

Appendix D

Technical Memos and Diagrams

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Memorandum

To	Duncan Shires	Page	1
CC	Simon Tsui		
Subject	Leachate Management System - Alexandria Landfill, 10-16 Albert Street, St Peters		
From	Kate McGrath, Anthony Davis		
File/Ref No.	60327128_FinalMemo_Alexandria Landfill Leachate Management System_150216	Date	16 Feb-2015

1.0 Introduction

AECOM Australia Pty Limited (AECOM) has been engaged by WestConnex Delivery Authority (WDA) to prepare this memorandum of information relevant to the design and layout of the existing Alexandria Landfill leachate management system.

1.1 Objectives

The objective of this report is to provide a desktop summary of available information relevant to the existing Alexandria Landfill leachate, groundwater and surface water management system and associated infrastructure in order that WDA:

- has a more informed understanding of the layout and capacity of the existing infrastructure used to manage leachate and groundwater at Alexandria Landfill; and
- can better evaluate the risks and liabilities associated with assuming responsibility for the ongoing operation, maintenance and compliance of the existing infrastructure used to manage leachate and groundwater.

1.2 Scope of Work

The scope of work completed includes a review and assessment of available background information relating to the existing leachate, groundwater and surface water management systems, including:

- Alexandra Landfill leachate and groundwater management system;
- Alexandra Landfill surface water and stormwater drainage system; and
- Botany Sands aquifer interception system.

1.3 Background and Information Sources

AECOM's understanding of the existing leachate/groundwater management system has been informed by the following information sources:

- Maunsell Pty Ltd, 1996. Staging for Stormwater and Leachate Disposal. February.
- Waste Services NSW, 1997. Albert Street Disposal Depot Landfill Environmental Management Plan. December.
- Woodward Clyde, 1998. Environmental Audit (1998) of the Albert Street Landfill Depot, St Peters. 10 July.
- Author unknown, 1999. A Review of the Landfill Environmental Management Plan for the Albert Street St Peters Waste Management Centre. Final Draft.
- Douglas Partners, 2000. Landfill Environment Management Plan St Peters Waste Facility.
- PPK Environment and Infrastructure Pty Ltd, 2001. St Peters Waste Management Facility Annual Environmental Monitoring Report November 1999 to October 2000.
- PPK Environment and Infrastructure Pty Ltd, 2002. St Peters Waste Management Facility Annual Environmental Monitoring Report 1 November 2000 to 30 November 2001.

- Parsons Brinckerhoff (PB), 2003. Alexandria Landfill Site Water and Leachate Plan Revised Filling Plan – October.
- IGGC, 2006. Alexandria Landfill Site Revised Surface Water and Leachate Management Plan, September 2006. September.
- IGGC, 2012. Alexandria Landfill Site Revised Surface Water and Leachate Management Plan, November 2011. January.
- IGGC, 2013. Alexandria Landfill Site Environmental Monitoring Results, Year Ending 30th November 2012.
- JPG Engineering (JPG), 2015. Alexandria Landfill Leachate Management System Inspection Notes – 12 January 2015.
- JPG Engineering (JPG), 2015. Alexandria Landfill Leachate Management System Inspection Notes – 2 February 2015.

2.0 Existing Leachate Management System

2.1 Summary

A summary of available information relating to the existing leachate system is listed below.

- The main leachate management system appears to comprise a subsurface herringbone drainage network which drains to a leachate sump located at the south-western end of the landfill. Figure 1 in Appendix A shows the indicative location of the subsurface drainage system and the leachate sump. The leachate sump is also labelled as LP01 as a leachate sampling reference name.
- An intermediate leachate riser is located within the licenced landfill premises area (refer to Figure 1 in Appendix A) and a secondary intermediate leachate riser is located between the main leachate riser and the intermediate leachate riser. The intermediate and secondary leachate riser feed into the main leachate sump.
- Leachate is pumped from the main leachate sump to the leachate treatment plant (LTP) located in the north eastern portion of the Site, as shown on Figure 1 in Appendix A. Leachate from the treatment plant is then pumped to a sewer discharge point in Albert Street under a Trade Waste Agreement (TWA) with SWC. .
- The process flow diagram from the *Alexandria Landfill Site-Recycling and Landfill Premises Revised Surface Water and Leachate Management Plan (SWLMP), November 2011* (ICCG, 2012) indicates there is a bypass option for leachate to be directly discharged to sewer. AECOM has not been provided with or reviewed any records regarding the bypass permission records from SWC. The SWLMP (IGGC, 2012) does not describe the bypass mechanism or approvals.
- Waste Assets Management Corporation (WAMC) have provided an updated process flow diagram for the leachate collection system Appendix A.

2.2 Leachate Drainage and Extraction System Design

AECOM has not been provided with any 'as built' surveys or plans of the construction of the leachate and associated drainage system.

2.2.1 Leachate Subsurface Drainage

The main leachate subsurface drainage system design comprised a 'herringbone' design. Based on the design plans (Appendix B), the herringbone system incorporates a main leachate drain of 375 mm diameter reinforced concrete pipe (RCP) with feeder herringbone drains constructed of 150 mm diameter slotted polyvinyl chloride (PVC). No 'as built' plans have been identified in the data reviewed. Given the depth of fill overlying the drainage system, there is a possibility that some of the herringbone pipework may have collapsed and been rendered ineffective. In this instance the drainage medium surrounding the herringbone system (where present) would be effectively draining subsurface leachate.

The plans attached in Appendix B (Douglas Partners, 2000), illustrate the approximate location of the herringbone system. No granular layer was reportedly present at the base of the landfill and the herringbone system.

