5	6.5	29.9
27	8	442	6	7.5	46.5
28	9	473	30	8.5	258.4
			473		1818.4

Slope = ΣA /(L²) = 0.016282909

Soil name and classification	Cover Description	Curve Number CN	Pre-development area (Ha)	CN x A	Post-development area (Ha)	CN x A	Comments
C	Class A	70	0.00	0	0.00	0	
C	Pasture and lawns	74	10.14	750.36	15.21	1125.54	
C	Roofs and pavements	98	6.76	662.48	1.69	165.62	
		Total Pervious	**10.14**	**750.36**	**15.21**	**1125.54**	
		Total Impervious	**6.76**	**662.48**	**1.69**	**165.62**	
			16.9		16.9		

		Pre-dev	Post-dev	Comments
CN Perv = tot prod perv / tot perv area =		74.00	74.00	
CN Imp = tot prod imp / tot imp area =		98.00	98.00	
CN weighed = tot prod / tot area =		83.60	76.40	
Ia weighed = 5 x pervarea / tot area =		3.00	4.50	
Ia =	5.00	Pervious		
Ia =	0.00	Impervious		

Time of Concentration

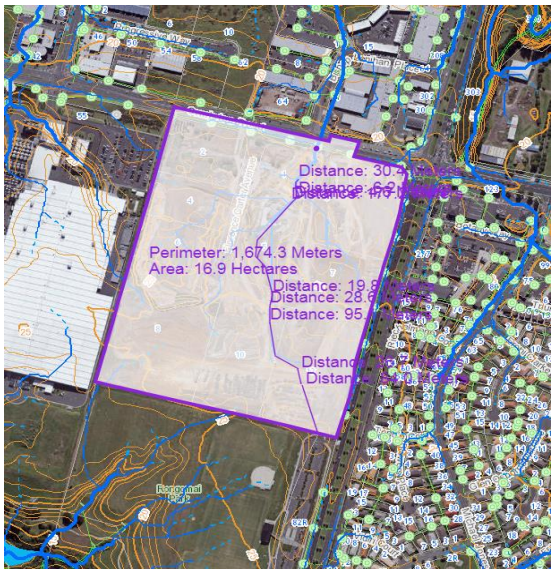
	Pre-dev	Post-dev	Comments
Channelisation Factor "C" (table 4.2)	1.00	1.00	
Catchment length (km)	0.47	0.47	
Catchment slope Sc (equal area method)	0.016	0.016	
Runoff factor (CN/(200-CN))	0.72	0.62	
Tc (hr)	0.35	0.38	

Parameters

	Pre-dev	Post-dev	Comments
Pervious Catchment Area 'A', km2	1.01E-01	1.52E-01	
Impervious Catchment Area 'A', km2	6.76E-02	1.69E-02	
Time of Concentration Tc	0.35	0.38	
Storage (weighed)	49.83	78.46	
Storage (Pervious)	89.24	89.24	
Storage (Impervious)	5.18	5.18	

Storm Events

ARI (yr)	**5 Yr**		
24hr rainfall depth 'P24'(mm)	115.10	115.10	From HIRDS
Compute c	0.523	0.403	
Specific peak flow q (figure 6.1)	0.1	0.084	
Peak flow rate (m3/s)	**1.945**	**1.634**	



The runoff coefficient (C) for the Rational Formula check has been determined, with appropriate adjustment for catchment slope, from "*Hydrological Design of Urban Stormwater Systems* " by New Zealand Institute of Engineers – Auckland Branch, dated December 1980.

AR & ASSOCIATES
CIVIL | ENVIRONMENT | PLANNING

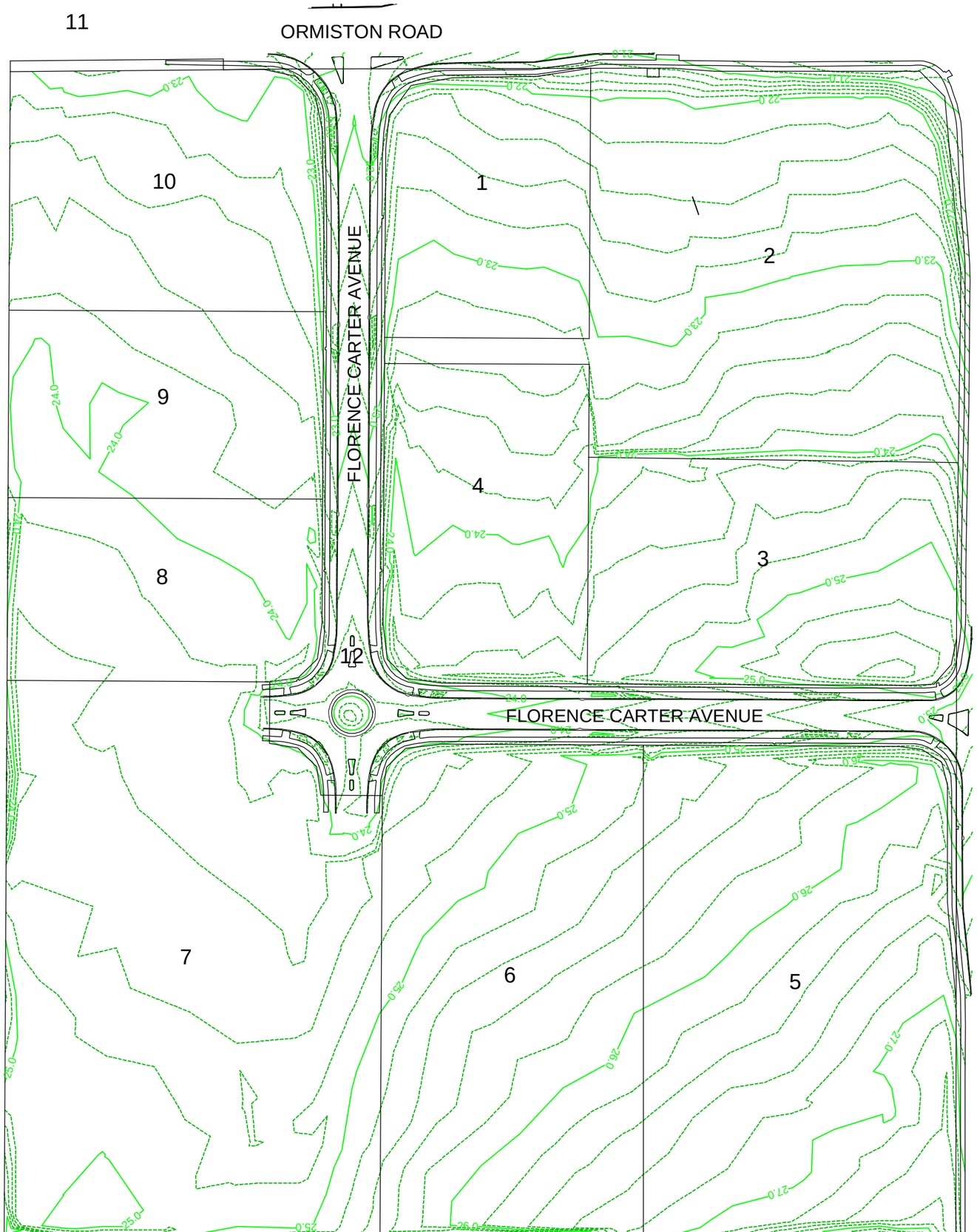
CALCULATION SHEET

Project:	79 Ormiston Road, Flat Bush	Job No:	P17-212-Clc01-RevA	Sheet:	4
Description:	Pipe Capacity Checks	Designed:	DR		
Date:	04/05/2018	Checked:	AR		

D **Pipe Capacity Check**

Pipe Flows		*MPD 5Yr Flow (m^3/s)*	*Pipe Diameter (mm)*	*Colebrook-White 'k'*	*Pipe Gradient*	*Flow Velocity (m/s)*	*Pipe Capacity (m^3/s)*	*Meet Design Flow?*
PIPE 1		**1.634**	1050.000	1.000	0.690%	2.697	**2.335**	Y

Appendix B – As-Built Subdivision Plans (Source: Candor[3])



APPLICATION NUMBER:
49033

CERTIFICATION

I CERTIFY THAT THIS AS-BUILT DRAWING IS AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:

- THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD(2000), AND ARE WITHIN ±50mm.
- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI), AND ARE WITHIN ±25mm.

SIGNED

.....

LICENSED SURVEYOR

DATE:

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@*candor3.co.nz*

LEGEND

15.0 — FINAL MAJOR CONTOUR (1m)

FINAL MINOR CONTOUR (0.20m)

NOTES:

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946
2. THE SURVEY IS IN TERMS OF NZTM
3. FINAL SURFACE TOPO TAKEN FOR THE PURPOSE OF GEOTECHNICAL AS-BUILT PLANS AND SHOULD NOT BE RELIED UPON BY OTHER PARTIES FOR DETAIL DESIGN

AS BUILT

REV	DESCRIPTION	APPV'D	DATE

Candor3
ENGINEERING FOR LIFE

PROJECT

79 ORMISTON ROAD

ASBUILT
ASBUILT CONTOURS OVERVIEW

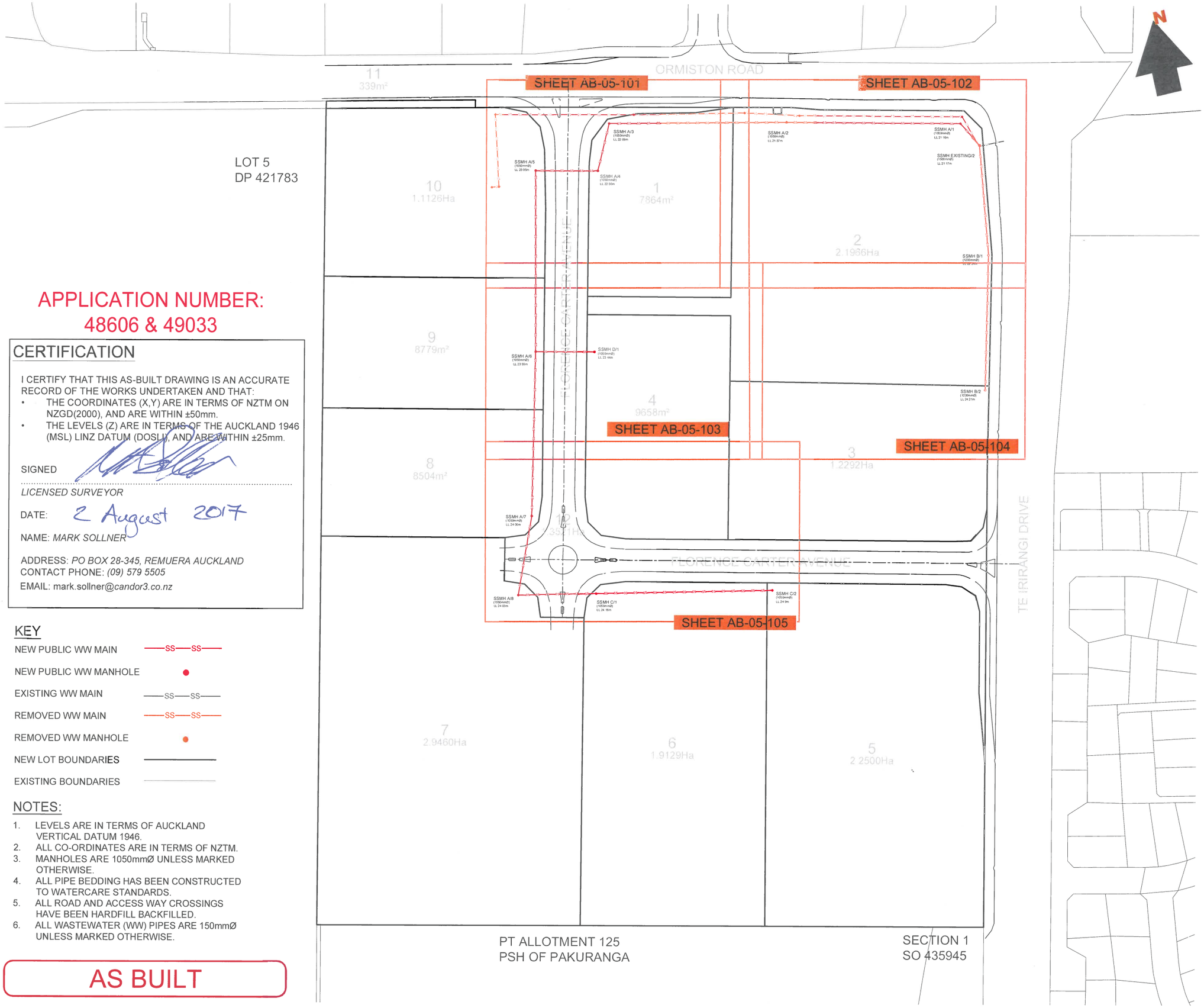
CLIENT

JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:1750 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 02-101	-

REV	DESCRIPTION	APPV'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17



PT ALLOTMENT 125
PSH OF PAKURANGA

SECTION 1
SO 435945

APPLICATION NUMBER:
48606 & 49033

CERTIFICATION

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SIGNED .....

LICENSED SURVEYOR

DATE: 2 August 2017

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@candor3.co.nz

KEY

NEW PUBLIC WW MAIN	——SS——SS——
NEW PUBLIC WW MANHOLE	●
EXISTING WW MAIN	——SS——SS——
REMOVED WW MAIN	——SS——SS——
REMOVED WW MANHOLE	●
NEW LOT BOUNDARIES	———
EXISTING BOUNDARIES	———

NOTES:

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
2. ALL CO-ORDINATES ARE IN TERMS OF NZTM.
3. MANHOLES ARE 1050mmØ UNLESS MARKED OTHERWISE.
4. ALL PIPE BEDDING HAS BEEN CONSTRUCTED TO WATERCARE STANDARDS.
5. ALL ROAD AND ACCESS WAY CROSSINGS HAVE BEEN HARDFILL BACKFILLED.
6. ALL WASTEWATER (WW) PIPES ARE 150mmØ UNLESS MARKED OTHERWISE.

AS BUILT

Candor³
ENGINEERING FOR LIFE

PROJECT

79 ORMISTON ROAD ASBUILT WASTEWATER RETICULATION

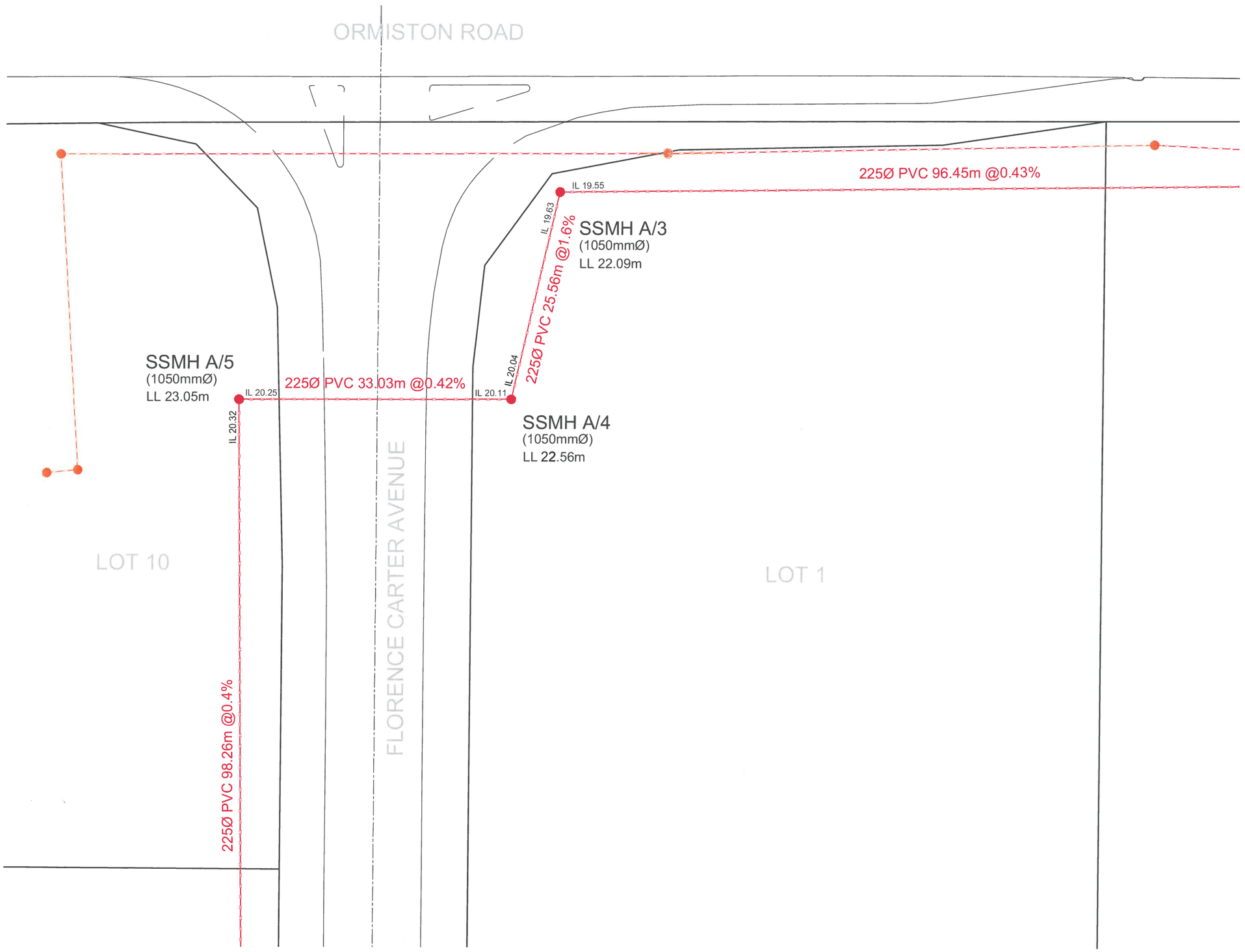
OVERVIEW

CLIENT

JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	MW	1:2000 @ A3	MAY 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 05-100	A