2.2.2 Main Leachate Extraction Sump

The design plans show that the herringbone drainage system drains into the leachate sump.

Design plans prepared by Maunsell Pty Ltd (1996) indicate the leachate sump was planned to be constructed of 2.1m diameter concrete vertical pipes, with the base of the sump installed at an elevation of -39 m AHD. The design detailed two submersible pumps with an agitator at the base.

The plans indicated that, prior to installation of the leachate management system, leachate was pumped directly through a pipeline traversing the south western boundary of the site to a sewer main on the Princes Highway (near Canal Road intersection).

The design plans for the leachate sump are attached in Appendix C.

An inspection of the main leachate sump riser was completed on the 12 January and 2 February 2015 by JPG. The following observations were recorded by JPG:

- The main leachate riser pumps were observed to be operational and pumping leachate to the LTP. The riser pumps were inhibited by high level in the LTP Feed Storage Tank via existing radio telemetry systems.
- Inspection of the leachate level in the main leachate riser indicated that the maximum height of leachate in the riser does not exceed a level approximately 1.5m below existing ground level (to be confirmed). The level appeared to coincide with the set height of an internal overflow pipe installed in the riser. The purpose and function of the overflow pipe remains to be established.
- Standing water level (SWL) was measured at approximately 7 m below the top of the sump . The level probe reading in the sump was 9.97 m on 12 January 2015. The pump was run for approximately 2 minutes and the SWL level remeasured. The reading on the level probe was 10.21 m. It was noted that the recorded water level was 9 m below the top of the sump riser on 30 December 2014. The power supply for the main rise pumps is sourced from the southern batter panel which has level probe telemetry.
- The system was observed to be working automatically with what appeared to be a logical control functionality.
- Leachate is pumped to the LTP via a 110 mm OD HDPE pipeline that runs from the main leachate sump to the southwest boundary and then along the western perimeter boundary of the landfill to the LTP,
- The leachate riser system has been operating automatically which is likely to account for the 80 – 100 m³ of leachate currently being discharged to sewer (as recorded by the trade waste flowmeter).

JPG noted that the radio telemetry software was currently being sourced and will be interrogated to establish the actual functionality.

A photograph of the top of the riser of the main leachate extraction sump is shown in Plate 1 below.



Plate 1 Main leachate extraction sump riser (facing south west)

2.2.3 Secondary Leachate Riser

The secondary leachate riser or leachate affected stormwater pump is located approximately 50 m north east of the main leachate riser. The secondary leachate riser was inspected on the 2 February 2015 by JPG. JPG noted the secondary leachate riser appeared to pump to the main leachate riser via a 63 OD HDPE pipe. The system was not in operation at the time the inspection was conducted.

2.2.4 Intermediate Leachate Riser (EPL Landfill Premises Area)

A preliminary inspection of the intermediate leachate riser was undertaken by JPG on 12 January 2015 (notes provided in Appendix J). The intermediate leachate riser was located in the South West portion of the EPL landfill premises area, in the location of the former leachate pond. The intermediate leachate riser discharges to the main leachate riser via a 75 mm OD HDPE pipe. The controller for the intermediate riser pump required an access code and the pump was not running at the time of the inspection.

A photograph of the top of the riser of the main leachate extraction sump is Plate 2.



Plate 2 Intermediate leachate riser (EPL landfill premises area)

2.3 Leachate Treatment Plant

The leachate treatment plant (LTP) comprises a rotating biological contact system. It is understood that the primary function of the treatment system is to remove ammonia.

The Sydney Water Corporation (SWC) TWA (No. 29304) listed the following treatment plant components:

- 1 x 80 KL biological treatment plant (batch discharge).
- 1 x 100 KL biological treatment plant (batch discharge).
- 1 x Rainfall Sentinel MEA 2211.
- 1 x ABB Magmaster electromagnetic flow meter.

JPG inspected the LTP on the 12 January and 2 February 2015. A summary of the observations are provided in Table 1 below. Accompanying notes and a preliminary process flow sketch of the LPT is provided in Appendix J.

Table 1 LTP summary (full details in JPG notes in Appendix J)

Feature	Description
110 mm OD HDPE inlet pipe	- Pipe feeding leachate from the main leachate riser
90 mm OD HDPE inlet pipe	<ul style="list-style-type: none"> - Pipe potentially feeding water from the Botany Sands interception pit (to be confirmed) - This line has been set up to provide a bypass of the LTP, allowing direct discharge to sewer. - The line is currently isolated to both the Storage Tank and Sewer.
Feed Water Tank	- 27,000 L capacity water tank is fed by the 110 OD HDPE pipe and the 90 OD HDPE pipe. The tank contains float switches linked to radio telemetry.
Sequencing Batch Reactor (SBR) 1	<ul style="list-style-type: none"> - Out of service - Aerators on SBR 1 were running with the reactor only partially full and no feed or discharge occurring (to be investigated). At this stage it is still unclear why SBR 1 is offline. - 60m³ operational volume - 7000 mm x 2000 mm - Mesh cover - Operating/set on 12 hr cycle
SBR 2	<ul style="list-style-type: none"> - Operational - 100 m³ operational volume - Submersible aspiring aerators - 8000 x 2400 mm - Mesh cover - Operating/set on 12 hr cycle - Observed discharge rate 6.15 L - Current maximum daily treatment and discharge rate is 4 hrs per day at 6.15 l/s or 89 m³
Bypass	<ul style="list-style-type: none"> - Between the 90 mm OD HDPE and outlet to sewer - Between Feed Water Tank and outlet to sewer
Radio telemetry	- Installed by Indratel Pty Ltd
Cycle Settings	<ul style="list-style-type: none"> - Fill tank feed – 2hrs - Aeration cycle – 8 hrs - Settle – 2 hrs - Discharge – 2 hrs
Covers	- SBRs have mesh covers to prevent foam over flow
PLC control system or fail safe feed back	- There did not appear to be any system in place (to be confirmed by JPG)