N

KEY

- NEW PUBLIC WW MAIN
- NEW PUBLIC WW MANHOLE
- EXISTING WW MAIN
- REMOVED WW MAIN
- REMOVED WW MANHOLE
- NEW LOT BOUNDARIES
- EXISTING BOUNDARIES

NOTES:

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APPLICATION NUMBER:
48606 & 49033

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AS BUILT

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
ASBUILT WASTEWATER RETICULATION
(SHEET 1 OF 5)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW
DRAWN	MW
CHECK	MAS
APPV'D	MAS

SCALE 1:500 @ A3

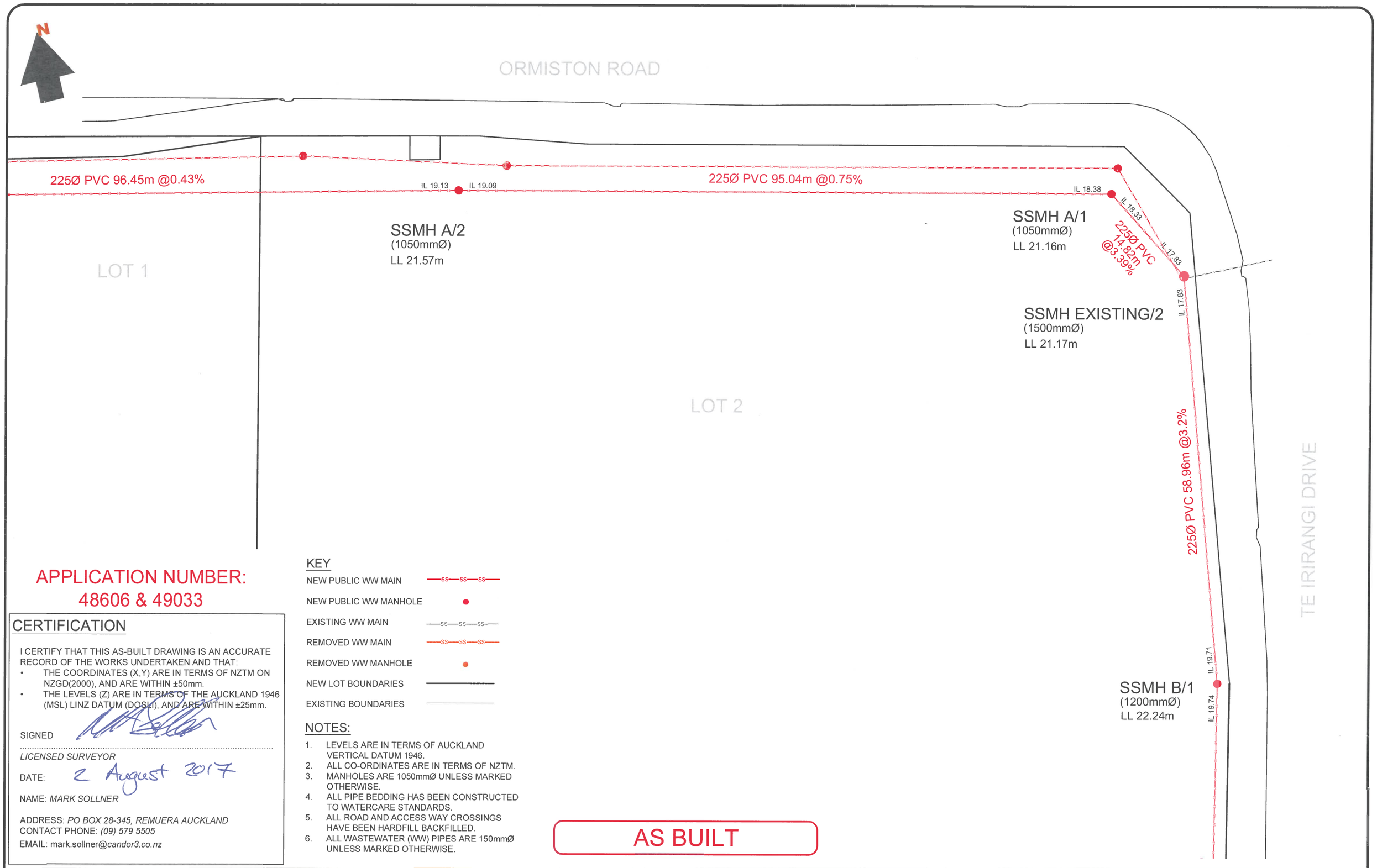
DATE ISSUED MAY 2017

PROJECT NO. 1160

DRAWING NO. AB 05-101

REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_05-100_WW RETICULATION.DWG



APPLICATION NUMBER:
48606 & 49033

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KEY

- NEW PUBLIC WW MAIN —SS—SS—SS—
- NEW PUBLIC WW MANHOLE ●
- EXISTING WW MAIN —SS—SS—SS—
- REMOVED WW MAIN —SS—SS—SS—
- REMOVED WW MANHOLE ●
- NEW LOT BOUNDARIES ———
- EXISTING BOUNDARIES ———

NOTES:

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5. ALL ROAD AND ACCESS WAY CROSSINGS HAVE BEEN HARDFILL BACKFILLED.
6. ALL WASTEWATER (WW) PIPES ARE 150mmØ UNLESS MARKED OTHERWISE.

AS BUILT

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

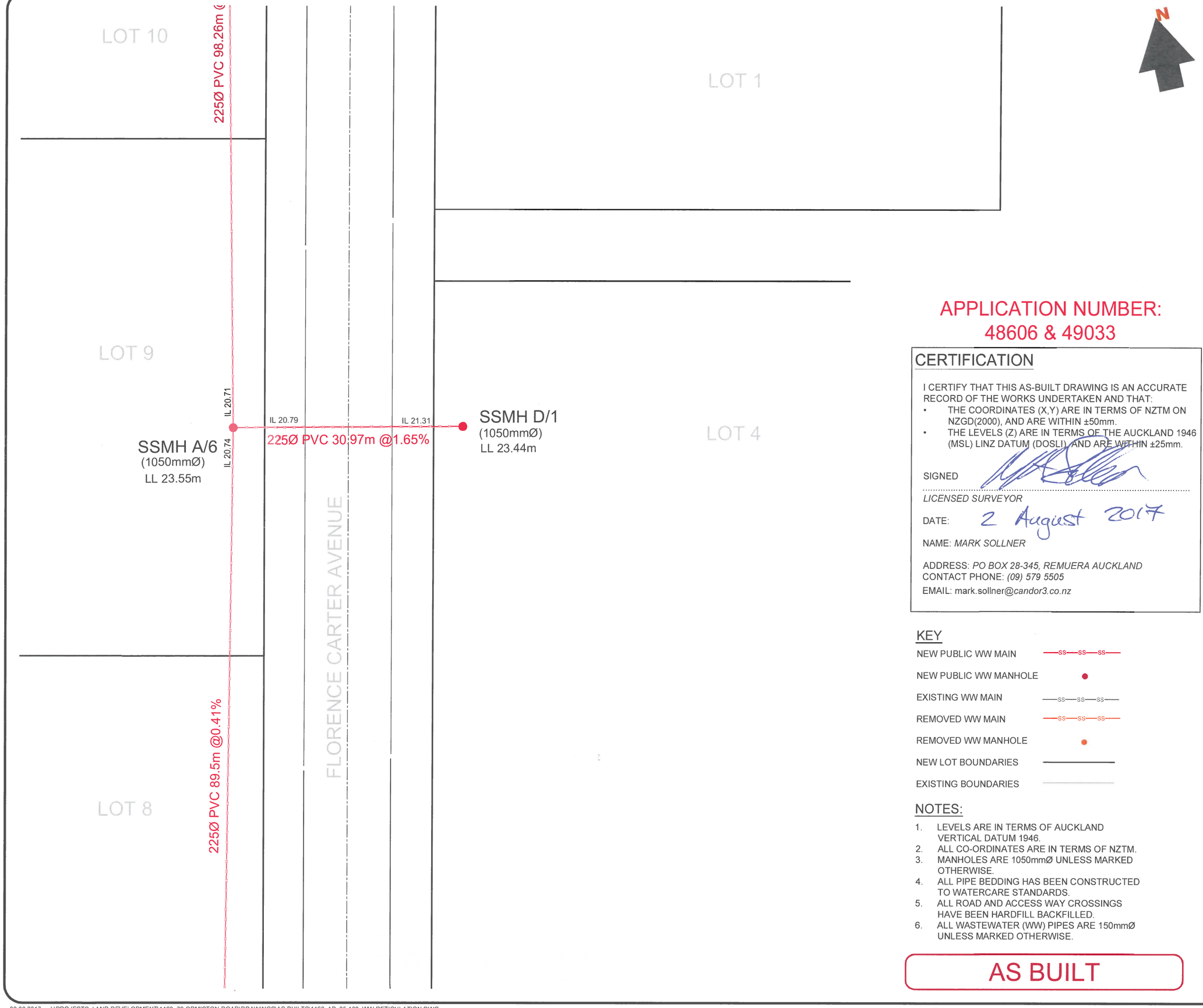
Candor3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
ASBUILT WASTEWATER RETICULATION
(SHEET 2 OF 5)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	MW	1:500 @ A3	MAY 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 05-102	A



REV	DESCRIPTION	APPV'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

APPLICATION NUMBER:
48606 & 49033

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SIGNED .....

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NEW PUBLIC WW MANHOLE ●

EXISTING WW MAIN —SS—SS—SS—

REMOVED WW MAIN —SS—SS—SS—

REMOVED WW MANHOLE ●

NEW LOT BOUNDARIES ———

EXISTING BOUNDARIES ———

NOTES:

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AS BUILT

Candor³
ENGINEERING FOR LIFE

PROJECT

79 ORMISTON ROAD ASBUILT WASTEWATER RETICULATION

(SHEET 3 OF 5)

CLIENT

JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	MW	1:500 @ A3	MAY 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 05-103	A

KEY

NEW PUBLIC WW MAIN —SS—SS—SS—

NEW PUBLIC WW MANHOLE ●

EXISTING WW MAIN —SS—SS—SS—

REMOVED WW MAIN —SS—SS—SS—

REMOVED WW MANHOLE ●

NEW LOT BOUNDARIES ———

EXISTING BOUNDARIES ———

NOTES:

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APPLICATION NUMBER:
48606 & 49033

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LICENSED SURVEYOR

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EMAIL: mark.sollner@*candor3.co.nz*

LOT 2

SSMH B/1
(1200mmØ)
LL 22.24m

IL 19.71
IL 19.74

225Ø PVC 72.88m @1.71%

IL 20.99

SSMH B/2
(1200mmØ)
LL 24.21m

LOT 3

TE IRIRANGI DRIVE

AS BUILT

REV	DESCRIPTION	APPV'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³
ENGINEERING FOR LIFE

PROJECT

79 ORMISTON ROAD ASBUILT WASTEWATER RETICULATION

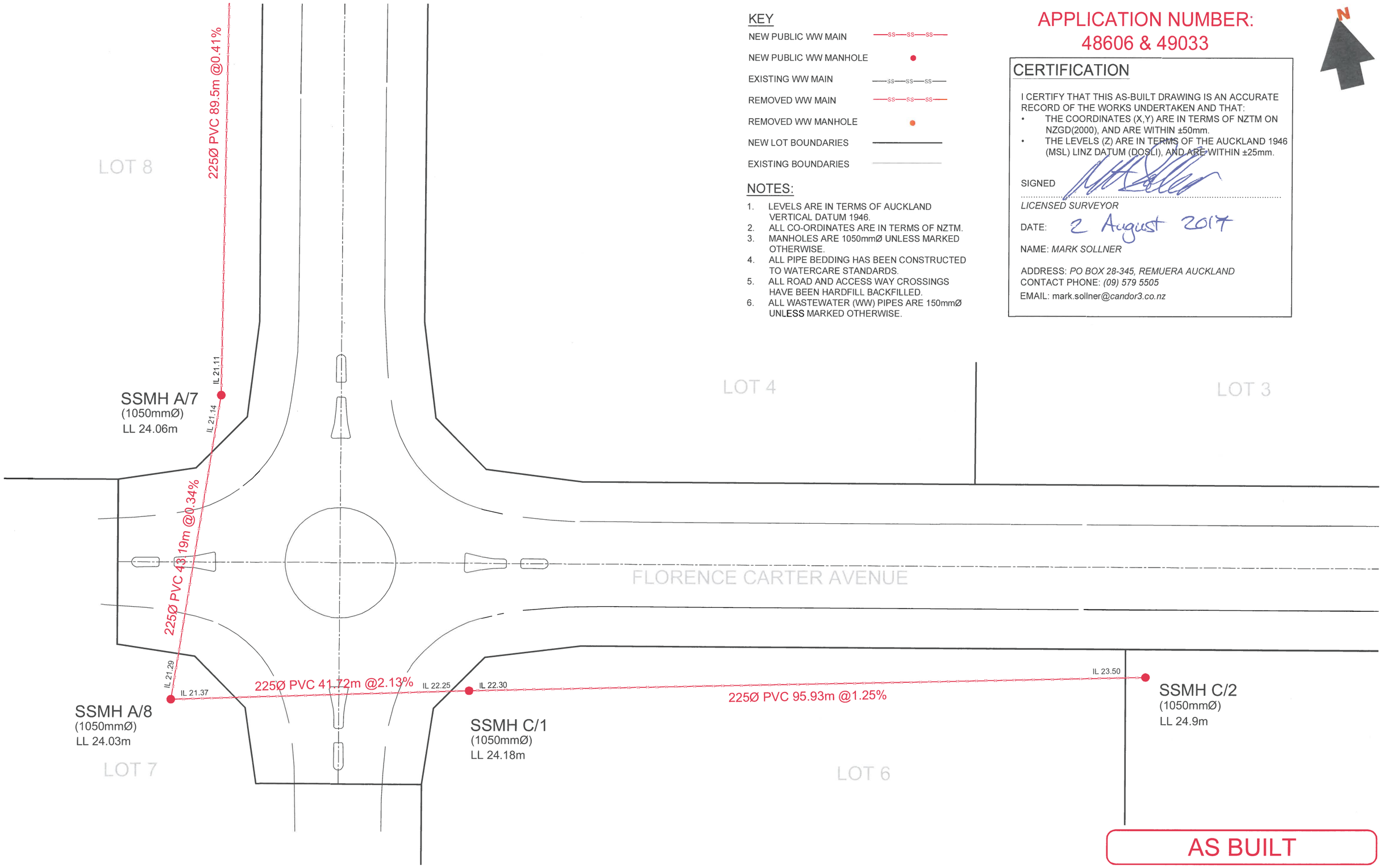
(SHEET 4 OF 5)

CLIENT

JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	MW	1:500 @ A3	MAY 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO. 1160 | DRAWING NO. AB 05-104 | REVISION (A)



KEY

NEW PUBLIC WW MAIN —SS—SS—SS—

NEW PUBLIC WW MANHOLE ●

EXISTING WW MAIN —SS—SS—SS—

REMOVED WW MAIN —SS—SS—SS—

REMOVED WW MANHOLE ●

NEW LOT BOUNDARIES ———

EXISTING BOUNDARIES ———

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APPLICATION NUMBER: 48606 & 49033

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AS BUILT

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³ ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
ASBUILT WASTEWATER RETICULATION
(SHEET 5 OF 5)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	MW	1:500 @ A3	MAY 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 05-105	A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_05-100_WW RETICULATION.DWG

Wastewater Pit As-Built

79 Ormiston Road Pit Data

	MONT EDEN CIRCUIT		NZTM			
PIT ID	NORTHING	EASTING	NORTHING	EASTING	LID LEVEL	MH Ø(mm)
SSMH A/1	790655.00	412229.39	5907447.505	1769277.275	21.16	1050
SSMH A/2	790676.93	412135.84	5907471.165	1769184.143	21.57	1050
SSMH A/3	790697.94	412040.64	5907493.936	1769089.343	22.09	1050
SSMH A/4	790674.03	412028.95	5907470.245	1769077.212	22.56	1050
SSMH A/5	790681.68	411995.74	5907478.509	1769044.148	23.05	1050
SSMH A/6	790584.77	411974.05	5907382.013	1769020.665	23.55	1050
SSMH A/7	790496.91	411952.15	5907294.569	1768997.141	24.06	1050
SSMH A/8	790455.96	411935.38	5907253.934	1768979.615	24.03	1050
SSMH B/1	790581.21	412228.71	5907373.737	1769275.229	22.24	1200
SSMH B/2	790509.32	412210.85	5907302.186	1769256.039	24.21	1200
SSMH C/1	790447.52	411977.30	5907244.719	1769021.373	24.18	1050
SSMH C/2	790427.63	412072.21	5907223.074	1769115.903	24.90	1050
SSMH D/1	790577.54	412005.24	5907374.206	1769051.718	23.44	1050
SSMH EXISTING/2	790640.90	412237.13	5907433.264	1769284.753	21.17	1500

Wastewater As-Built

79 Ormiston Road Pipe Data

Pit ID (DS)	Pit ID (US)	Invert DS	Invert US	Pipe Ø(mm)	Length (m)	% Slope
SSMH A/1	SSMH A/2	18.38	19.09	225	95.04	0.75
SSMH A/2	SSMH A/3	19.13	19.55	225	96.45	0.43
SSMH A/3	SSMH A/4	19.63	20.04	225	25.56	1.60
SSMH A/4	SSMH A/5	20.11	20.25	225	33.03	0.42
SSMH A/5	SSMH A/6	20.32	20.71	225	98.26	0.40
SSMH A/6	SSMH A/7	20.74	21.11	225	89.50	0.41
SSMH A/7	SSMH A/8	21.14	21.29	225	43.19	0.34
SSMH A/8	SSMH C/1	21.37	22.25	225	41.72	2.13
SSMH C/1	SSMH C/2	22.30	23.50	225	95.93	1.25
SSMH B/1	SSMH B/2	19.74	20.99	225	72.88	1.71
SSMH EXISTING/2	SSMH B/1	17.83	19.71	225	58.96	3.20
SSMH A/6	SSMH D/1	20.79	21.31	225	30.97	1.65
SSMH EXISTING/2	SSMH A/1	17.83	18.33	225	14.82	3.39

AS BUILT

APPLICATION NUMBER:
48606 & 49033

CERTIFICATION

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SIGNED .....