2.4 Leachate Discharge Point

2.4.1 Current Leachate Discharge to Sewer

During their preliminary inspection (notes in Appendix J), JPG noted that the discharge meter reading was 645,543 m³ and that 453 m³ of liquid had been discharged between 30 December and 12 January 2015.. JPG collected effluent samples for analysis for the trade waste analysts (results pending).

2.4.2 Trade Waste Agreement 9017

AECOM submitted a request to SWC under the Government Information (Public Access) Act 2009 (GIPA) to obtain a copy of TWA 9017 between SWC and DADI for the discharge of leachate to sewer from Alexandria Landfill.

SWC's written response on the 22 October 2014 was: 'A search of Sydney Water's records has been undertaken. Trade Waste Agreement number 9017 (on property no 4059264) for the property address 10-36 Albert Street, St. Peters was cancelled on 5th March 2012. Therefore, there was no discharge to sewer and no payments were made to Sydney Water for this property under Trade Waste Agreement 9017 in last three years'.

Leachate discharge monitoring results were reviewed from as recently as August 2014. The monitoring results for the leachate discharge compliance are summarised in Table 4 below and in records provided in Appendix H.

2.4.3 Trade Waste Agreement 29304

The 2011 SWLMP (IGGC, 2012) stated that leachate from the treatment plant was discharged to a sewer discharge point on Albert Street under a TWA with SWC (TWA Consent No. 29304). The SWLMP stated that no reuse of treated leachate took place within Alexandria Landfill.

A copy of the SWC TWA (No. 29304) was attached to the report. A copy of the TWA is provided in Appendix E. It is understood that the existing TWA expired on 22 January 2015..

The maximum discharge allowances that were set out in the TWA (Consent 29304) are listed in Table 2 below.

Table 2 Schedule of substance threshold limits

Substance	LTADM (kg/day)	MDM (kg/day)	Standard (mg/L)
Ammonia as N	1.5	25	100
Suspended Solids	5	20	600
Total Dissolved Solids	450	674	10000
Barium	0.21	1	5
Iron	0.7	4	50

Notes: LTADM – Long Term Average Daily Mass; MDM – Maximum Daily Mass.

The SWC TWA (No. 29304) specified the following physical discharge limits for treated leachate:

- Temperature must be less than 38°C.
- pH must be in the range of 7 to 10.
- Gross solids must have a maximum linear dimension of less than 20mm, a maximum cross section dimension of 6 mm and a quiescent settling velocity of less than 3 m/h.
- The flammability of the discharge must never exceed 5% of the lower explosive limit (LEL) at 25°C.
- Maximum discharge of 620 kL/day.
- Average daily discharge of 121 kL/day.

The SWC TWA (No. 29304) specified the following sampling/monitoring regime for the Albert Street discharge point:

- Collection of composite samples over one full production day by combining equal volumes taken at 5 kL intervals totalling 5 L over one day.
- Collection of samples every 22 days or the next day that trade wastewater is discharged.
- Analysis of discrete samples for pH at the start and end of each sample day.
- Analysis of a discrete sample for ammonia (as N) at the finish of each sample day.
- Analysis of composite samples for ammonia (as N), suspended solids, total dissolved solids (TDS), barium and iron.

The SWC TWA (No. 29304) required the results to be submitted within 21 days from the date the sample was collected. Disposal fees were calculated by the sum of the flow weighted discharges for the billing period.

2.4.4 Historical Leachate Discharge Monitoring

Average daily discharge volumes of leachate to sewer reported for the years between 2004 and 2012 are summarised in Table 3 below. The data was obtained from the annual monitoring reports. It is noted that no detailed records of flow monitoring have been provided so the accuracy of the data is not known.

Table 3 Average Discharge to Sewer

Date	Average Discharge (kL/day) to Sydney Water Sewer under TWA
Dec 2004 to Nov 2005	79.9
Dec 2005 to Nov 2006	24.06
Dec 2007 to Nov 2008	9.2
Dec 2008 to Nov 2009	23.2
Dec 2009 to Nov 2010	42.9
Dec 2010 to Nov 2011	33.3
Dec 2011 to Nov 2012	17.7
Average 2004 to 2012	32.9

The most recent data available for the leachate discharge quality and volume monitoring is provided in Appendix H and summarised in Table 4 below.

Table 4 Leachate Discharge Volume and Quality Data - December 2012 to August 2014

Date	Discharge (kL/day)	Discharge - Composite Sample Results (mg/L)					Discrete Sample Result	
		TDS	SS	Barium	Iron	Ammonia as N	Ammonia as N (mg/L)	pH
3/12/2012	59	3750	34	0.9	1.83	<0.5	<0.5	8
13/02/2013	57	3620	54	1	2.96	1.4	-	8
6/3/2013	29	3670	81	1.6	4.02	0.7	<0.5	8.1-8.3
9/5/2013	31	3340	36	0.6	6.51	8	<0.5	8.2
3/06/2013	53	3650	4	0.6	0.92	1.9	1.9	8.2
25/6/2013	55	3490	29	0.7	2.55	3	<0.5	8.2
17/07/2013	49	3370	18	0.8	1.94	3.1	4.3	8.2-8.3
8/08/2013	32	3370	84	1.2	7.32	<0.5	17.7	8.2
25/03/2014	72	3630	49	1.5	4.92	78.6	77.2	8.2
27/08/2014	46	3230	18	0.6	1.23	<0.5	3	7.4

2.4.5 Leachate and Groundwater Monitoring Leachate

Groundwater water monitoring for compliance with the Environment Protection Licences (EPLs) are described in the SWLMP (IGGC, 2012) and summarised in Table 5 below.