LICENSED SURVEYOR

DATE: 2 August 2017

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EMAIL: mark.sollner@*candor3.co.nz*

REV	DESCRIPTION	APPV'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³
ENGINEERING FOR LIFE

PROJECT

79 ORMISTON ROAD
ASBUILT WASTEWATER
RETICULATION

COORDINATES

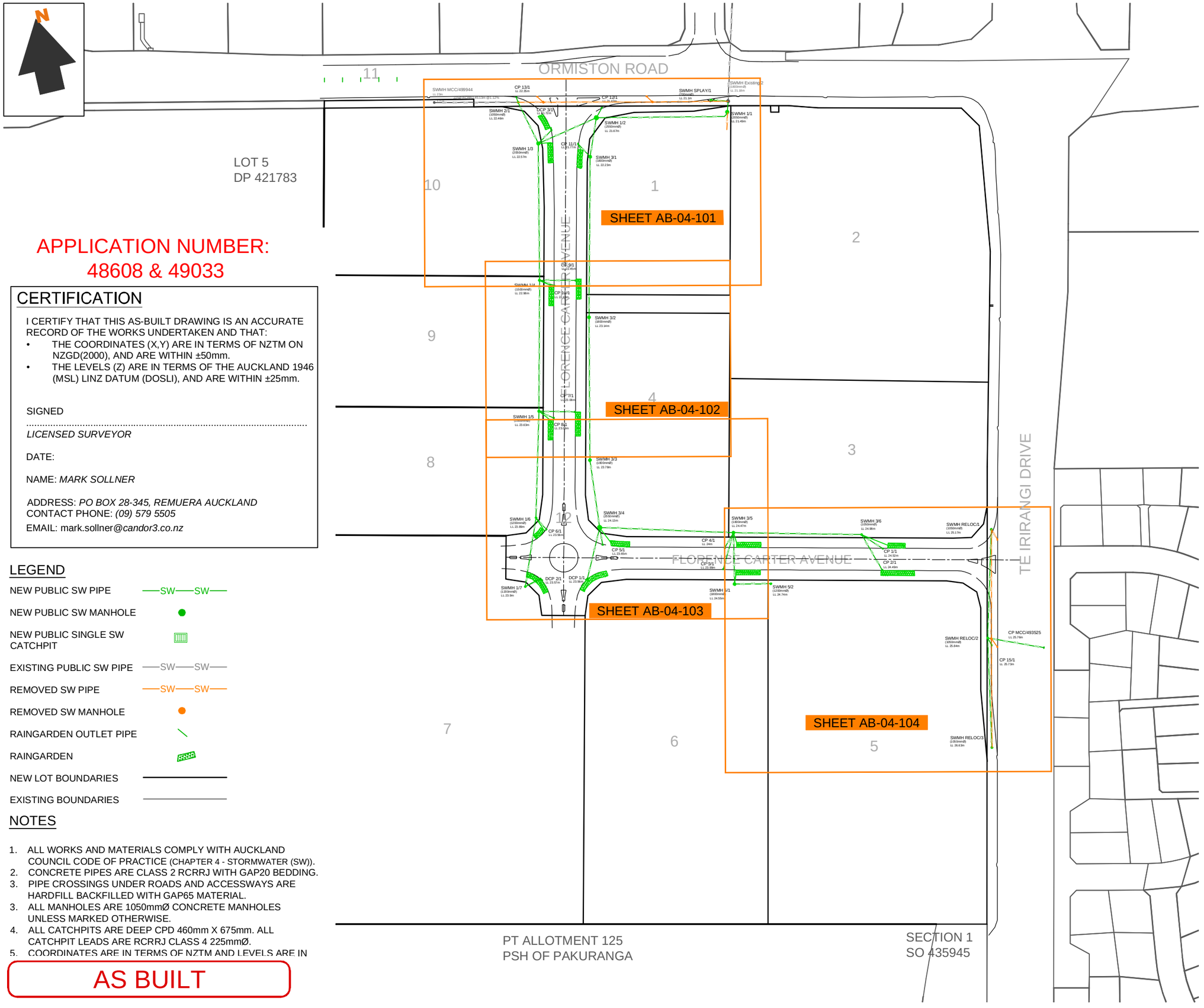
CLIENT

JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	MW		MAY 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 05-106	A

REV	DESCRIPTION	APPV'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17



PT ALLOTMENT 125
PSH OF PAKURANGA

SECTION 1
SO 435945

APPLICATION NUMBER:
48608 & 49033

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LEGEND

- NEW PUBLIC SW PIPE —SW—SW—
- NEW PUBLIC SW MANHOLE
- NEW PUBLIC SINGLE SW CATCHPIT
- EXISTING PUBLIC SW PIPE —SW—SW—
- REMOVED SW PIPE —SW—SW—
- REMOVED SW MANHOLE
- RAINGARDEN OUTLET PIPE
- RAINGARDEN
- NEW LOT BOUNDARIES
- EXISTING BOUNDARIES

NOTES

1. ALL WORKS AND MATERIALS COMPLY WITH AUCKLAND COUNCIL CODE OF PRACTICE (CHAPTER 4 - STORMWATER (SW)).
2. CONCRETE PIPES ARE CLASS 2 RCRRJ WITH GAP20 BEDDING.
3. PIPE CROSSINGS UNDER ROADS AND ACCESSWAYS ARE HARDFILL BACKFILLED WITH GAP65 MATERIAL.
3. ALL MANHOLES ARE 1050mmØ CONCRETE MANHOLES UNLESS MARKED OTHERWISE.
4. ALL CATCHPITS ARE DEEP CPD 460mm X 675mm. ALL CATCHPIT LEADS ARE RCRRJ CLASS 4 225mmØ.
5. COORDINATES ARE IN TERMS OF NZTM AND LEVELS ARE IN

AS BUILT

Candor³
ENGINEERING FOR LIFE

PROJECT

79 ORMISTON ROAD ASBUILT STORMWATER RETICULATION

OVERVIEW

CLIENT

JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:2000 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 04-100	A

SWMH 2/1 WAS PLACED ON TOP OF THE EXISTING STORMWATER LINE FROM SWMH MCC/499944. THE NEW LENGTH OF THE PIPE IS AS SHOWN.

ORMISTON ROAD

SWMH MCC/499944
LL 23m

225Ø RCRRJ 45.13m @1.12%

IL 21.31

CP 13/1
LL 22.35m

IL 21.30
IL 21.22
2.84m @3.52%
IL 20.81
IL 20.76

SWMH 2/1
(1050mmØ)
LL 22.46m

225Ø RCRRJ 23.76m @5.69%

DCP 3/1
LL 21.72m

9.04m @9.13%

IL 19.41
IL 19.60
IL 20.43
IL 18.30

900Ø RCRRJ 32.66m @0.49%

CP 12/1
LL 21.42m

4.73m @0.42%
IL 20.28
IL 20.22
IL 17.99

SWMH 1/2
(2550mmØ)
LL 21.67m

IL 18.14
IL 18.07

900Ø RCRRJ 19.6m @0.64%

SWMH 1/3
(2050mmØ)
LL 22.57m

IL 18.38

CP 11/1
LL 21.77m

8.55m @3.89%
IL 20.45
IL 20.19

SWMH 3/1
(1800mmØ)
LL 22.23m

IL 18.20
IL 18.26

SWMH SPLAY/1
(700mmØ)
LL 21.1m

450Ø RCRRJ 8.26m @15.19%
IL 19.24
IL 18

SWMH Existing/2
(1800mmØ)
LL 21.18m

1050Ø RCRRJ 4.05m @0.69%
IL 16.70
IL 16.67

1050Ø RCRRJ 71.40m @1.74%

SWMH 1/1
(2050mmØ)
LL 21.49m

IL 16.75

60° LOBSTER BACK BEND

LOT 1

LOT 10

825Ø RCRRJ 73.57m @0.91%

FLORENCE CARTER AVENUE

900Ø RCRRJ 86.62m @1.02%

CP 9/1
LL 22.45m

IL 19.05
18.81m @2.37%
IL 20.71
IL 21.16
IL 21.28
IL 20.89
7.71m @4.77%
IL 19.10

SWMH 1/4
(1500mmØ)
LL 22.98m

CP 10/1

N

LEGEND

NEW PUBLIC SW PIPE	—SW—SW—SW—
NEW PUBLIC SW MANHOLE	●
NEW PUBLIC SINGLE SW CATCHPIT	▭
EXISTING PUBLIC SW PIPE	—SW—SW—SW—
REMOVED SW PIPE	—SW—SW—SW—
REMOVED SW MANHOLE	●
RAINGARDEN OUTLET PIPE	\
RAINGARDEN	▭
NEW LOT BOUNDARIES	———
EXISTING BOUNDARIES	———

AS BUILT

APPLICATION NUMBER:
48608 & 49033

CERTIFICATION

I CERTIFY THAT THIS AS-BUILT DRAWING IS AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:

- THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD(2000), AND ARE WITHIN ±50mm.
- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI), AND ARE WITHIN ±25mm.

SIGNED

.....

LICENSED SURVEYOR

DATE:

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@*candor3.co.nz*

NOTES

1. ALL WORKS AND MATERIALS COMPLY WITH AUCKLAND COUNCIL CODE OF PRACTICE (CHAPTER 4 - STORMWATER (SW)).
2. CONCRETE PIPES ARE CLASS 2 RCRRJ WITH GAP20 BEDDING.
3. PIPE CROSSINGS UNDER ROADS AND ACCESSWAYS ARE HARDFILL BACKFILLED WITH GAP65 MATERIAL.
3. ALL MANHOLES ARE 1050mmØ CONCRETE MANHOLES UNLESS MARKED OTHERWISE.
4. ALL CATCHPITS ARE DEEP CPD 460mm X 675mm. ALL CATCHPIT LEADS ARE RCRRJ CLASS 4 225mmØ.
5. COORDINATES ARE IN TERMS OF NZTM AND LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

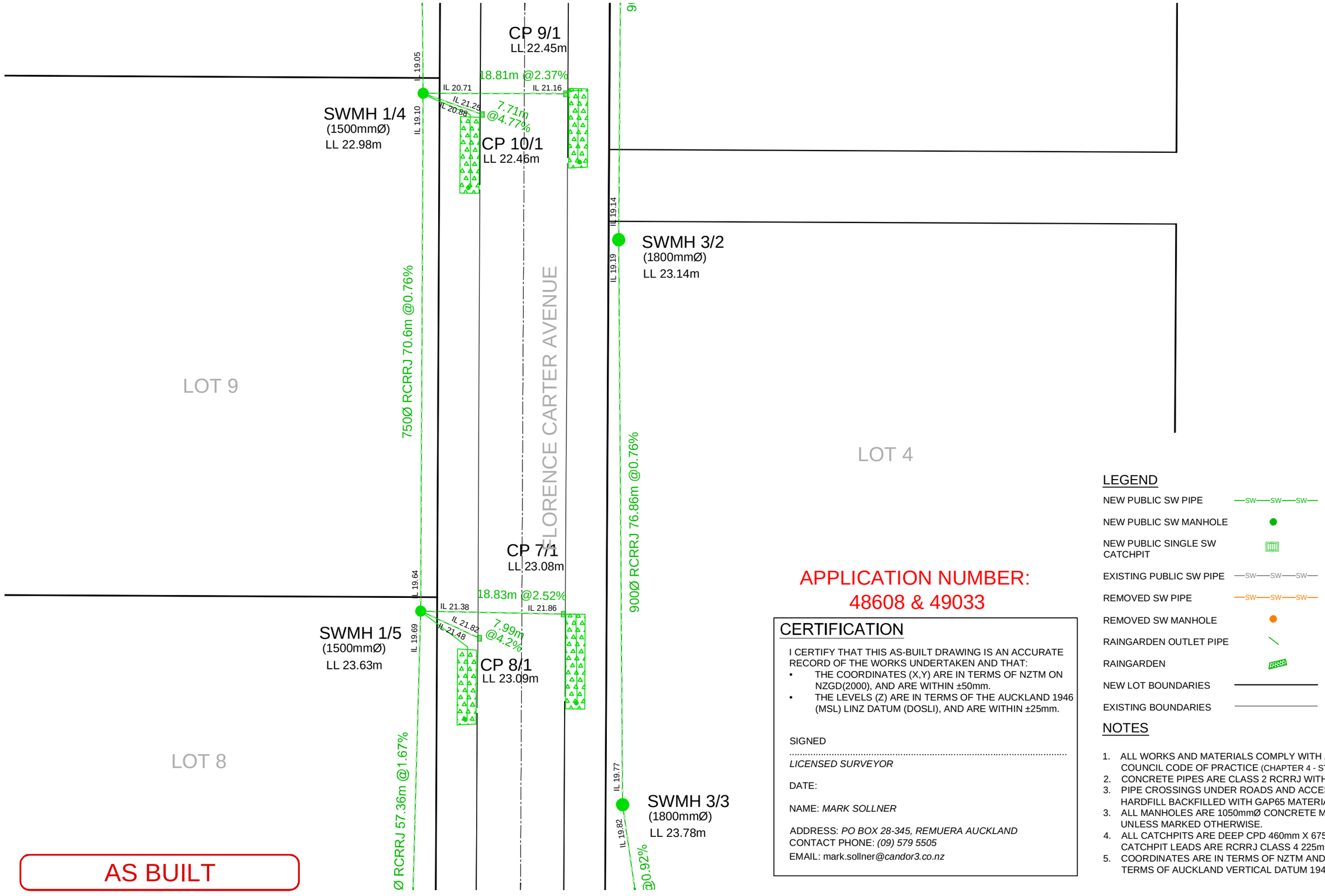
PROJECT
79 ORMISTON ROAD
ASBUILT STORMWATER RETICULATION
(SHEET 1 OF 4)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO. 1160 | DRAWING NO. AB 04-101 | REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_04-100_SW RETICULATION.DWG



AS BUILT

LEGEND

- NEW PUBLIC SW PIPE —SW—SW—SW—
- NEW PUBLIC SW MANHOLE
- NEW PUBLIC SINGLE SW CATCHPIT
- EXISTING PUBLIC SW PIPE —SW—SW—SW—
- REMOVED SW PIPE —SW—SW—SW—
- REMOVED SW MANHOLE
- RAINGARDEN OUTLET PIPE
- RAINGARDEN
- NEW LOT BOUNDARIES
- EXISTING BOUNDARIES

APPLICATION NUMBER:
48608 & 49033

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SIGNED

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LICENSED SURVEYOR

DATE:

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner*@candor3.co.nz*

NOTES

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REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

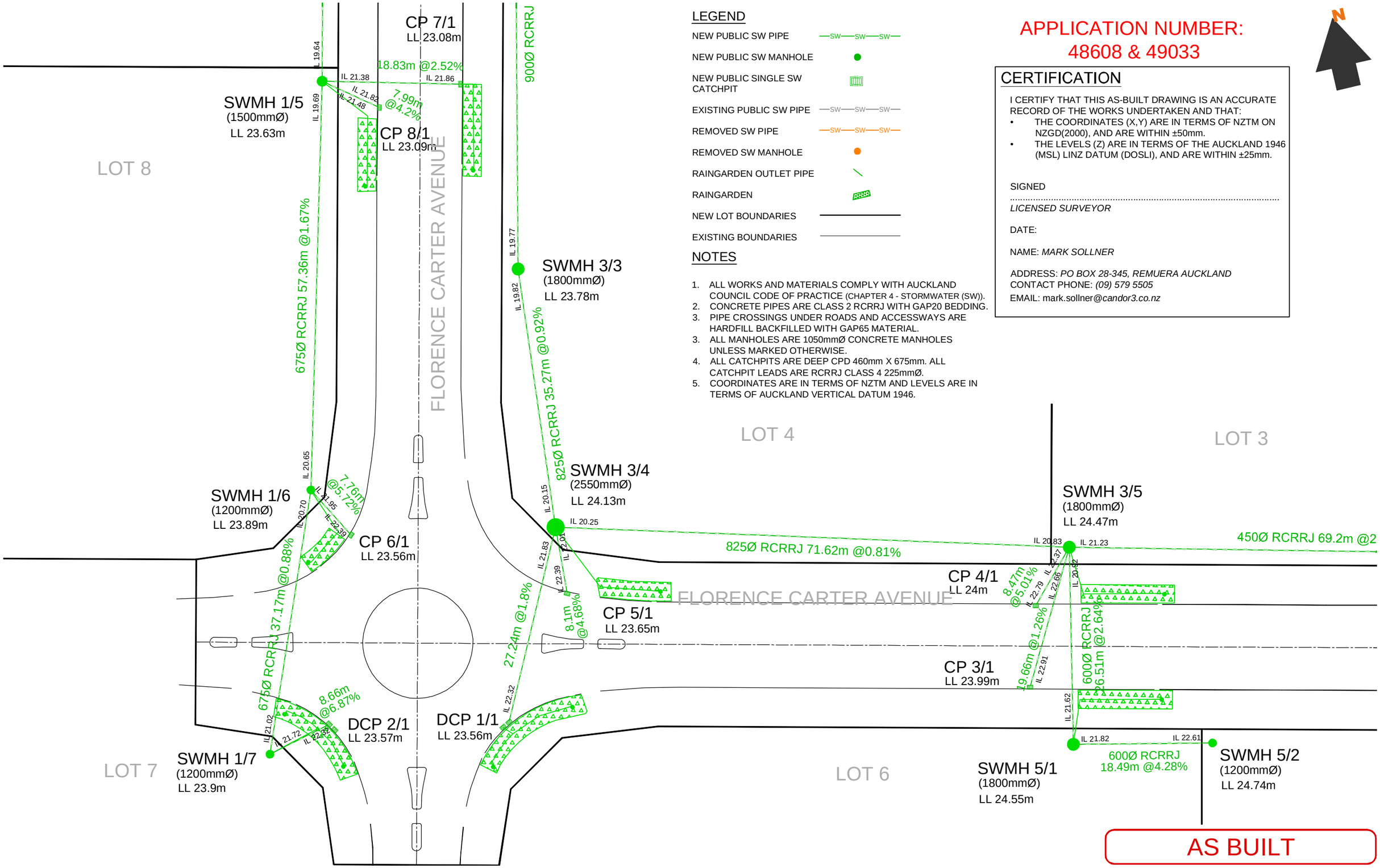
PROJECT
79 ORMISTON ROAD
ASBUILT STORMWATER RETICULATION
(SHEET 2 OF 4)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO. 1160 | DRAWING NO. AB 04-102 | REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_04-100_SW RETICULATION.DWG



LEGEND

- NEW PUBLIC SW PIPE
- NEW PUBLIC SW MANHOLE
- NEW PUBLIC SINGLE SW CATCHPIT
- EXISTING PUBLIC SW PIPE
- REMOVED SW PIPE
- REMOVED SW MANHOLE
- RAINGARDEN OUTLET PIPE
- RAINGARDEN
- NEW LOT BOUNDARIES
- EXISTING BOUNDARIES

NOTES

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APPLICATION NUMBER: 48608 & 49033

CERTIFICATION

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SIGNED

.....

LICENSED SURVEYOR

DATE:

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@*candor3.co.nz*

AS BUILT

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³ ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
ASBUILT STORMWATER RETICULATION
(SHEET 3 OF 4)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW
DRAWN	EPB
CHECK	MAS
APPV'D	MAS

SCALE 1:500 @ A3

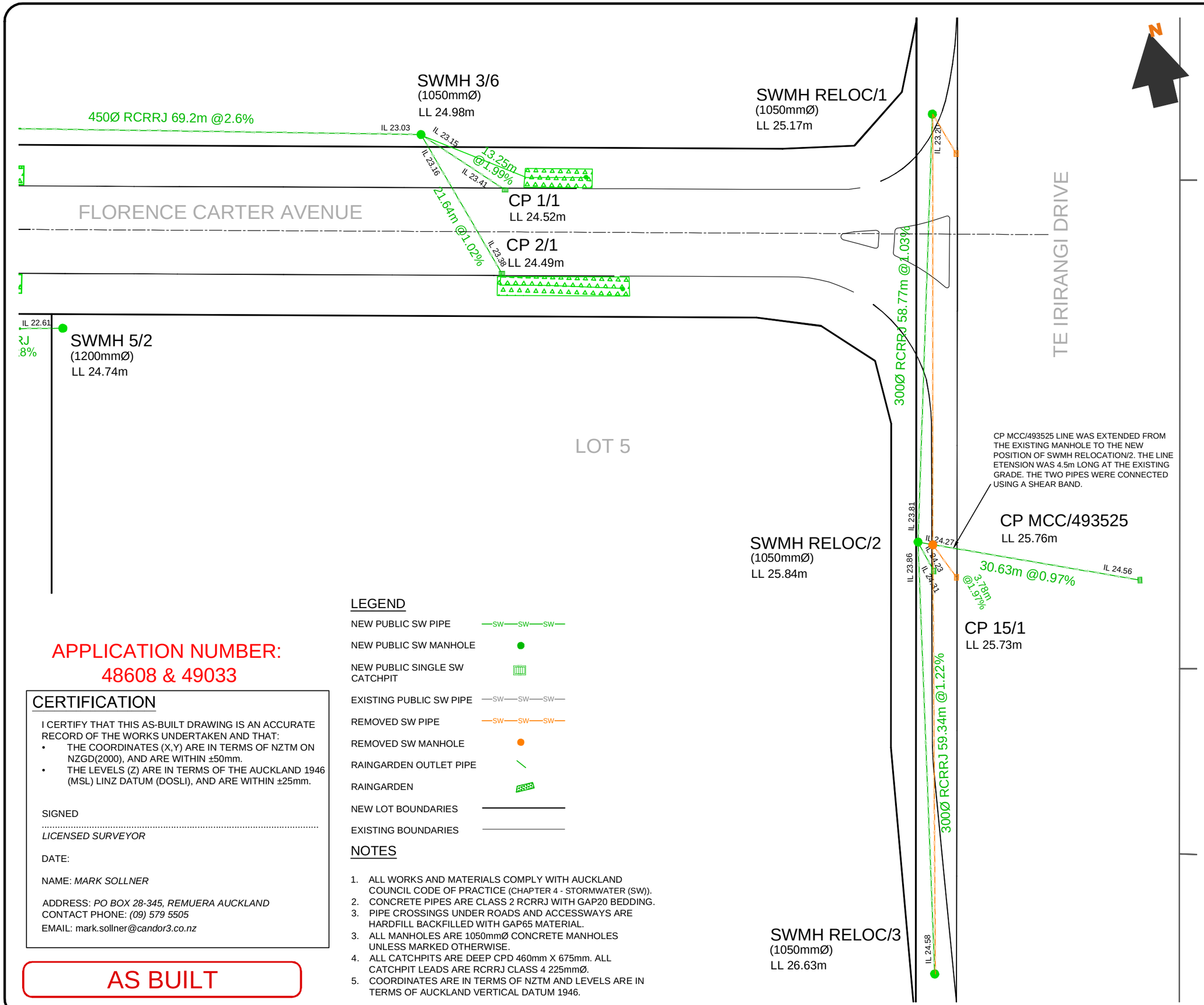
DATE ISSUED JUN 2017

PROJECT NO. 1160

DRAWING NO. AB 04-103

REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_04-100_SW RETICULATION.DWG



REV	DESCRIPTION	APPV'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

APPLICATION NUMBER:
48608 & 49033

CERTIFICATION

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SIGNED

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LICENSED SURVEYOR

DATE:

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@*candor3.co.nz*

AS BUILT

LEGEND

- NEW PUBLIC SW PIPE —SW—SW—SW—
- NEW PUBLIC SW MANHOLE
- NEW PUBLIC SINGLE SW CATCHPIT
- EXISTING PUBLIC SW PIPE —SW—SW—SW—
- REMOVED SW PIPE —SW—SW—SW—
- REMOVED SW MANHOLE
- RAINGARDEN OUTLET PIPE
- RAINGARDEN
- NEW LOT BOUNDARIES
- EXISTING BOUNDARIES

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Candor³
ENGINEERING FOR LIFE

PROJECT

79 ORMISTON ROAD ASBUILT STORMWATER RETICULATION

(SHEET 4 OF 4)

CLIENT

JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:2000 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 04-104	A

Storm Water Pit As-Built

	MONT EDEN CIRCUIT		NZTM			
PIT ID	NORTHING	EASTING	NORTHING	EASTING	LID LEVEL	MH Ø(mm)
SWMH 1/1	790688.46	412106.49	5907483.24	1769155.01	21.49	2050
SWMH 1/2	790701.61	412035.50	5907497.70	1769084.27	21.67	2550
SWMH 1/3	790695.00	412001.17	5907491.73	1769049.82	22.57	2050
SWMH 1/4	790621.44	411984.87	5907418.48	1769032.16	22.98	1500
SWMH 1/5	790551.27	411968.28	5907348.62	1769014.28	23.63	1500
SWMH 1/6	790494.47	411953.47	5907292.11	1768998.42	23.89	1200
SWMH 1/7	790458.86	411939.19	5907256.76	1768983.48	23.90	1200
SWMH 2/1	790719.62	411995.44	5907516.45	1769044.55	22.46	1050
SWMH 3/1	790681.43	412027.34	5907477.67	1769075.74	22.23	1800
SWMH 3/2	790595.43	412006.81	5907392.07	1769053.62	23.14	1800
SWMH 3/3	790518.67	411989.60	5907315.63	1769034.99	23.78	1800
SWMH 3/4	790481.36	411986.48	5907278.39	1769031.18	24.13	2550
SWMH 3/5	790461.93	412057.66	5907257.64	1769101.99	24.47	1800
SWMH 3/6	790445.01	412126.21	5907239.45	1769170.22	24.98	1050
SWMH 5/1	790434.23	412051.86	5907230.05	1769095.68	24.55	1800
SWMH 5/2	790429.92	412071.36	5907225.38	1769115.10	24.74	1200
SWMH MCC/499944	790729.87	411950.42	5907527.53	1768999.73	23.00	1050
SWMH RELOC/1	790431.69	412196.45	5907224.83	1769240.20	25.17	1050
SWMH RELOC/2	790373.90	412181.04	5907167.34	1769223.73	25.84	1050
SWMH RELOC/3	790314.58	412169.71	5907108.23	1769211.30	26.63	1050
SWMH SPLAY/1	790696.80	412099.28	5907491.71	1769147.96	21.11	700
CP 1/1	790434.82	412135.93	5907229.08	1769179.75	24.52	
CP 2/1	790423.55	412132.84	5907217.87	1769176.45	24.49	
CP 3/1	790443.64	412047.64	5907239.54	1769091.63	23.99	
CP 4/1	790454.86	412051.09	5907250.69	1769095.29	24.00	
CP 5/1	790471.71	411985.96	5907268.75	1769030.48	23.65	
CP 6/1	790486.89	411957.63	5907284.45	1769002.44	23.56	
CP 7/1	790546.38	411987.54	5907343.38	1769033.44	23.08	
CP 8/1	790545.74	411975.42	5907342.96	1769021.31	23.09	
CP 9/1	790616.89	412004.20	5907413.57	1769051.41	22.45	
CP 10/1	790616.70	411992.23	5907413.60	1769039.44	22.46	
CP 11/1	790689.85	412022.44	5907486.18	1769071.00	21.77	
CP 12/1	790706.31	412039.71	5907502.32	1769088.57	21.42	
CP 13/1	790722.76	411995.08	5907519.60	1769044.25	22.35	
CP 15/1	790369.46	412182.27	5907162.87	1769224.87	25.73	
CP MCC/493525	790361.73	412210.04	5907154.63	1769252.50	25.76	
DCP 1/1	790455.33	411973.17	5907252.61	1769017.39	23.56	
DCP 2/1	790460.66	411948.73	5907258.39	1768993.05	23.57	
DCP 3/1	790701.04	412009.85	5907497.61	1769058.61	21.72	

Storm Water Pipe As-Built

Pit ID (DS)	Pit ID (US)	Invert DS	Invert US	Pipe Ø(mm)	Length (m)	% Slope
SWMH 1/1	SWMH 1/2	16.75	17.99	1050	73.44	1.69
SWMH 1/2	SWMH 1/3	18.14	18.30	900	32.66	0.49
SWMH 1/3	SWMH 1/4	18.38	19.05	825	73.57	0.91
SWMH 1/4	SWMH 1/5	19.10	19.64	750	70.60	0.76
SWMH 1/5	SWMH 1/6	19.69	20.65	675	57.36	1.67
SWMH 1/6	SWMH 1/7	20.70	21.02	675	37.17	0.88
SWMH 1/3	SWMH 2/1	19.41	20.76	225	23.76	5.69
SWMH 1/2	SWMH 3/1	18.07	18.20	900	19.60	0.64
SWMH 3/1	SWMH 3/2	18.26	19.14	900	86.62	1.02
SWMH 3/2	SWMH 3/3	19.19	19.77	900	76.86	0.76
SWMH 3/3	SWMH 3/4	19.82	20.15	825	35.27	0.92
SWMH 3/4	SWMH 3/5	20.25	20.83	825	71.62	0.81
SWMH 3/5	SWMH 3/6	21.23	23.03	450	69.20	2.60
SWMH 3/5	SWMH 5/1	20.92	21.62	600	26.51	2.64
SWMH 5/1	SWMH 5/2	21.82	22.61	600	18.49	4.28
SWMH 3/6	CP 1/1	23.15	23.41	225	13.25	1.99
SWMH 3/6	CP 2/1	23.16	23.38	225	21.64	1.02
SWMH 3/5	CP 3/1	22.66	22.91	225	19.66	1.26
SWMH 3/5	CP 4/1	22.37	22.79	225	8.47	5.01
SWMH 3/4	CP 5/1	22.01	22.39	225	8.10	4.68
SWMH 1/6	CP 6/1	21.95	22.39	225	7.76	5.72
SWMH 1/5	CP 7/1	21.38	21.86	225	18.83	2.52
SWMH 1/5	CP 8/1	21.48	21.82	225	7.99	4.20
SWMH 1/4	CP 9/1	20.71	21.16	225	18.81	2.37
SWMH 1/4	CP 10/1	20.88	21.25	225	7.71	4.77
SWMH 3/1	CP 11/1	20.12	20.45	225	8.55	3.88
SWMH 1/2	CP 12/1	20.30	20.28	225	4.73	0.42
SWMH 2/1	CP 13/1	21.22	21.30	225	2.34	3.24
SWMH 3/4	DCP 1/1	21.83	22.32	300	27.24	1.80
SWMH 1/7	DCP 2/1	21.72	22.32	300	8.66	6.87
SWMH 1/3	DCP 3/1	19.60	20.43	300	9.04	9.13
SWMH 2/1	SWMH MCC/499944	20.81	21.31	225	45.13	1.12
SWMH RELOC/1	SWMH RELOC/2	23.20	23.81	300	58.77	1.03
SWMH RELOC/2	SWMH RELOC/3	23.86	24.58	300	59.34	1.22
SWMH RELOC/2	CP 15/1	24.31	24.23	225	3.78	1.97
SWMH RELOC/2	CP MCC/493525	24.27	24.56	225	30.63	0.97
SWMH Existing/2	SWMH 1/1	16.67	16.70	1050	4.05	0.69
SWMH Existing/2	SWMH SPLAY/1	18.00	19.24	450	8.26	15.19

APPLICATION NUMBER:
48608 & 49033

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- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI), AND ARE WITHIN ±25mm.

SIGNED

.....