Table 5 Leachate and groundwater monitoring

Monitoring	Frequency
Leachate volume pumped from sump/discharged to sewer	Every 22 days
Leachate level in sump	Monthly
Intercepted groundwater volume: Botany Sands 1	Monthly (volume)
Intercepted groundwater volume: Botany Sands 2	Monthly (volume)
Groundwater levels: 4 shale bores, 1 Botany Sands bore	Monthly and Quarterly

The most recent groundwater and leachate monitoring data (ICCG, 2012) are summarised in Table 6.

Table 6 Groundwater and leachate standing water levels.

Date	MW1 (shale - 29 to 35 m*)	MW2s (botany sands -5 to 8 m*)	MW2d (shale - 23 to 29 m*)	MW3 (shale - 13.4 to 18.4 m*)	MW4c (shale - 16 to 22 m*)	LP1 (leachate)	BS2 (botany sands)
21/11/2011	-4.01	-0.86	-8.53	-	-5.49	-20.77	-2.72
11/01/2012	-3.61	-0.25	-8.43	-	-5.45	-19.51	1.18
9/02/2012	-2.98	1.01	-8.44	-	-4.97	-18.59	2.27
16/03/2012	-2.56	1.23	-8.31	-	-4.9	-17.08	2.39
12/04/2012	-2.25	0.19	-8.34	-	-5.18	-20.14	-2.71
10/05/2012	-2.19	-1.02	-8.32	-	-4.99	-17.75	-2.72
7/06/2012	-2.26	-0.8	-8.23	-	-3.96	-17.02	-2.69
11/07/2012	-1.55	-0.65	-8.34	-	-4.25	-21.26	-2.69
9/08/2012	-1.5	0.03	-8.42	-	-4.36	-20	1.72
13/09/2012	-1.62	-1.1	-8.49	-	-3.98	-18.63	-2.71
9/10/2012	-1.98	-1.28	-8.45	-16.2	-3.82	-16.93	-2.72
19/11/2012	-1.24	-1.4	-8.5	-16.46	-3.74	-18.87	-2.71
2013 - 2014	No data available for review						

Notes: levels in m AHD; *screened interval (metres below ground surface)

2.5 Former Secondary Leachate System

Between approximately 2003 and 2011, a secondary leachate system was reportedly used within the active tipping area. The secondary leachate drainage system comprised an interception drain and injection trench approximately one metre wide and 7.5 metres in depth to collect shallow leachate and contaminated run off from the landfill premises (active tipping area). The surface leachate trench drained into the main leachate system by infiltration. The SWLMP (IGGC, 2012) indicated that the injection trench was no longer required and would be decommissioned as the area now drained to the leachate pond from where it was pumped to the leachate treatment plant.

Leachate generated by runoff and infiltration reportedly travelled through the waste mass to the herringbone system and the main leachate sump, from where it was pumped to the leachate pond. Prior to this the secondary leachate system consisted of a surface drain running to a sump where it was then injected in the subsurface.

In 2003 a surface drain was reportedly present running along the lower edge of the tipping area to a sump and tank where it was then reportedly injected in the subsurface by injection wells. The location of this secondary leachate system is shown on Figure 1 Appendix A.

3.0 Surface Water and Stormwater Management System

3.1 Existing System

The current surface water drainage system is summarised below in Table 7.

Table 7 Surface Water Drainage System

Area	Drainage Details
Area A – Recycling Premises: weighbridge, workshops, offices, parking	Runoff drains to stormwater drains which discharge to a main subsurface stormwater drain (a 675 mm subsurface pipe) that connects to the off-site drain in Canal Road. There is a discharge monitoring point (SW3) at the Canal Road pipe junction. The same subsurface stormwater line also drains stormwater from off-site lots (located between the site and Princes Highway).
Area B & C: Recycling Premises: stockpiling and processing area	Surface water in the recycling premises and stockpiling area discharge to stormwater after sediment control and treatment. Monitoring occurs (SW1 and SW2)
Area D: Recycling Premises: waste transfer areas	Treatment and discharge to trade waste system
Area E: Landfill premises	Treatment and discharge to trade waste system
Area F: Lower Recycling Premises: Capped & contoured stockpile area	Collection by drain and sump with sediment control and pumped discharge to stormwater with treatment and monitoring (SW4). JPG inspected the area on 15 January 2015 and noted the following: <ul style="list-style-type: none"> - A small stormwater pit with no power and appeared the level probe had been recently removed. - A main stormwater sump consisting of a concrete block sump with junction boxes in the pit filled with epoxy.

The above features are shown on Figure 1 in Appendix A and Marrickville Council stormwater plans are provided in Appendix D.

3.2 Surface Water Sampling

The surface water sampling regime is detailed in the SWLMP (IGGC, 2012). The sampling regime comprises four monitoring events per year at each designated monitoring point (SW1 to SW4) (refer to *Figure 3: Site Water Management Features Revised March 2012* (IGGC, 2012) attached.

The SWLMP includes stormwater discharge criteria based on Pollution Reduction Plan [PRP U3 (under EPL 12594)] and ANZECC (2000) guidelines:

- ammonia – 0.91 mg/L
- pH – 6.5 to 8.5
- Dissolved oxygen – 80-110%
- TOC – 10mg/L
- lead – 0.0044 mg/L
- phenol – 0.4 mg/L
- suspended solids – 50 mg/L

A copy of PRP U3 has not been provided to AECOM for review.

4.0 Botany Sands Interception System

Inflow of groundwater from the Botany Sands aquifer into the landfill was reportedly contributing to the large volumes of leachate being generated. To reduce this, two groundwater interception systems (designated BS1 and BS2) were installed between Alexandra Canal and the landfilled area to reduce groundwater inflow into the pit [refer to *Figure 7: Leachate & Groundwater Management Features (IGGC, 2012)* provided in Appendix I].

Extraction of groundwater from the Botany Sands aquifer to the east of the landfill pit began in approximately 2001/2002. Extracted groundwater is reportedly stored in 50,000 litre capacity tanks and has historically been used for dust suppression by water cart. Excess groundwater is understood to discharge to the stormwater drainage system on Canal Road.

JPG noted in their inspection notes from 2 February 2012 that historical documentation indicates that there may be a pipeline extending from the Botany Sands Interception System to the LTP storage tank..

At the time of the JPG inspection, the system did not appear operational. The present requirement for the operation of the Botany Sands Interception System needs to be established.

4.1 Botany Sands Groundwater Interception Drain (BS1)

Botany Sands groundwater extraction system (BS1) was installed approximately 20 metres from the southern Alexandria Landfill boundary and extends approximately 20 metres in a south-westerly direction, to a depth of -10 m AHD and a width of 2 m. The bottom of the trench was installed into low permeability clays present below the permeable Botany Sands strata. A 300mm inside diameter (ID) heavy duty PVC slotted pipe was placed in the base of the trench and wrapped in geotextile to minimise blockages. The trench was subsequently backfilled with coarse brick, sand and gravel. At the northern end of the trench a concrete sump was constructed using interlocking precast sections, founded on the clay strata. The sump was perforated to allow ingress of water from the trench, and wrapped in geotextile fabric. The location of BS1 is shown on Figure 1 in Appendix A.

JPG briefly inspected BS1 on 12 January 2015 and noted that there was no power on the main panel and the groundwater pit level probes had been disconnected.

4.2 Botany Sands Collection Sump (BS2)

The second interception and extraction system (BS2) is understood to comprise a sump that pumps to one 45 kL and two 27 kL storage tanks with an overflow to the stormwater drain.

4.3 Approvals

It is noted that Clause 10.16 in the development consent conditions (Section 96 Modification Approval for 9 Canal Road, St Peters Application No: DU/2003/635/C) state that only clean and unpolluted water can be discharged to stormwater. As some historical heavy metal and ammonia concentrations exceed the proposed stormwater discharge criteria outlined in the 2011 SWLMP (IGGC, 2012), it is uncertain whether the extracted groundwater can be characterised as unpolluted.

The Land and Environment Court conditions of consent (dated 28 September 2006) state that the volume of groundwater intercepted and pumped off-site is required to be recorded weekly and only clean and unpolluted water (as defined in the Protection of the Environment Operations Act 1997) shall be permitted to discharge from the subject premises into the Councils stormwater drainage system. The conditions of consent also state that any water re-used on the site must be of a quality that would be acceptable to the SWC trade waste system; and cause no harm to the health of the persons who may come in contact with the water.

It is also noted that the groundwater extraction systems are required to be licensed. Copies of the licences have been not been sourced or reviewed .

Copies of the conditions of consent for the Alexandria Landfill are provided in Appendix G.

4.4 Extraction Volumes

Extracted volumes of water from the Botany Sands are summarised in Table 8 below. The re-use of the extracted groundwater was estimated in the SWLMP (ICCG, 2011) to be 21.4-35.7 kL/day. The SWLMP (ICCG, 2013) calculated that the sprays for dust suppression would not lead to any substantial increase in infiltration (based on an average daily evaporation rate of 4.9 mm/day over 95,000 m²).

Table 8 Average discharge volumes from Botany Sands extraction systems

Date	Botany Sands Extraction -Average Discharge (kL/day)		
	BS1	BS2	Total
Dec 2004 to Nov 2005	11.9	-	11.9
Dec 2005 to Nov 2006	24.06	-	24.06
Dec 2007 to Nov 2008	16.9	-	16.9
Dec 2008 to Nov 2009	25.6	38.1	63.7
Dec 2009 to Nov 2010	20.1	40	60.1
Dec 2010 to Nov 2011	23.3	12.5	35.8
Dec 2011 to Nov 2012	39.8	16.2	56
Average 2004 to 2012	23.1	26.7	38.4

5.0 Identified Historical and Current Leachate Management System Issues

A summary of identified issues relating to the leachate management system issues is provided below.