LICENSED SURVEYOR

DATE:

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@*candor3.co.nz*

AS BUILT

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³ ENGINEERING FOR LIFE

PROJECT

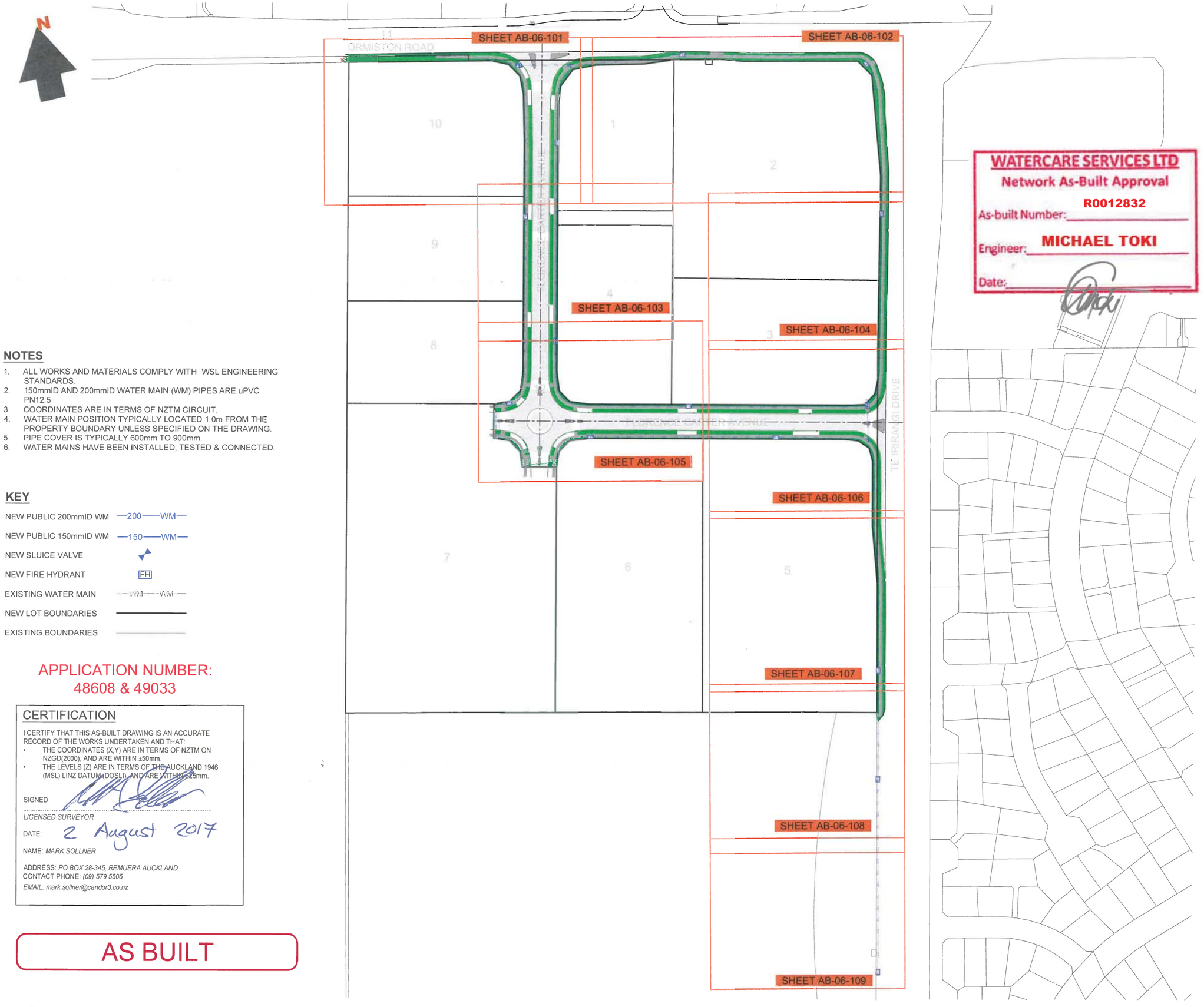
79 ORMISTON ROAD
ASBUILT STORMWATER RETICULATION
COORDINATES

CLIENT

JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB		JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 04-105	A



NOTES

1. ALL WORKS AND MATERIALS COMPLY WITH WSL ENGINEERING STANDARDS.
2. 150mmID AND 200mmID WATER MAIN (WM) PIPES ARE uPVC PN12.5
3. COORDINATES ARE IN TERMS OF NZTM CIRCUIT.
4. WATER MAIN POSITION TYPICALLY LOCATED 1.0m FROM THE PROPERTY BOUNDARY UNLESS SPECIFIED ON THE DRAWING.
5. PIPE COVER IS TYPICALLY 600mm TO 900mm.
6. WATER MAINS HAVE BEEN INSTALLED, TESTED & CONNECTED.

KEY

NEW PUBLIC 200mmID WM —200——WM—

NEW PUBLIC 150mmID WM —150——WM—

NEW SLUICE VALVE

NEW FIRE HYDRANT FH

EXISTING WATER MAIN —WM— -WM- —

NEW LOT BOUNDARIES

EXISTING BOUNDARIES

APPLICATION NUMBER:
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SIGNED

LICENSED SURVEYOR

DATE: 2 August 2017

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@candor3.co.nz

AS BUILT

WATERCARE SERVICES LTD
Network As-Built Approval
R0012832
As-built Number:
Engineer: **MICHAEL TOKI**
Date:

REV	DESCRIPTION	APPV'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³
ENGINEERING FOR LIFE

PROJECT

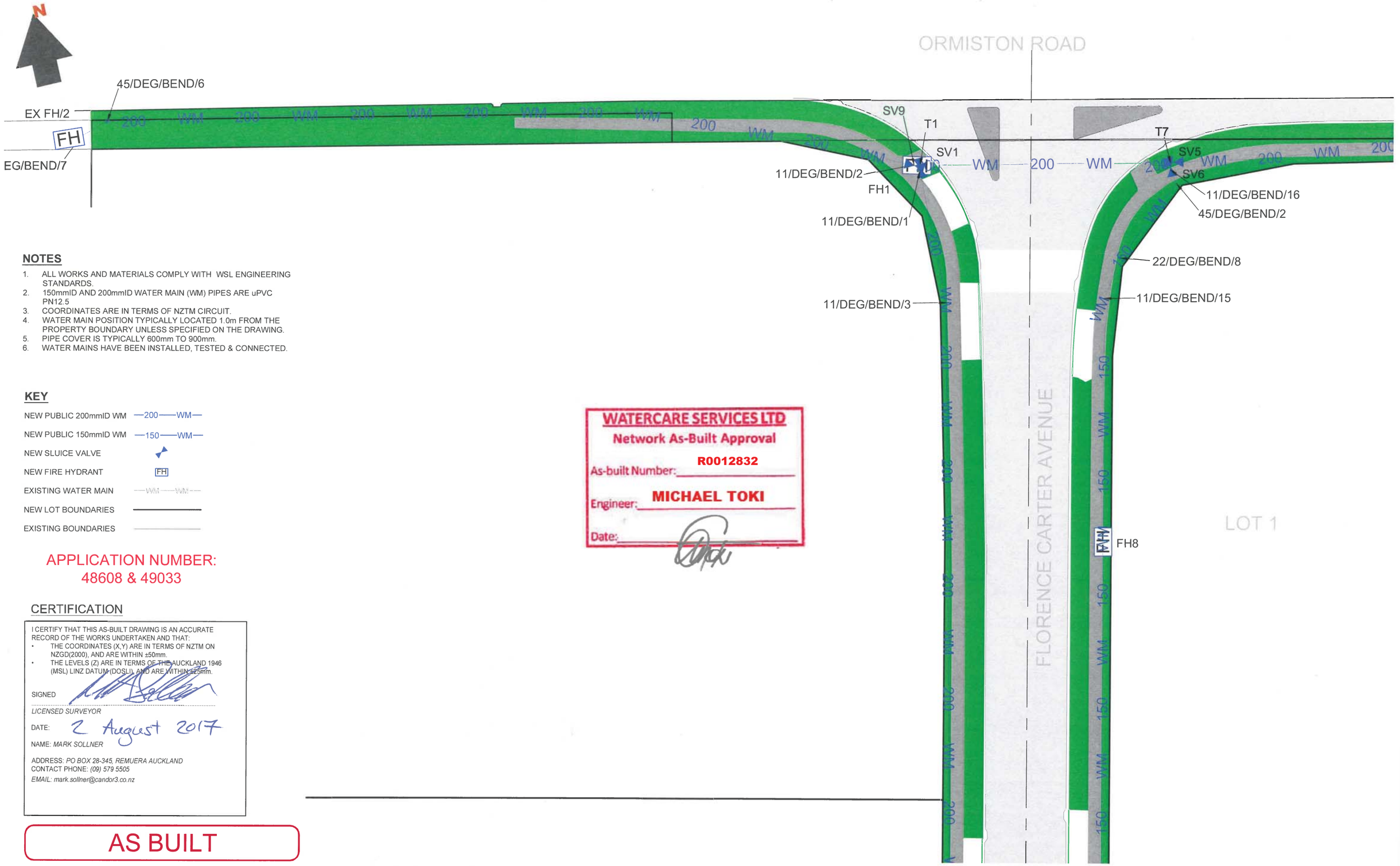
79 ORMISTON ROAD WATER SUPPLY AS-BUILT OVERVIEW

CLIENT

JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:2500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO	DRAWING NO	REVISION
1160	AB 06-100	A



NOTES

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KEY

NEW PUBLIC 200mmID WM —200—WM—

NEW PUBLIC 150mmID WM —150—WM—

NEW SLUICE VALVE

NEW FIRE HYDRANT FH

EXISTING WATER MAIN —WM—WM—

NEW LOT BOUNDARIES

EXISTING BOUNDARIES

APPLICATION NUMBER:
48608 & 49033

CERTIFICATION

I CERTIFY THAT THIS AS-BUILT DRAWING IS AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:

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SIGNED

LICENSED SURVEYOR

DATE: 2 August 2017

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@candor3.co.nz

AS BUILT

WATERCARE SERVICES LTD
Network As-Built Approval
As-built Number: R0012832
Engineer: MICHAEL TOKI
Date:

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³ ENGINEERING FOR LIFE

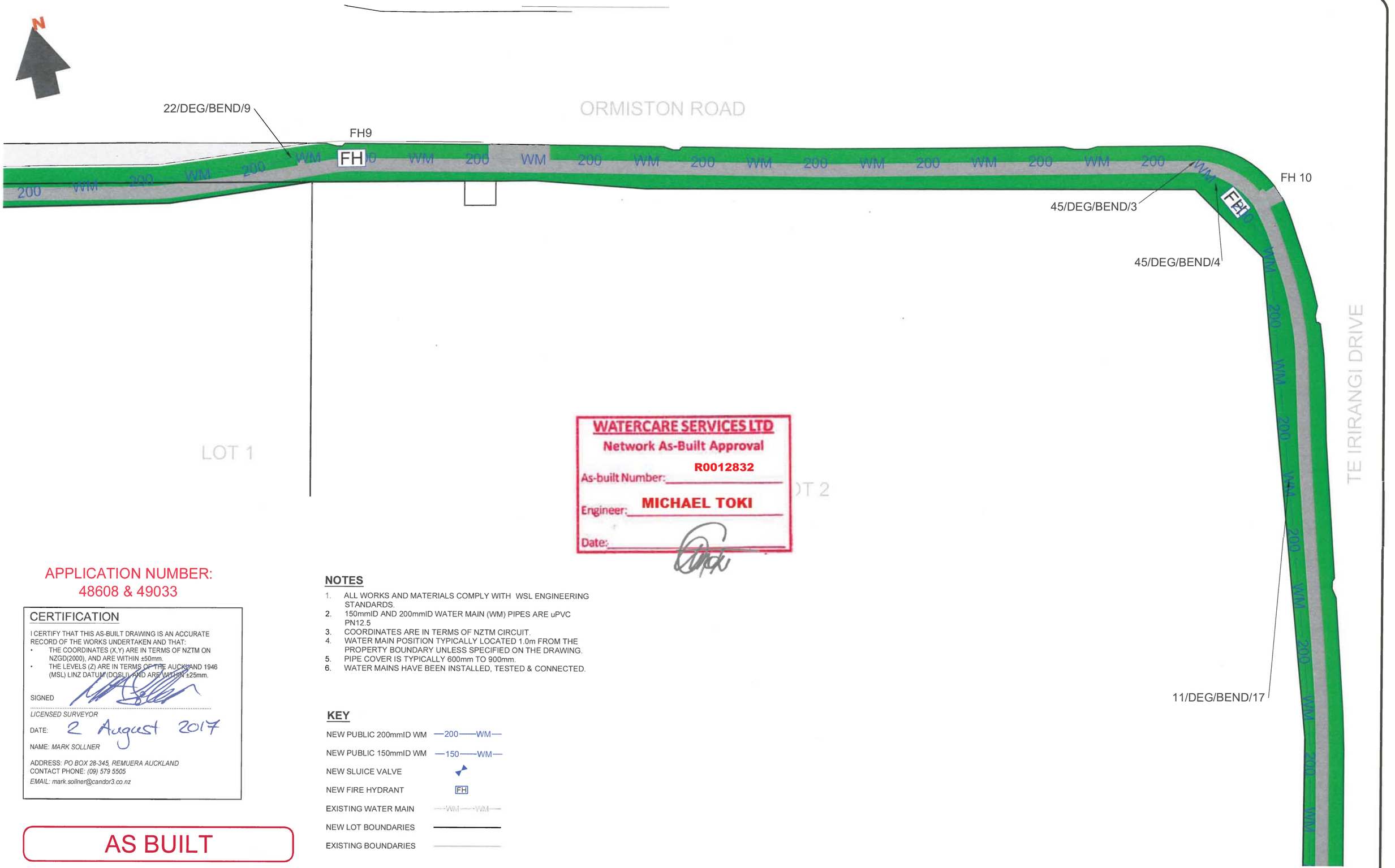
PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 1 of 9)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO. 1160 | DRAWING NO. AB 06-101 | REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_06-100_WATERMAIN RETICULATION.DWG



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AS BUILT

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NEW PUBLIC 150mmID WM —150—WM—
NEW SLUICE VALVE
NEW FIRE HYDRANT FH
EXISTING WATER MAIN —WM—WM—
NEW LOT BOUNDARIES
EXISTING BOUNDARIES

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³ ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 2 of 9)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW
DRAWN	EPB
CHECK	MAS
APPV'D	MAS

SCALE 1:500 @ A3
DATE ISSUED JUN 2017
PROJECT NO. 1160
DRAWING NO. AB 06-102
REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_06-100_WATERMAIN RETICULATION.DWG

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NEW SLUICE VALVE

NEW FIRE HYDRANT FH

EXISTING WATER MAIN ——WM——WM——

NEW LOT BOUNDARIES

EXISTING BOUNDARIES

APPLICATION NUMBER:
48608 & 49033

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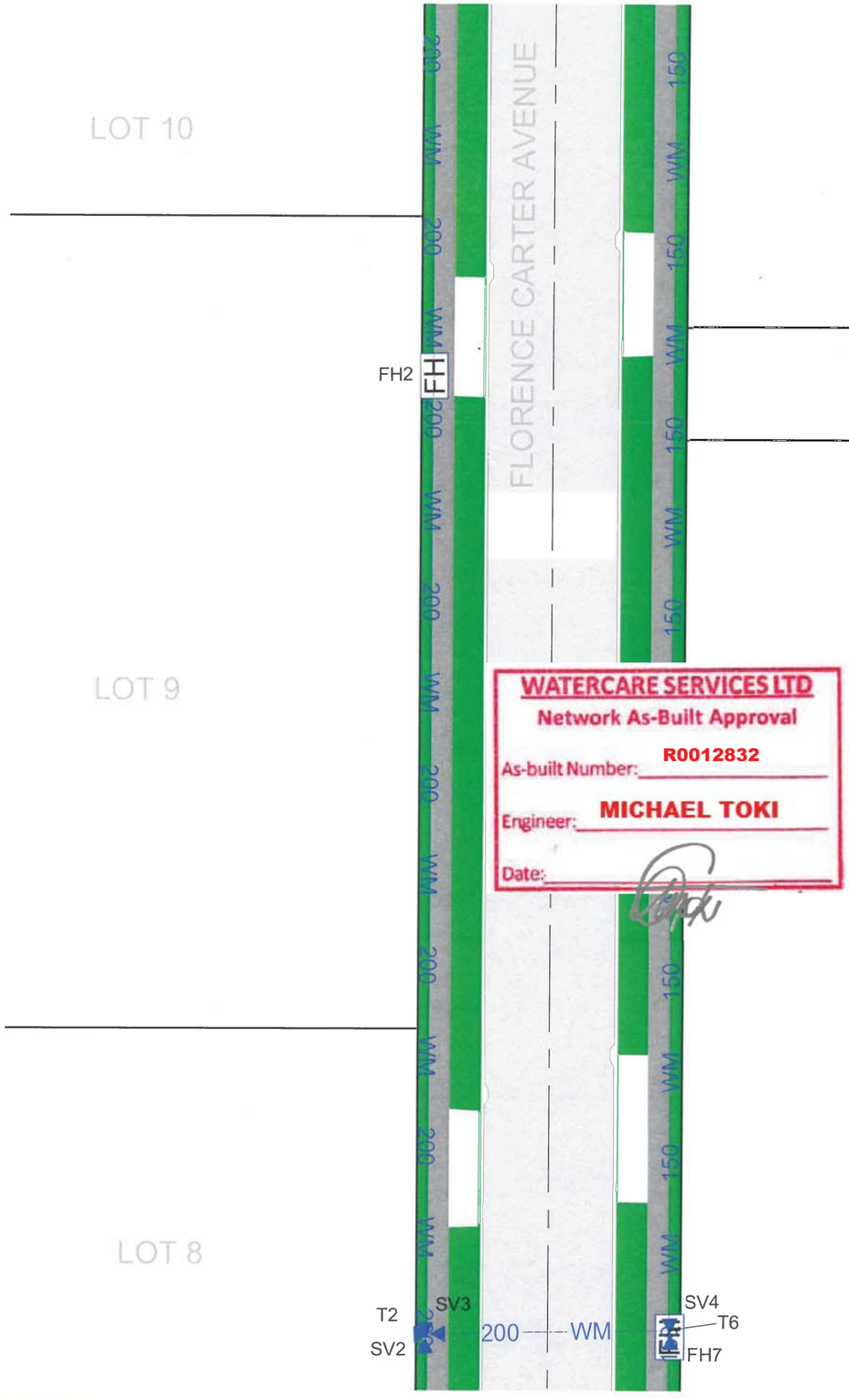
AS BUILT



REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 3 of 9)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO. 1160 | DRAWING NO. AB 06-103 | REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_06-100_WATERMAIN RETICULATION.DWG

WATERCARE SERVICES LTD
Network As-Built Approval
As-built Number: R0012832
Engineer: MICHAEL TOKI
Date:

APPLICATION NUMBER:
48608 & 49033

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AS BUILT

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KEY

NEW PUBLIC 200mmID WM —200—WM—
NEW PUBLIC 150mmID WM —150—WM—
NEW SLUICE VALVE
NEW FIRE HYDRANT FH
EXISTING WATER MAIN ---WM---WM---
NEW LOT BOUNDARIES
EXISTING BOUNDARIES

LOT 3

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

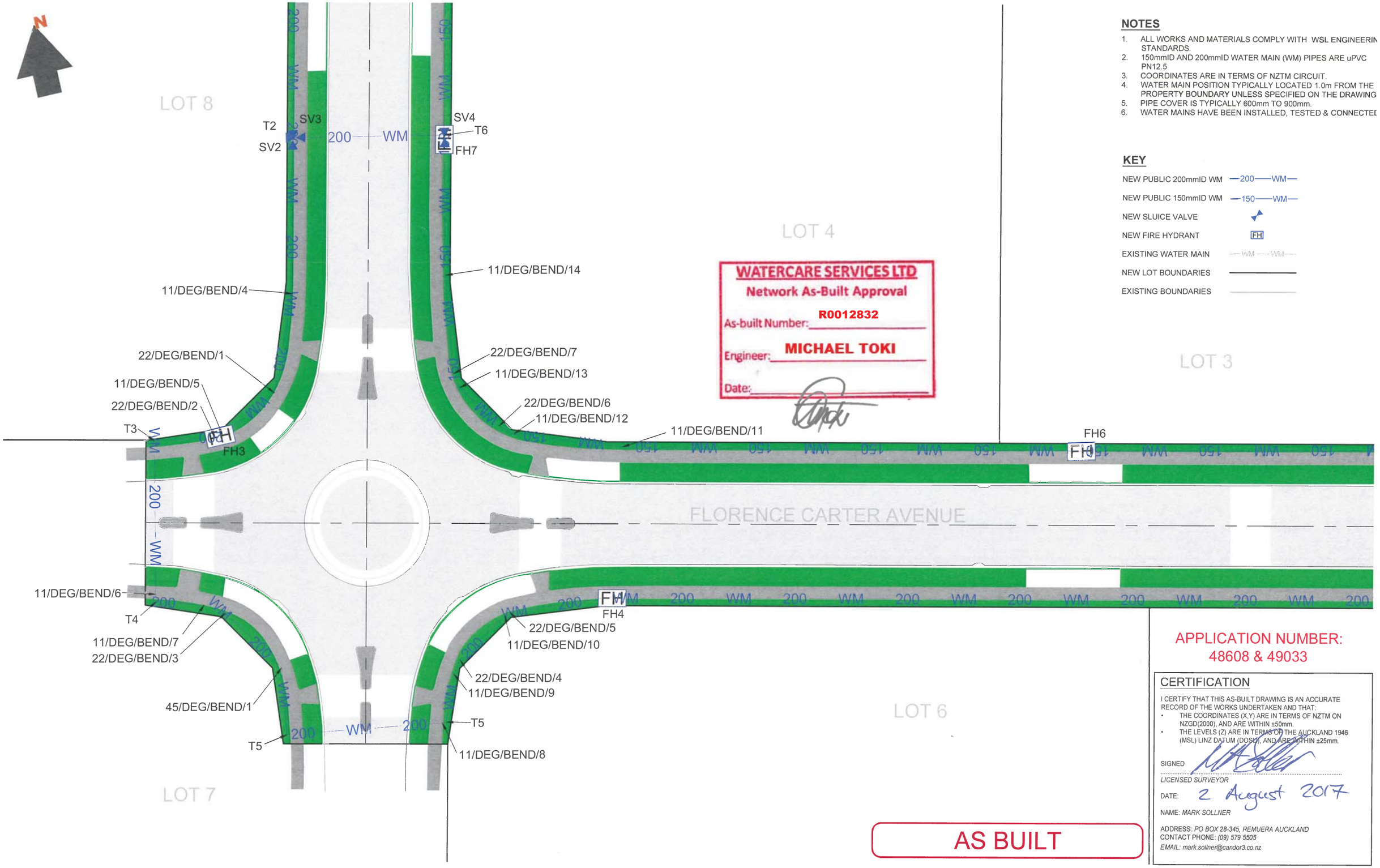
PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 4 of 9)

CLIENT
JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO. 1160 | DRAWING NO. AB 06-104 | REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_06-100_WATERMAIN RETICULATION.DWG



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NEW SLUICE VALVE

NEW FIRE HYDRANT FH

EXISTING WATER MAIN — WM — WM —

NEW LOT BOUNDARIES

EXISTING BOUNDARIES

WATERCARE SERVICES LTD
Network As-Built Approval
As-built Number: R0012832
Engineer: MICHAEL TOKI
Date:

APPLICATION NUMBER:
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AS BUILT

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

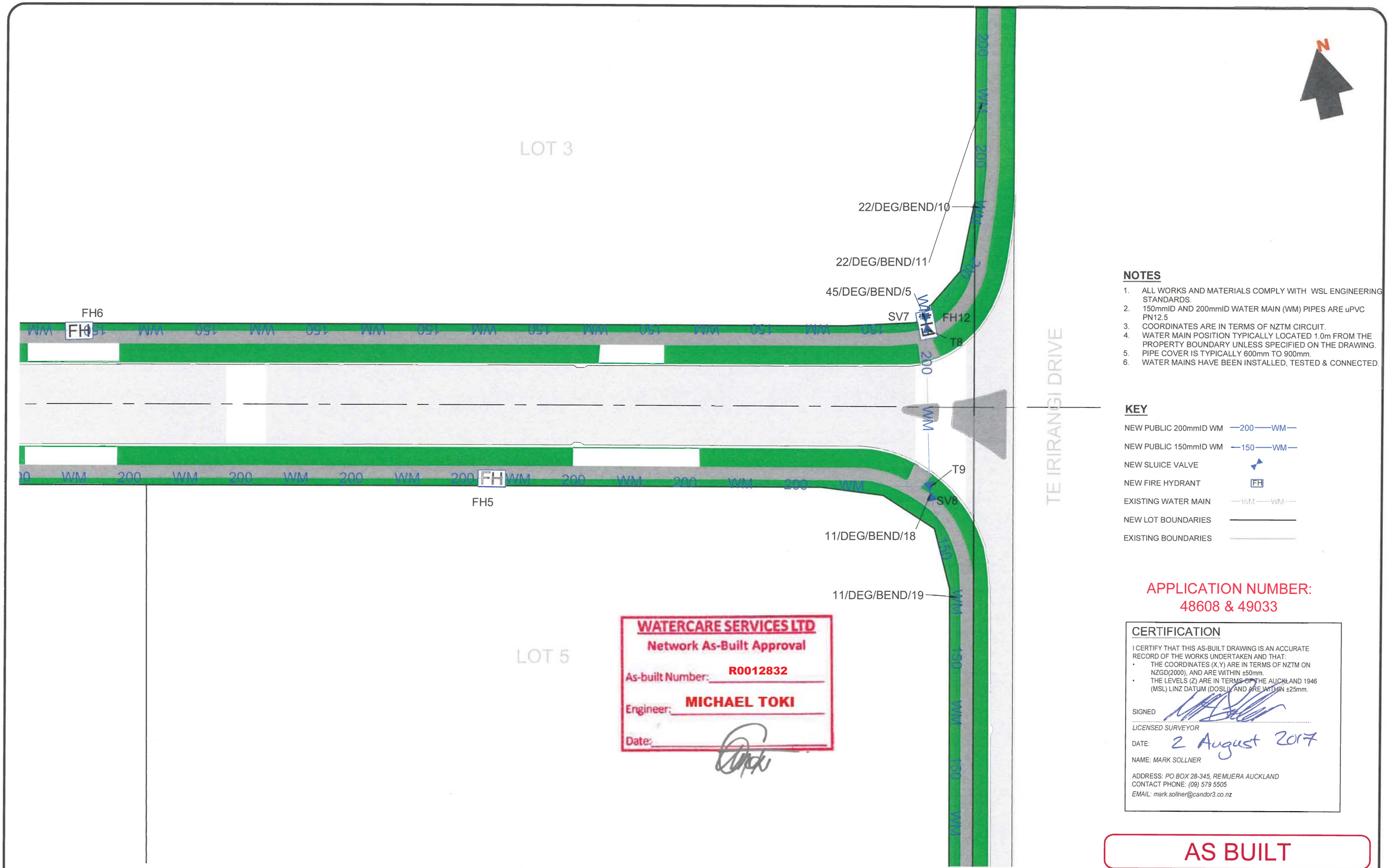
Candor3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 5 of 9)

CLIENT
JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 06-105	A



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NEW LOT BOUNDARIES

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A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor³ ENGINEERING FOR LIFE

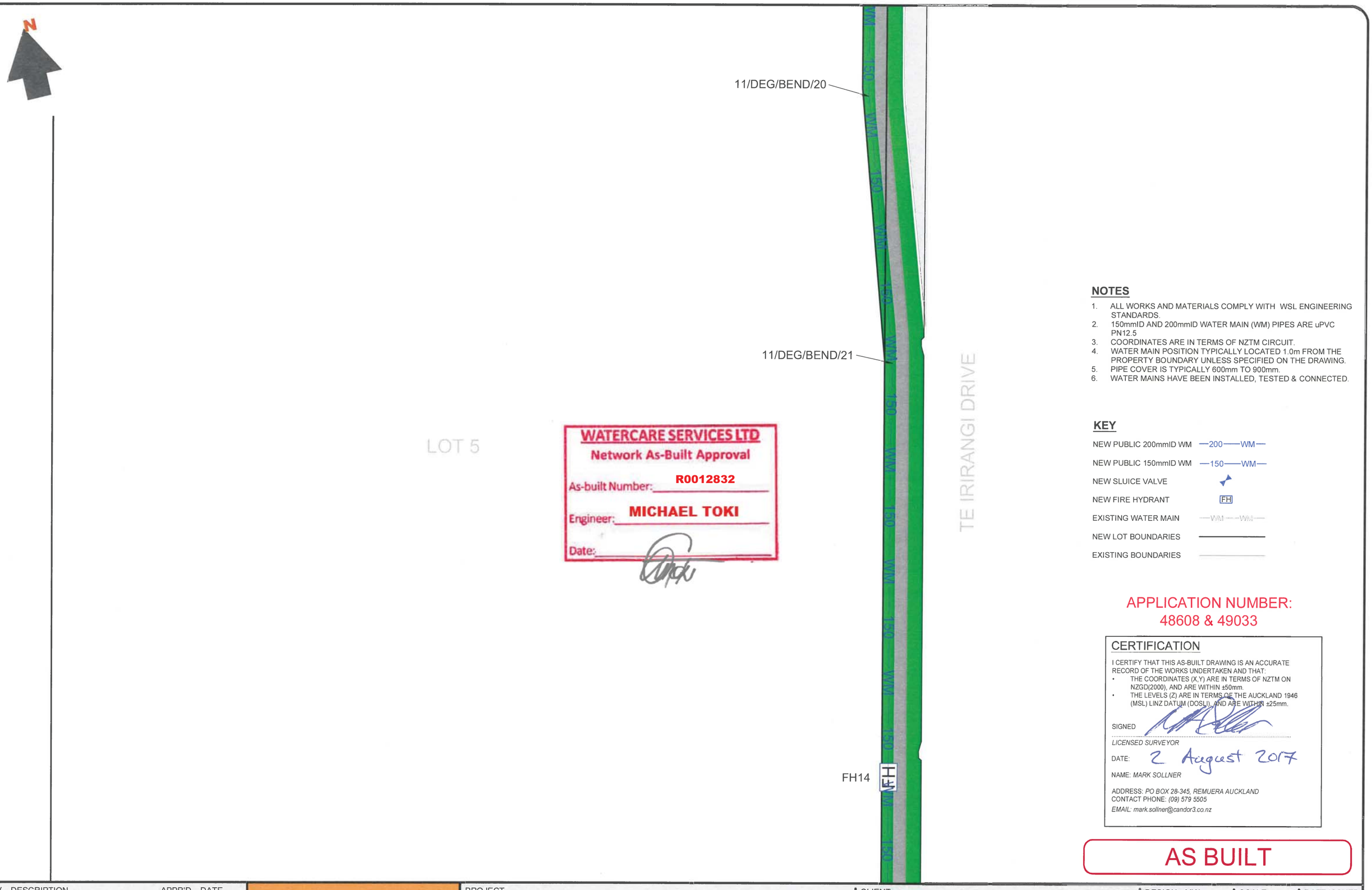
PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 6 of 9)

CLIENT
JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO	DRAWING NO	REVISION
1160	AB 06-106	A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_06-100_WATERMAIN RETICULATION.DWG



WATERCARE SERVICES LTD
Network As-Built Approval
As-built Number: R0012832
Engineer: MICHAEL TOKI
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AS BUILT

REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor 3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 7 of 9)

CLIENT
JAMES KIRKPATRICK GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO	DRAWING NO.	REVISION
1160	AB 06-107	A

PT ALLOT 125 SO 64472
PSH OF PAKURANGA

SECTION 1
SO 435945

150 WM 150

150 WM 150 WM 150 WM

FH15 150

150 WM 150 WM 150 WM 150

TE IRIRANGI DRIVE

WATERCARE SERVICES LTD
Network As-Built Approval
As-built Number: R0012832
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REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 8 of 9)

CLIENT
JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO 1160 | DRAWING NO. AB 06-108 | REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_06-100_WATERMAIN RETICULATION.DWG

PT ALLOT 125 SO 64472
PSH OF PAKURANGA

SECTION 1
SO 435945

150 WM 150 WM 150 WM 150 WM 150 WM 150 WM

TE IRIRANGI DRIVE

EX FH/1 FH

WATERCARE SERVICES LTD
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REV	DESCRIPTION	APPR'D	DATE
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
(SHEET 9 of 9)

CLIENT
JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB	1:500 @ A3	JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO. 1160 | DRAWING NO. AB 06-109 | REVISION A

02.08.2017 J:\PROJECTS_LAND DEVELOPMENT\1160_79 ORMISTON ROAD\DRAWINGS\AS-BUILTS\1160_AB_06-100_WATERMAIN RETICULATION.DWG

Water Reticulation Devices As-Built Field Data

	MONT EDEN CIRCUIT		NZTM	
Device ID	NORTHING	EASTING	NORTHING	EASTING
11 DEG BEND 1	790711.84	412003.35	5907508.53	1769052.32
11 DEG BEND 2	790710.80	412004.35	5907507.47	1769053.30
11 DEG BEND 3	790691.81	412003.82	5907488.49	1769052.41
11 DEG BEND 4	790504.15	411960.44	5907301.66	1769005.56
11 DEG BEND 5	790486.60	411946.15	5907284.37	1768990.95
11 DEG BEND 6	790466.54	411931.58	5907264.58	1768976.01
11 DEG BEND 7	790463.46	411938.10	5907261.38	1768982.47
11 DEG BEND 8	790439.11	411967.58	5907236.49	1769011.50
11 DEG BEND 9	790445.63	411970.78	5907242.95	1769014.82
11 DEG BEND 10	790452.15	411979.75	5907249.30	1769023.91
11 DEG BEND 11	790471.94	412001.71	5907268.68	1769046.23
11 DEG BEND 12	790477.29	411986.83	5907274.31	1769031.45
11 DEG BEND 13	790485.56	411980.81	5907282.69	1769025.59
11 DEG BEND 14	790501.73	411982.48	5907298.83	1769027.56
11 DEG BEND 15	790687.31	412025.84	5907483.58	1769074.35
11 DEG BEND 16	790702.94	412039.02	5907498.97	1769087.82
11 DEG BEND 17	790586.30	412232.16	5907378.76	1769278.77
11 DEG BEND 18	790405.06	412181.50	5907198.48	1769224.76
11 DEG BEND 19	790389.43	412181.96	5907182.85	1769224.93
11 DEG BEND 20	790345.46	412171.56	5907139.07	1769213.72
11 DEG BEND 21	790307.00	412166.44	5907100.71	1769207.89
22 DEG BEND 1	790490.90	411954.69	5907288.51	1768999.57
22 DEG BEND 2	790486.61	411945.04	5907284.40	1768989.84
22 DEG BEND 3	790461.65	411940.76	5907259.52	1768985.10
22 DEG BEND 4	790447.35	411972.07	5907244.65	1769016.14
22 DEG BEND 5	790452.45	411980.55	5907249.59	1769024.71
22 DEG BEND 6	790478.94	411985.09	5907275.99	1769029.74
22 DEG BEND 7	790487.71	411980.42	5907284.85	1769025.24
22 DEG BEND 8	790692.33	412029.38	5907488.54	1769077.98
22 DEG BEND 9	790695.32	412107.08	5907490.09	1769155.73
22 DEG BEND 10	790444.15	412197.80	5907237.27	1769241.78
22 DEG BEND 11	790435.03	412193.51	5907228.23	1769237.33
45 DEG BEND 1	790452.14	411946.81	5907249.90	1768990.97
45 DEG BEND 2	790700.83	412039.44	5907496.85	1769088.20
45 DEG BEND 3	790665.44	412233.65	5907457.87	1769281.73
45 DEG BEND 4	790651.86	412241.17	5907444.15	1769289.00
45 DEG BEND 5	790429.84	412186.43	5907223.17	1769230.15
45 DEG BEND 6	790743.9	411893.75	5907542.61	1768943.32
45 DEG BEND 7	790742.62	411889.64	5907541.41	1768939.19

Water Reticulation Devices As-Built Field Data

	MONT EDEN CIRCUIT		NZTM	
Device ID	NORTHING	EASTING	NORTHING	EASTING
FH1	790711.70	412004.11	5907508.37	1769053.07
FH2	790608.92	411985.40	5907405.95	1769032.46
FH3	790486.60	411945.73	5907284.38	1768990.53
FH4	790451.13	411995.36	5907247.99	1769039.50
FH5	790421.70	412119.63	5907216.27	1769163.21
FH6	790456.40	412065.84	5907251.96	1769110.07
FH7	790520.69	411986.63	5907317.71	1769032.06
FH8	790653.63	412017.92	5907450.05	1769065.81
FH9	790693.43	412115.5	5907488.04	1769164.11
FH 10	790658.40	412237.95	5907450.75	1769285.90
FH 11	790555.40	412225.08	5907348.00	1769271.12
FH12	790429.11	412186.37	5907222.44	1769230.08
FH14	790248.47	412152.60	5907042.45	1769192.97
FH15	790175.20	412135.36	5906969.51	1769174.37
EX FH 1	790044.84	412105.56	5906839.71	1769142.16
EX FH 2	790742.75	411887.86	5907541.57	1768937.41
SV1	790711.20	412004.48	5907507.86	1769053.43
SV2	790525.83	411965.85	5907323.23	1769011.38
SV3	790525.59	411965.39	5907323.00	1769010.91
SV5	790703.27	412039.10	5907499.29	1769087.90
SV6	790703.81	412039.67	5907499.82	1769088.48
SV7	790429.44	412186.39	5907222.77	1769230.10
SV8	790405.35	412181.53	5907198.77	1769224.80
SV9	790711.70	412003.77	5907508.38	1769052.73
T1	790711.53	412004.53	5907508.19	1769053.49
T2	790526.00	411965.47	5907323.41	1769011.00
T3	790488.09	411936.40	5907286.04	1768981.23
T4	790465.51	411931.38	5907263.56	1768975.79
T5	790442.55	411945.38	5907240.34	1768989.37
T6	790439.08	411968.16	5907236.45	1769012.08
T7	790405.99	412181.61	5907199.41	1769224.89
T8	790428.60	412186.18	5907221.93	1769229.88
T9	790521.29	411986.76	5907318.31	1769032.20
T10	790703.83	412039.26	5907499.85	1769088.07

APPLICATION NUMBER:
48608 & 49033

I CERTIFY THAT THIS AS-BUILT DRAWING IS AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:
- THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD(2000), AND ARE WITHIN ±50mm.
- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI), AND ARE WITHIN ±25mm.