- Regular pumping of leachate ceased in late 2001 after problems with the pumping system and subsequent cessation of the SWC TWA. Pumping to sewer under a renewed TWA took place briefly in November and early December 2002 but was resuspended due to lack of hydraulic capacity in the sewer to accept additional load.
- Inflow of Botany Sands aquifer into the landfill (as summarised in 4.0 above).
- As a result of elevated ammonia concentrations reported at MW1 in the Alexandria landfill, PPK (2002) recommended the responsible person within Alexandria Landfill have discussions with Sydney City Council to evaluate leachate/groundwater management practices at Sydney Park and to investigate the hydrogeological connection between the Sydney Park the site. SWC requested a treatment plant to be installed at the Alexandria Landfill as a matter of urgency to reduce ammonia concentrations.
- A discharge of water occurred occasionally from the dry cleaners site on the Princes Highway onto the Alexandria Landfill (PPK, 2002). There was concern that the dry cleaners may have been contributing to the ammonia concentrations reported in landfill leachate. A discharge was observed onto the landfill from the drycleaners on 6 February 2001 with a flow rate of 5-10 L/s for one hour. A sample was collected by the Alexandria Landfill Site Manager (David Low, City of Sydney Council) and submitted to ALS for ammonia and electrical conductivity. A larger suite was not undertaken as the sample collected was only 50 ml. Results were 0.45 mg/L ammonia and 10090 µS/cm electrical conductivity. PPK noted that the water may contain other contaminants associated with dry cleaning activities.
- Negotiation with SWC allowed pumping to resume in February 2003 (due to commissioning of a Rotating Biological Contact treatment plant). Prior to recommencement of pumping higher leachate levels (height) were evident. The level of leachate was slightly higher than the Ashfield Shale groundwater level as measured in borehole MW03. It was noted that had the height of the leachate level not lowered, the leachate would have potentially migrated into the Ashfield Shale.
- On the 16 July 2012 the NSW EPA implemented a pollution reduction program under EPL 4627 (landfill premises), which stated the following:
 - By 16 August 2012 the licensee must install a leachate drainage system (comprising a leachate sump, interception drain and injection trench) in accordance with the document titled 'Filling Plan' dated May 2012 prepared by Genesis. Within two weeks of installing the leachate drainage system the licensee must submit to the EPA as built design drawings (AECOM has not reviewed these documents).It is uncertain whether the above measures have been implemented.
 - By 16 August 2012 the licensee must install the new stormwater drain and dam system in accordance with the document titled 'Filling Plan' dated May 2012 prepared by Genesis. Within two weeks of installing the stormwater drain and dam the licensee must submit to the EPA 'as built' design drawings (AECOM has not reviewed these documents). It is uncertain whether the above measures have been implemented.

- AECOM issued a request under the GIPA Act 2009 to obtain a copy of the SWC TWC for the property address 10-36 Albert Street, St. Peters (Alexandria Landfill Pty Ltd). SWC advised that the TWA was cancelled on 5th March 2012.
- AECOM understands that the existing TWA for the Alexandria Landfill (29304) was cancelled on 22 January 2015.
- The most recent reported ammonia concentration's in leachate (reported by IGGC in 2013) ranged from 168 mg/L to 232 mg/L, which exceeds the ammonia limit of 100 mg/L from the most recent copy of the SWC TWA (provided in IGGC 2011 report) . Post-treatment leachate discharge monitoring results reported composite results for ammonia ranging from <0.5 mg/L to 77.2 mg/L. The laboratory reports, field records and quality assurance/quality control results were not available for review.

6.0 Conclusions and Recommendations

The overall conclusions on the review of the leachate management system are listed below.

- A leachate collection and treatment system is present at the site, and appears to be operational based on preliminary inspections undertaken by JPG. JPG noted that the system will require repairs and modifications.
- It is uncertain whether the system is adequately treating collected leachate to comply with the requirements of the TWA.
- It is unclear whether groundwater from the Botany Sands aquifer is being lawfully extracted under a licence from the NSW Office of Water or whether the discharged water fully complies with the development consent conditions.

Based on the available information the below is recommended to be undertaken:

- Sampling and analysis of untreated and treated leachate samples to evaluate the effectiveness of the treatment system.
-
- Negotiate a new TWA with SWC as the existing EPL was cancelled on the 22 January 2015.
- Engage an engineer experienced in the operation and design of biological contact treatment plants to assess the current capability and condition of the plant to provide recommendations and cost estimates for upgrades or repair to meet discharge standards (if required).
- Investigate whether a groundwater extraction permit is in place with the NSW Office of Water (NOW) for the extraction of groundwater from the Botany Sands aquifer and whether the quality of the water is appropriate for disposal to the Canal Road stormwater system.

7.0 References

Author unknown, 1999. A Review of the Landfill Environmental Management Plan for the Albert Street St Peters Waste Management Centre. Final Draft.

Douglas Partners, 2000. Landfill Environment Management Plan St Peters Waste Facility.

IGGC, 2006. Alexandria Landfill Site Revised Surface Water and Leachate Management Plan, September 2006. September.

IGGC, 2012. Alexandria Landfill Site Revised Surface Water and Leachate Management Plan, November 2011. January.

IGGC, 2013. Alexandria Landfill Site Environmental Monitoring Results, Year Ending 30th November 2012.

JPG Alexandria Landfill Leachate Management Systems Inspection Notes (15 January 2015)

JPG Alexandria Landfill Leachate Management Systems Inspection Notes (2 February 2015)

Maunsell Pty Ltd, 1996. Staging for Stormwater and Leachate Disposal. February.

PPK Environment and Infrastructure Pty Ltd, 2001. St Peters Waste Management Facility Annual Environmental Monitoring Report November 1999 to October 2000.

PPK Environment and Infrastructure Pty Ltd, 2002. St Peters Waste Management Facility Annual Environmental Monitoring Report 1 November 2000 to 30 November 2001.

Parsons Brinckerhoff (PB), 2003. Alexandria Landfill Site Water and Leachate Plan Revised Filling Plan – October.

Waste Service NSW, 1997. Albert Street Disposal Depot Landfill Environmental Management Plan. December.