SIGNED

LICENSED SURVEYOR

DATE: 2 August 2017

NAME: *MARK SOLLNER*

ADDRESS: *PO BOX 28-345, REMUERA AUCKLAND*
CONTACT PHONE: *(09) 579 5505*
EMAIL: mark.sollner@candor3.co.nz

AS BUILT

REV	DESCRIPTION	APPR'D	DATE
-			16-06-17
A	ISSUED FOR APPROVAL	MAS	02-08-17

Candor3 ENGINEERING FOR LIFE

PROJECT
79 ORMISTON ROAD
WATER SUPPLY AS-BUILT
COORDINATES

CLIENT
JAMES KIRKPATRICK
GROUP LIMITED

DESIGN	MW	SCALE	DATE ISSUED
DRAWN	EPB		JUN 2017
CHECK	MAS		
APPV'D	MAS		

PROJECT NO.	DRAWING NO.	REVISION
1160	AB 06-110	A

Appendix C – Correspondence with Watercare

Dipal Raniga

From: LJaine (Lewis) <lewis.jaine@water.co.nz>
Sent: Wednesday, 15 November 2017 4:16 p.m.
To: Lloyd Morris
Cc: IGotelli (Ilze)
Subject: FW: Kirkpatrick Group - Ormiston & Puhinui Road

Hi Lloyd

Ilze has asked me to respond to your request for rule of thumb water demand estimates for developments containing different activities.

Typical water demands are as follows:

Hotel
Water demand is influenced by occupancy rate, quality of hotel, restaurants, on-site laundry.
The water demand of a range of 5-star hotels in Auckland is as follows (some of these hotels have a swimming pool, restaurant, bar, meeting rooms, gymnasium, spa):

Hotel	Number of rooms	Overall water demand per room (litres/day)	Review period
A	286	593	Mar 10 – Dec 16
B	452	333	Apr 04 – Dec 16
C	25	824	Nov 11 – Dec 16
D	340	507	May 06 – Dec 16
E	172	287	Feb 02 – Dec 16
F	352	480	Aug 05 – Dec 16
G	455	415	Nov 04 – Dec 16
	average	**491**	

Retirement Villages
Independent living units:
Assume 1.3 persons per unit, 200 litres of water demand per person per day.

Assisted living:
Assume 1 person per bed, 135 litres of water demand per person per day.

Add water demand for laundry, communal areas, irrigation, swimming pool.

Serviced apartments
If the apartment is individually owned, then each apartment with floor area greater than 65m2 is 1 IGC (being $11,340 plus GST). The water demand per unit is assumed to be 600 litres per day.
If the apartment is less than 65m2, then the IGC is $7,560 plus GST. The water demand per unit is assumed to be 400 litres per day.

Shopping centre
If it is a mall type of centre, the number of DUEs is the total floor area divided by 300.

If they are individual non-food related shops, then water demand is based on number of staff at 40 litres per staff per day.
Food related shops (e.g. café) range from 2 to 5 DUEs each. Average across 12 cafes is 1,700 litres per day.

Supermarket
Countdowns range from 1,000 to 17,000 litres per day. The average across 45 sites is 8,000 litres per day

Bunnings warehouse
Range from 200 to 30,000 L/day. These depend on the size of the garden centre. The average across 9 sites is 3,400 litres per day.

Note a DUE is defined as a unit of water demand, being 220 kL per year.

Hope this helps.

regards

Lewis Jaine | Infrastructure Growth Charge Manager

Watercare Services Limited
DDI: +64 9 539 7804
Mobile: +64 21 973 512
Customer service line: +64 9 442 2222
Postal address: Private Bag 92 521, Wellesley Street, Auckland 1141, New Zealand
Physical address: 73 Remuera Road, Remuera, Auckland 1050, New Zealand
Website: www.watercare.co.nz

From: Lloyd Morris [mailto:lloyd@jkgl.co.nz]
Sent: Friday, 3 November 2017 5:50 p.m.
To: IGotelli (Ilze) <ilze.gotelli@water.co.nz>
Subject: Kirkpatrick Group - Ormiston & Puhinui Road

Evening Ilze,

Thank you for the opportunity to converse last night, I believe that was most beneficial as by the time we had finished we had a clearer understanding of what we were trying to achieve, particularly with Ormiston.

Puhinui

- **We agreed there were no immediate water or waste water services that could service the property within the immediate desired timeframes and at an appropriate manageable cost.**
- **There is a 100mm watermain at the front of the property, that is sufficient to provide 'potable water', but given we require ESFR Sprinklers with first & secondary response storage, it made sense in regard to both the timing and cost to provide a private scheme, which also helps with obtaining Tenant driven 'green points'.**
- **We appreciate your advice that WaterCare understood the parameters and would not contest a private system.**

Ormiston

- **We had earlier been looking at the assignment from 'different ends of the spectrum', which gives quite different outcome scenarios.**
- **We wanted to conduct both a 'work up' and a 'work down' assessment … one to check the other, but as we are not conversant with the water usage numbers on several of these types of uses we were looking to WaterCare for rule of thumb advice.**
- **In particular, we have not built and owned a Hotel, Retirement home, service apartments or a shopping centre before … but we can tell you pretty accurately the actual water usage for industrial warehouse type operations and those numbers vary significantly to the Council and published book guidelines.**
- **We had been saying, lets assume the existing 50 l/s waste water outlet is fixed in the first instance and see what we can build on the site.**

- **Each of the 5x existing Resource Consents has a different use that translates into a different horizontal & vertical building footprints.**
- **We are less worried about the IGC charges, and more interested in maximising the site … in a sensible way.**
- **The site slopes up from the edges to various heights that we can work with … as per below and the trick is to find out how high we can go before the waste water out becomes the limiting factor.**
- **This will require specific design, the generalisations are too broad and conservative.**
- **Block A Single level retail shops & supermarket**
  Block B Ground floor retail / eating and 4 or 5 floors above commercial office or 4x commercial and a carpark level.
  Block C Travelers accommodation is in the middle of the block and has the capacity to have the highest / tallest building … 6 or 7 stories.
  Block D Hotel or retirement 4 and 5 max height
  Block E Large Warehouse shed, low height, single story … Bunnings type
- **At this point, if you were able to offer some guidance to the uses marked in yellow above, we would be most grateful. We would work with Andres Roa / AR Associates to work up some numbers and then come back to you to figure out if we are all on the same wave length.**
- **We are not too worried about water 'in', we laid large pipes capable of handling ESFR for Fire emergency, water 'out' is the critical factor.**

Thank you for your time.

Kind regards

Lloyd Morris
Engineer

T +64 9 379 7288
M +64 21 493 360
E lloyd@jkgl.co.nz

PO Box 512, Shortland Street, Auckland 1140, NZ
Level 17, 48 Emily Place, Auckland 1010, NZ

www.jkgl.co.nz

JAMES KIRKPATRICK
GROUP LTD

Appendix D – Consent 47993 – Variation to Network Discharge Consent (Permit 25478)

Decision on an application to change and cancel consent condition(s) under the Resource Management Act 1991

Application number(s):	47993
Applicant's name:	Auckland Council
Site address:	Flat Bush Catchment
Legal description:	Various throughout the catchment
NZTM map reference:	Discharge Point (Flat Bush Dam) 1768840E 5908415N
Proposal:	To change conditions 1, 2, 3, 7, 8, 11, 12 and 14, and to cancel conditions 5 and 9, of Network Discharge Consent 25478 that authorises the diversion of stormwater within, and discharge of stormwater from, the Flat Bush catchment via public stormwater reticulation.

The discretionary activity under s127 of the Resource Management Act (RMA) is for the following changes and cancellation of conditions of consent 25478 involving the following changes (with strikethrough for deletion, underline for insertions):

Provision	**Proposed Wording**
Consent holder	**Auckland Council** ~~***Manukau City Council***~~
Manager	Deleted
Consent duration	This consent shall expire on 31 December 2027unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991
Lapsing date	31 December 2007
Purpose of Consent	To authorise the discharge and diversion of stormwater from and within the ~~-~~**1,780** ha ~~East Tamaki~~ **Flat Bush** Catchment in accordance with Section 14(1)(a) and 15(1)(b) of the Resource Management Act 1991.
Discharge Location	Otara Creek, **Flat Bush Dam**, East Tamaki
Map Reference	Approximate Catchment Discharge Point~~***s***~~: **NZTM 1768840 E 5908415 N** ~~***NZMS 260 R11 799699;***~~ ~~***NZMS 260 R11 798 695; and***~~ ~~***NZMS 260 R11 798 694***~~
Territorial Authority	**Auckland Council** ~~**Manukau City Council**~~

Condition No.	**Proposed Change to Condition**
1	That the consent holder shall permit the servants or agents of **the Team Leader Specialist**

Condition No.	Proposed Change to Condition
	Integration of Auckland Council ~~ARC~~ to have access to relevant parts of the catchment which are owned or controlled by the consent holder at all reasonable times for the purpose of carrying out inspections, investigations, tests, measurements surveys, and/or to take samples associated with the exercise of this consent.
2	That the consent holder shall undertake development in the East Tamaki Catchment with respect to stormwater works, in accordance with proposals, priorities and design objectives as detailed in the "Flat Bush catchment Management Implementation Plan" June 2004 Version 6A (FBCMIP), prepared by Beca Carter Hollings & Ferner Ltd, **and as updated by the Application and Assessment of Environment Effects to support a change to Conditions of Consent: East Tamaki Network Discharge Consent 25478, October 2015, prepared by Tonkin and Taylor Ltd (AEE Report).** **An updated FBCMIP incorporating the changes set out in the AEE Report shall be submitted to the Team Leader Specialist Integration by [12 months of issue of variation] for written approval.** Any further amendments to the FBCMIP shall be approved in writing by the **Team Leader Specialist Integration** prior to implementation of the specific works.
3	That the consent holder shall submit to the **Team Leader Specialist Integration**, a Monitoring Plan for the Flat Bush catchment in accordance with the FBCMIP, which shall include, but not be limited to the following: (i) Reporting Process; (ii) Plan Implementation, Review and Effectiveness; (iii) Operation and Maintenance Planning and Implementation for the stormwater disposal and treatment systems; (iv) Links, to the Regional Discharge Project monitoring requirements; (v) Compliance with Consent Conditions; (vi) Documentation of changes associated with implementation options; (vii) Identification of further consent requirements; (viii) Monitoring Plan Improvements Programme; and (ix) Recording and supply on request of as builts for stormwater treatment measures, outfall structures and all new and modified flowpaths. **The Monitoring Plan shall be submitted for written approval by the Team Leader Specialist Integration within 6 months of commencement this consent**. **~~The Monitoring Plan shall be developed in consultation with *Auckland Council ARC* and shall be submitted for written approval by the Manager within 6 months of commencement this consent~~**
4	That the consent holder shall implement the approved Monitoring Plan as approved under Condition 3 above.
5	***~~The consent holder shall establish a Council "Project Control Group" chaired by MCC (including representatives from the ARC and MCC) to meet and review the compliance with the FBCMIP on a minimum of a 6 monthly basis unless waived by the Manager. This group shall review guidelines and procedures for the implementation of catchment, sub-catchment and site practices consistent with the approved FBCMIP. Further issues for regular discussion and reporting shall include but not be limited to the following:~~*** ***~~(i) Review of level of subdivision and development occurring in the catchment~~*** ***~~(ii) Review of stormwater and sediment control devices in place to manage current and immediate future anticipated development;~~*** ***~~(iii) Review of asset management plans, including forward planning for works, including projects to be incorporated into annual plans of either Council for the upcoming year in the context of the level, density and type of land use development occurring;~~*** ***~~(iv) Review of all resource consents granted by the MCC and ARC Auckland Council in the catchment, including any issues of consent conditions or consistency;~~*** ***~~(v) Review of monitoring information gathering and analysed~~*** ***~~in accordance with that condition, including need to gather any information emerging arising from trends;~~***

Condition No.	Proposed Change to Condition
	~~*(vi) Review of the Operation and Maintenance provisions which form part of the Monitoring Plan detailed in condition 3 above.*~~ ~~*(vii) Receiving any annual or other reports from developers operating in the catchment in respect of their activities;*~~ ~~*(viii) Any legal issues arising in respect of compliance with the Comprehensive Discharge Consent, and where relevant any enforcement action that may be needed by Auckland Council either by MCC in respect of land use or subdivision where consents granted where non-compliance by the consent holder may impact on the FBCMIP, or by the ARC where non-compliance with the comprehensive discharge consent is impacting on the FBCMIP;*~~ ~~*(ix) Review of any significant policy changes by Auckland Council either MCC to district or ARC in relation or regional plans that may have an impact on the FBCMIP;*~~ ~~*(X) Any other matters related to FBCMIP implementation that may arise.*~~
6	That for stormwater flows in excess of the capacity of the primary systems, secondary flow paths shall be provided and maintained to allow surplus stormwater from critical storms, up to the 1 in 100 Annual Exceedence Probability event, to discharge with the minimum of nuisance and damage.
7	**Stormwater infrastructure for new impervious areas greater than 1,000 m^2 shall be certified by the consent holder (through the Auckland Council Stormwater Unit) in writing to the Team Leader Specialist Integration that it complies with one of the following:** **a. the criteria and recommendations set out in [Appendix I to the s127 Application AEE Report]; or** **b. the Objectives set out in Section 4 of the Flat Bush Catchment Management Implementation Plan and be in general accordance with the criteria and recommendations set out in [Appendix I to the s127 Application AEE Report].** **Advice Note: For proposals from a third party seeking authorisation under this consent for new land use development and / or intensification, the written certification required under this condition must be obtained from consent holder (through the Auckland Council, Stormwater Unit) to accept the discharge from the new proposed development into the network. To obtain this certification, the third party must provide the consent holder (through the Auckland Council, Stormwater Unit) with the information it requires to determine whether the development stormwater management and infrastructure complies with the consent.** **A Stormwater Network Plan prepared in accordance with the Proposed Auckland Unitary Plan or its operative successor is one mechanism to demonstrate compliance with (a) or (b) above and therefore its approval comprises written certification from the consent holder.** **Where a Stormwater Network Plan has been approved, new development in the area of the Stormwater Network Plan will be required to meet with the requirements of that Plan unless otherwise certified by the Stormwater Unit.** ~~*That the stormwater within the catchment shall be treated in accordance with criteria in the FBCMIP and stormwater management practices shall be designed and implemented in accordance with TP10 or to an alternative design approved in writing by the Manager.*~~
8	**The consent holder shall maintain a register of certifications under Condition 7, and update this register within six months of each certification being submitted.** ~~*That the consent holder shall ensure that concentrated stormwater discharged from the catchment is managed in the following manner:*~~