Woodward Clyde, 1998. Environmental Audit (1998) of the Albert Street Landfill Depot, St Peters. 10 July.

Appendix A

Site Layout and Draft Leachate Process Flow Diagram

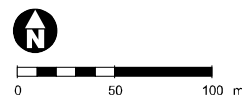


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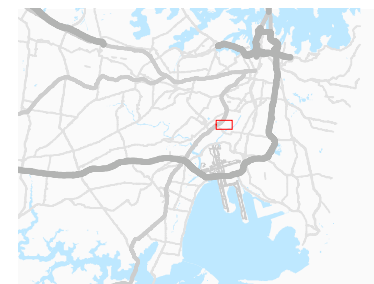
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- Quarry Pit Extent
- Local Government Area
- Desalination Pipeline
- Stormwater Drainage Line
- Concrete Dish Drain
- Groundwater Sampling Location
- Indicative Location of Herringbone Drainage
- Former Surface Drain
- Stormwater Drainage Line
- Botany Sands Transfer Line
- Leachate Transfer Line
- Sewer Discharge Line

WestConnex
Building for the future

AECOM



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AECOM/DA makes no representations or warranties of any kind, about the accuracy, reliability, completeness, suitability or fitness for purpose in relation to the map content.



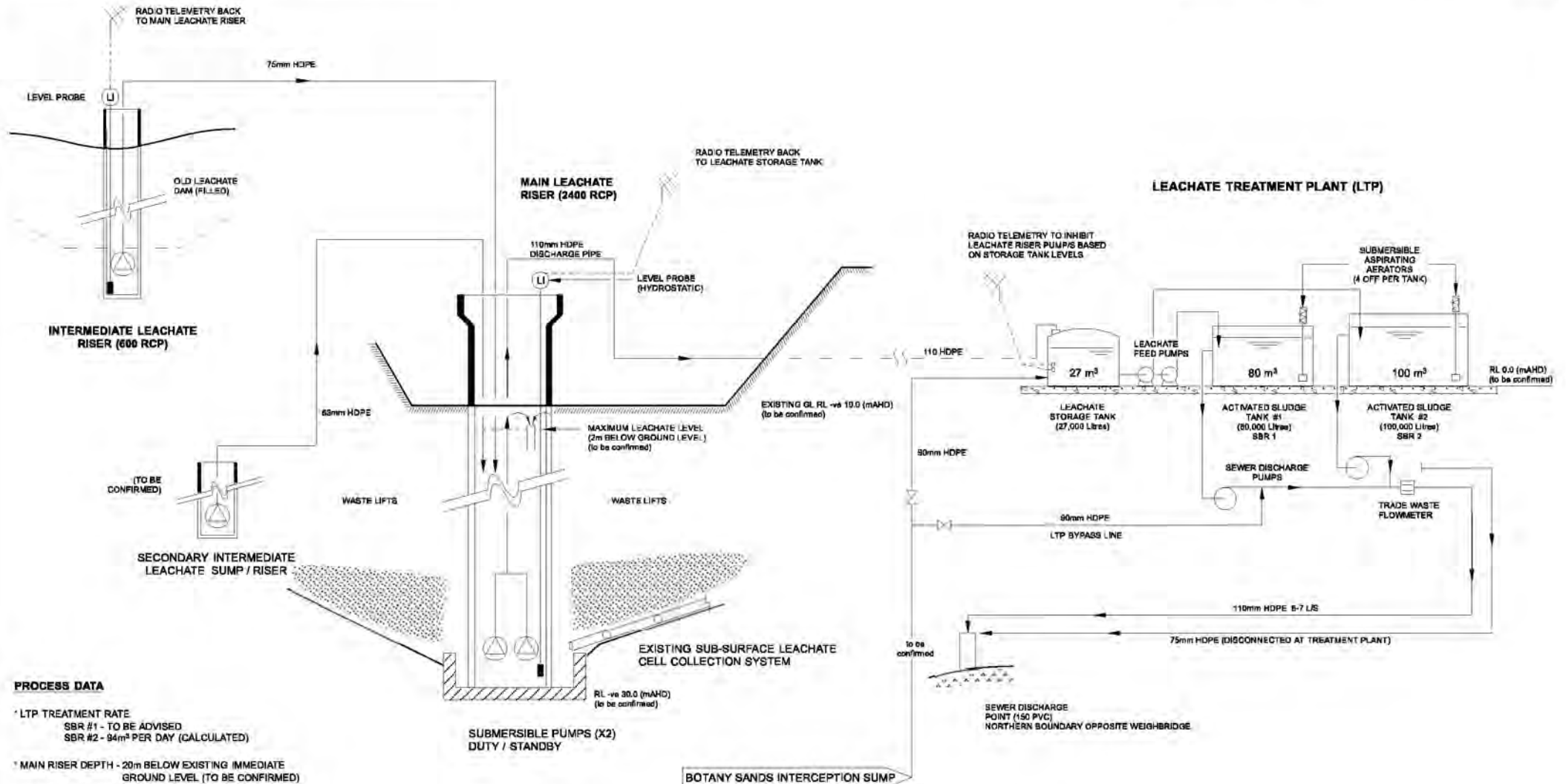
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CLIENT	WESTCONNEX DELIVERY AUTHORITY	
DRAWN	DN	PROJECT # 60327128
CHECK	DATE 16/02/2015	MAP # REV G056 04 60327128