Condition No.	Proposed Change to Condition
	~~(i) That the runoff from the first 34.5mm of rainfall is detained and released steadily over at least 24 hours; and~~ ***~~(ii) That peak flows are kept at pre-development levels for return the 2, 10 and 100 year period storms. The method given in ARC, TP108, is assessing to be used for the peak flows.~~***
9	***~~That the consent holder shall ensure that the base width of any swales used as part of the stormwater treatment system does not exceed 2 metres~~***.
10	That the consent holder shall ensure that the outfalls are of such location, design and performance as to prevent erosion of the waterway and surround area.
11	That the consent holder shall ensure that: (a) the relevant stormwater management practices approved in condition 2, or temporary or interim alternative stormwater management systems, are constructed and operational prior to development creating impervious surfaces within that development stage being completed. Temporary or interim alternative stormwater management systems may only be constructed when they: (i) are needed prior to development of the permanent systems; and (ii) facilitate the staging of development; and (iii) are consistent with the FBCMIP, provided that temporary works may be approved by the **consent holder (through the Auckland Council Stormwater Unit*) ~~MCC~~**, after consultation with the **Team Leader Specialist Integration ~~which fail to attenuate flood events greater than a 1 in 10 year event where the topography of the subject site renders that outcome impractical~~.** (b) where the developer provides a temporary or interim alternative management stormwater system in accordance with (a) above, the comprehensive discharge consent holder shall ensure that the stormwater management provisions in terms of condition 2 are met prior to completion of land development within the specific catchment or sub-catchment.
12	That the consent holder shall prepare an education and awareness programme in consultation with **the Team Leader Specialist Integration ~~ARC~~** for written approval within 24 months of the granting of this consent or such later period as agreed in writing by the **Team Leader Specialist Integration ~~Manager~~**. This education and awareness programme could be undertaken on a district wide basis but shall contain specific actions which are relevant to the East Tamaki Catchment
13	That the consent holder shall ensure that all new developments allow for stormwater runoff to be managed in accordance with the FBCMIP or other relevant resource consents.
14	The conditions of this Consent may be reviewed by the **~~ARC~~Team Leader Specialist Integration of Auckland Council** pursuant to Section 128 of the Resource Management Act 1991, (with the costs of borne the review process being by the consent holder), by the giving of notice pursuant to Act, in one Section 129 of the of the following years: January 2005 June 2006 June 2007 June 2008 June 2009 And/or at five yearly intervals after either the date of that) review (if such review occurs) or after June 2010 whichever is the earlier The purpose of the review may be for any of the following purposes, namely: i) To deal with any adverse effect on the environment which may arise from the exercise of the consent or upon which the exercise of the consent may have an influence and which becomes apparent, or is found appropriate, to deal with at a later stage, and in particular but without limiting the ambit of this clause to: a) Insert conditions, or modify existing conditions, to require the consent holder to identify

Condition No.	Proposed Change to Condition
	the character or nature of any discharges authorised by this Consent and to report the results of that monitoring to **Team Leader Specialist Integration of Auckland Council ~~ARC~~**; and/or b) Insert conditions, or modify existing conditions to require the consent holder to monitor the effects of any discharges authorised by this Consent on the local receiving environment and to report the results of that monitoring to the **Team Leader Specialist Integration of Auckland Council ~~ARC~~**; c) The conditions may relate to the matters contained in s. 108(4) of the Resource Management Act 1991 or any Act in substitution thereof. ii) Insert conditions, or modify existing conditions, requiring the consent holder to adopt the Best Practicable Option to remedy, mitigate or minimise any adverse effects on the environment resulting from the discharges authorised by this consent, including remedying or mitigating any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.

Note: Appendix 2 contains the full set of consent conditions as amended by this decision.

I have read the application, supporting documents, and the report and recommendations on the consent application. I am satisfied that I have sufficient information to consider the matters required by the Resource Management Act 1991 (RMA) and make a decision under delegated authority on the application.

Acting under delegated authority, under sections 104, 104B, s127, 105 & 107 of the RMA, the application for changes of conditions are **GRANTED**.

Reasons

The reasons for this recommendation are addressed in detail in the preceding sections of this report. To summarise the reason in the context of the relevant statutory provisions:

1. The proposal is appropriately considered under s127 of the RMA as the changes to conditions sought will not result in a fundamentally different activity or materially different effects.

2. In accordance with s104(1)(a) and s127(3) of the RMA, the actual and potential effects from the changes sought will be appropriately minimised and will not be greater, or adversely differ, from those currently consented.

3. In accordance with s104(1)(b) and s127(3) of the RMA, the changes sought are consistent with the relevant statutory documents, and in particular the Auckland Council Regional Plan: Air Land & Water ACRP:ALW and the Proposed Auckland Unitary Plan (PAUP). The changes are also in keeping with the wider direction of the PAUP with respect to streams, freshwater management, and the coastal environment. The changes enable the adoption of the requirements of the PAUP, through current best practice Water Sensitive Design principles.

4. As a relevant "other matter" under s104(1)(c) of the RMA, it is noted that an application for a new stormwater discharge consent associated within a Special Housing Area would, in accordance with section 34 of the Housing Accords and Special Housing Areas Act 2013 (HASHAA), have a controlled activity status under Rule H4.14.1.1 of the PAUP, and that s29 of the HASHAA in that instance precludes public notification.

5. This changes sought achieve the sustainable management purpose of Part 2 of the RMA. The changes will allow the consent to continue to appropriately guide the management of stormwater within the catchment in a way that allows people and the community to provide for their social, economic, and cultural well-being, and for their health and safety, while ensuring the outcomes sought in s5(2)(a) to (c) are achieved. The relevant matters listed in s6, 7 and 8 of the RMA have also been appropriately addressed.

Overall the proposal will update the management of stormwater provided for by the consent to current best practice required under the PAUP. It will enable SHAs within the Flat Bush catchment to be developed in a manner that is consistent with that required for HASHAA plan change areas throughout the region.

APPENDIX 1: SPECIALIST REPORTS AND DRAWINGS

Specialist Reports				
Specialist Report	**Title**	**Prepared by**	**Rev**	**Date**
AEE	Application and Assessment of Environmental Effects to support a change to Conditions of Consent: East Tamaki Stormwater Network Discharge Consent 25478	Tonkin & Taylor Ltd		October 2015
Letter	East Tamaki Stormwater NDC 25478 variation - response to the s92 request for further information	Tonkin & Taylor		30 September 2015

Drawing References are outlined below:

Drawing Ref No.	**Title**	**Architect / Author**	**Dated**
Figure E1	Proposed Change to Catchment Bound and Discharge Location	Tonkin & Taylor	October 2015
Figure F1	Flat Bush Catchment Stormwater Management Approach	Tonkin & Taylor	October 2015

APPENDIX 2: FINAL CONDITIONS

Provision	Proposed Wording
Consent holder	**Auckland Council**
Manager	Deleted
Consent duration	This consent shall expire on 31 December 2027unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991
Lapsing date	31 December 2007
Purpose of Consent	To authorise the discharge and diversion of stormwater from and within the ~~-~~**1,780** ha **Flat Bush** Catchment in accordance with Section 14(1)(a) and 15(1)(b) of the Resource Management Act 1991.
Discharge Location	Otara Creek, **Flat Bush Dam**, East Tamaki
Map Reference	Approximate Catchment Discharge Point~~s~~: **E 1768840 N 5908415**
Territorial Authority	**Auckland Council**

Condition No.	
1	That the consent holder shall permit the servants or agents of **the Auckland Council** to have access to relevant parts of the catchment which are owned or controlled by the consent holder at all reasonable times for the purpose of carrying out inspections, investigations, tests, measurements surveys, and/or to take samples associated with the exercise of this consent.
2	That the consent holder shall undertake development in the East Tamaki Catchment with respect to stormwater works, in accordance with proposals, priorities and design objectives as detailed in the "Flat Bush catchment Management Implementation Plan" June 2004 Version 6A (FBCMIP), prepared by Beca Carter Hollings & Ferner Ltd, **and as updated by the Application and Assessment of Environment Effects to support a change to Conditions of Consent: East Tamaki Network Discharge Consent 25478, July 2015, prepared by Tonkin and Taylor Ltd (AEE Report).** **An updated FBCMIP incorporating the changes set out in the AEE Report shall be submitted to the Team Leader Specialist Integration by [12 months of issue of variation] for written approval.** Any further amendments to the FBCMIP shall be approved in writing by the **Team Leader Specialist Integration** prior to implementation of the specific works.
3	That the consent holder shall submit to the **Team Leader Specialist Integration**, a Monitoring Plan for the Flat Bush catchment in accordance with the FBCMIP, which shall include, but not be limited to the following: (i) Reporting Process; (ii) Plan Implementation, Review and Effectiveness; (iii) Operation and Maintenance Planning and Implementation for the stormwater disposal and treatment systems; (iv) Links, to the Regional Discharge Project monitoring requirements; (v) Compliance with Consent Conditions; (vi) Documentation of changes associated with implementation options; (vii) Identification of further consent requirements; (viii) Monitoring Plan Improvements Programme; and (ix) Recording and supply on request of as builts for stormwater treatment measures, outfall

Condition No.	
	structures and all new and modified flowpaths. The Monitoring Plan shall be submitted for written approval by the **Team Leader Specialist Integration** within 6 months of commencement this consent.
4	That the consent holder shall implement the approved Monitoring Plan as approved under Condition 3 above.
5	Now Blank
6	That for stormwater flows in excess of the capacity of the primary systems, secondary flow paths shall be provided and maintained to allow surplus stormwater from critical storms, up to the 1 in 100 Annual Exceedence Probability event, to discharge with the minimum of nuisance and damage.
7	**Stormwater infrastructure for new impervious areas greater than 1,000 m^2 shall be certified by the consent holder (through the Auckland Council) in writing to the Team Leader Specialist Integration that it complies with one of the following:** **a. the criteria and recommendations set out in [Appendix I to the s127 Application AEE Report]; or** **b. the Objectives set out in Section 4 of the Flat Bush Catchment Management Implementation Plan and be in general accordance with the criteria and recommendations set out in [Appendix I to the s127 Application AEE Report].** **Advice Note: For proposals from a third party seeking authorisation under this consent for new land use development and / or intensification, the written certification required under this condition must be obtained from consent holder (through the Auckland Council, Stormwater Unit) to accept the discharge from the new proposed development into the network. To obtain this certification, the third party must provide the consent holder (through the Auckland Council, Stormwater Unit) with the information it requires to determine whether the development stormwater management and infrastructure complies with the consent.** **A Stormwater Network Plan prepared in accordance with the Proposed Auckland Unitary Plan or its operative successor is one mechanism to demonstrate compliance with (a) or (b) above and therefore its approval comprises written certification from the consent holder.** **Where a Stormwater Network Plan has been approved, new development in the area of the Stormwater Network Plan will be required to meet with the requirements of that Plan unless otherwise certified by the Stormwater Unit.**
8	**The consent holder shall maintain a register of certifications under Condition 7, and update this register within six months of each certification being submitted**.
9	Now blank.
10	That the consent holder shall ensure that the outfalls are of such location, design and performance as to prevent erosion of the waterway and surround area.
11	That the consent holder shall ensure that: (a) the relevant stormwater management practices approved in condition 2, or temporary or interim alternative stormwater management systems, are constructed and operational prior to development creating impervious surfaces within that development stage being completed. Temporary or interim alternative stormwater management systems may only be constructed when they: (i) are needed prior to development of the permanent systems; and

Condition No.	
	(ii) facilitate the staging of development; and (iii) are consistent with the FBCMIP, provided that temporary works may be approved by the **consent holder (through the Auckland Council Stormwater Unit*)*, after consultation with the **Team Leader Specialist Integration.** (b) where the developer provides a temporary or interim alternative management stormwater system in accordance with (a) above, the comprehensive discharge consent holder shall ensure that the stormwater management provisions in terms of condition 2 are met prior to completion of land development within the specific catchment or sub-catchment.
12	That the consent holder shall prepare an education and awareness programme in consultation with **the Team Leader Specialist Integration** for written approval within 24 months of the granting of this consent or such later period as agreed in writing by the **Team Leader Specialist Integration**. This education and awareness programme could be undertaken on a district wide basis but shall contain specific actions which are relevant to the East Tamaki Catchment
13	That the consent holder shall ensure that all new developments allow for stormwater runoff to be managed in accordance with the FBCMIP or other relevant resource consents.
14	The conditions of this Consent may be reviewed by **Auckland Council** pursuant to Section 128 of the Resource Management Act 1991, (with the costs of borne the review process being by the consent holder), by the giving of notice pursuant to Act, in one Section 129 of the of the following years: January 2005 June 2006 June 2007 June 2008 June 2009 And/or at five yearly intervals after either the date of that) review (if such review occurs) or after June 2010 whichever is the earlier The purpose of the review may be for any of the following purposes, namely: i) To deal with any adverse effect on the environment which may arise from the exercise of the consent or upon which the exercise of the consent may have an influence and which becomes apparent, or is found appropriate, to deal with at a later stage, and in particular but without limiting the ambit of this clause to: a) Insert conditions, or modify existing conditions, to require the consent holder to identify the character or nature of any discharges authorised by this Consent and to report the results of that monitoring to **Auckland Council**; and/or b) Insert conditions, or modify existing conditions to require the consent holder to monitor the effects of any discharges authorised by this Consent on the local receiving environment and to report the results of that monitoring to **Auckland Council**; c) The conditions may relate to the matters contained in s. 108(4) of the Resource Management Act 1991 or any Act in substitution thereof. ii) Insert conditions, or modify existing conditions, requiring the consent holder to adopt the Best Practicable Option to remedy, mitigate or minimise any adverse effects on the environment resulting from the discharges authorised by this consent, including remedying or mitigating any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.

Appendix E – Correspondence with Auckland Council

9 August 2016

James Kirkpatrick Group Limited
C/- Mike Yu
Mt Hobson Group

Dear Mike

Re: Network Utility Operator Approval for the stormwater diversion and discharge from the proposed commercial development at 79 Ormiston Road, to be authorised by the Flat Bush Network Discharge Consent (Permit 47993)

The Auckland Council's Healthy Waters department holds a network discharge consent (NDC) for the Flat Bush catchment (Permit 47993). On behalf of your client, we understand you are requesting the development at 79 Ormiston Road to be authorised by the Flat Bush NDC as provided for under Rule 5.5.9 of the Air, Land and Water Plan.

We have reviewed the following documentation submitted for this development:

- Memorandum entitled '79 Ormiston Rd, Flat Bush - Stormwater' dated 1 August 2016, prepared by AR and Associates.
- 'Stormwater Calculations' dated 1 August 2016, AR and Associates.

As outlined in this documentation:

- The resource consent applications seek authorisation to develop five large commercial and industrial lots.
- A reticulated stormwater system is proposed for each lot meeting the requirements of the NDC, namely on site stormwater quality treatment and retention/detention in accordance with the PAUP SMAF 1 requirements.

The information supplied by AR and Associates refers to the Flat Bush Consent 25478. In 2015 a variation was processed for this consent thereby altering the outcomes sought in relation to development within the catchment. Essentially this variation removed the requirement for peak flow attenuation up to the 100 year ARI rainfall event. Therefore although this mitigation has been included in the design outcomes for the site, it is not necessary in this case. This leaves water quality treatment and SMAF 1 retention/detention requirements as the mitigation outcomes for the five sites as is proposed in the documentation listed above.

This letter represents approval from the Auckland Council Healthy Waters department, as the stormwater network utility operator, for the stormwater diversion and discharge from the development to be authorised under the network discharge consent. Note that the Healthy Waters as the network utility operator has agreed to the inclusion of the private devices under the network discharge consent subject to the following conditions:

a) *The device is owned by the landowner, and appropriate mechanism/s are in place to ensure that ongoing ownership of the device/s will run with ownership of the land.*
b) *An adequate operations and maintenance plan is in place once the device(s) becomes (become) operational.*
c) *The operation and maintenance of the device(s) must be adequately undertaken at all times to ensure proper function, including that the devices will continue to ensure compliance with the relevant discharge consent for which this approval is being given.*
d) *No discharges are to occur from the device (s) other than those designed for by that device.*
e) *The landowner is responsible for all costs associated with the construction, commissioning, operation and maintenance of the device(s).*

f) *For onsite treatment devices required under land use planning rules and/or forming part of the approved stormwater management under the Network Discharge Consent, the device(s) is (are) not to be modified or removed without written approval from the Healthy Waters department.*

g) *Subject to liaison with the landowner prior to accessing the site, the Council has land owner permission to gain access within 5 working days of notices being given to inspect the devices/s, and request a copy of the operations and maintenance plan and any relevant records.*

h) The Council is not responsible for any clean-up, pollution response, compliance, *repair or legal costs associated with any malfunction or unauthorised discharges from the device(s).*

Non-compliance with any of the criteria a) - g) above will result in the stormwater diversion and discharge from the site and the catchment the device treats to be no longer approved by the Healthy Waters Department under its Network Discharge Consent.

Note that this approval applies only to the authorisation under the Network Discharge Consent [47993] and relies on the technical information and effects assessment you provided as referenced above. Any changes to the design as described in these referenced documents must be reviewed and accepted again by the Healthy Waters department for this approval to remain valid. It should also be noted that this approval does not represent Auckland Council agreement for the design of the private stormwater system, ultimate vesting of any device or infrastructure, nor provision of any Council funding. These approvals are subject to separate engineering reviews and other processes that are not covered by the network discharge consent.

Thank you and should you have any questions, please feel free to contact us.

Andrew Chin
Stormwater Strategy & Resilience Manager
Healthy Waters, I & E Services
Auckland Council