**ST PETERS INTERCHANGE
WESTCONNEX DELIVERY AUTHORITY**

DRAFT PROCESS FLOW DIAGRAM

**ALEXANDRIA LANDFILL LEACHATE
COLLECTION & TREATMENT SYSTEMS**



PROCESS CONSULTANT / CONTRACTOR

JPG ENGINEERING
Purpose Built Process Plant & Equipment,
Industrial Water Treatment
Unit 1/8 Pioneer Drive Bellambi NSW 2518
T (02) 4284 2122 F (02) 4284 2133
M 0408 210 474 E jpg@jpgeng.com

MANAGING CONTRACTOR



**Waste Assets
Management
Corporation**

LEVEL 4, 10 VALENTINE AVE
PARRAMATTA NSW 2124
T: (02) 9665 4966
F: (02) 9667 6670

REV	DATE	REVISION	BY	CHECKED	APPROVED
01	10/02/15	TELEMETRY DETAIL ADDED	EL	JPG	EDG
00	09/02/15	ORIGINAL DRAFT	EL	JPG	EDG

DESIGNED BY	JG	JOB NO.	J1430
DRAWN BY	JG/EL	DATE	09/02/15
SCALE	NTS	SHEET SIZE	A3

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TITLE:	DRAFT PROCESS FLOW DIAGRAM
DRAWING No:	AL - LS01
SHT No.	1 of 1
ISSUE:	01

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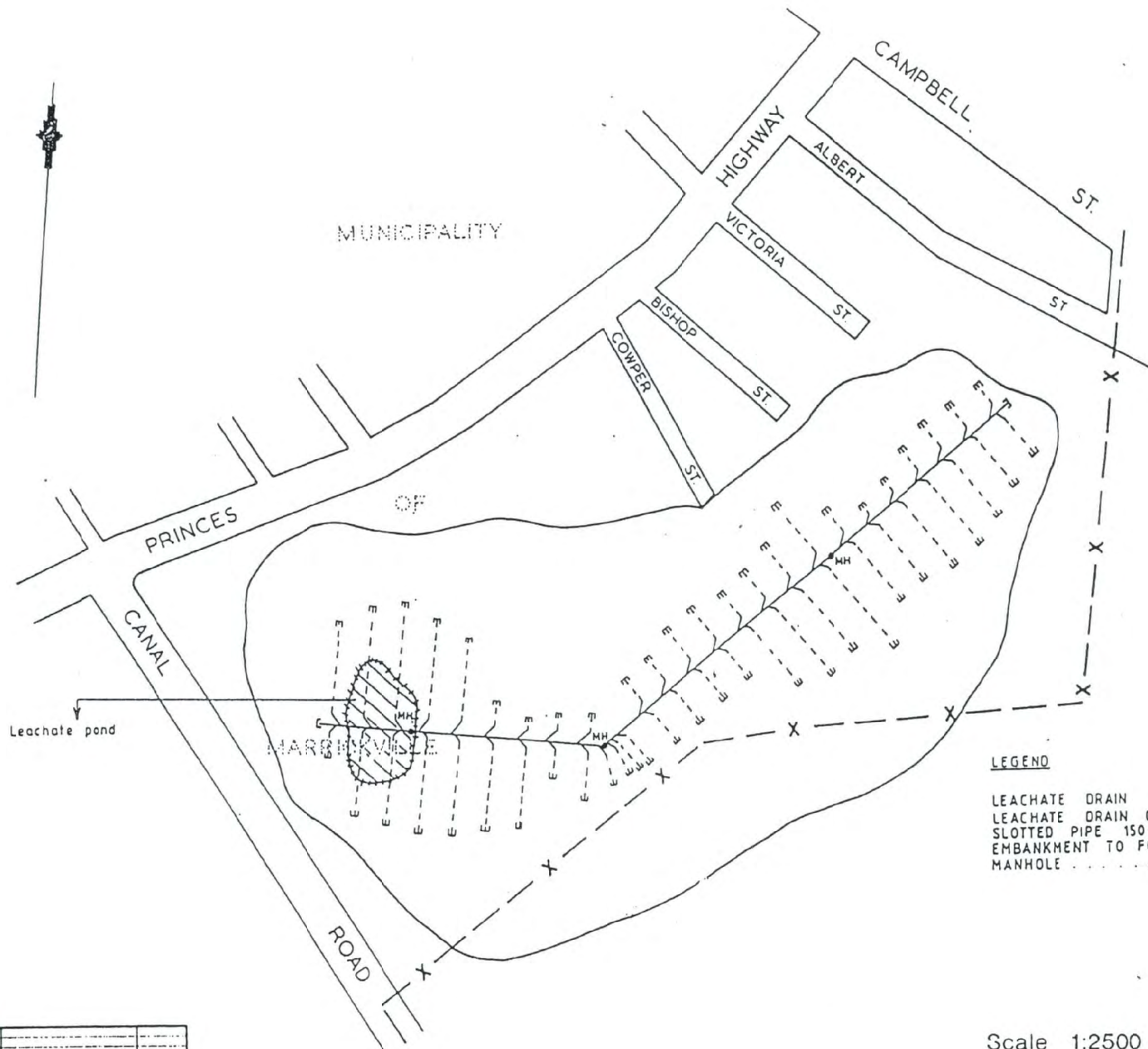
Appendix B

Herringbone Leachate Drainage Design Plans



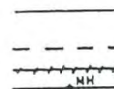
MUNICIPALITY

CITY
OF
SYDNEY



LEGEND

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- LEACHATE DRAIN CORRUGATED PVC
- SLOTTED PIPE 150 Ø
- EMBANKMENT TO FORM POND
- MANHOLE

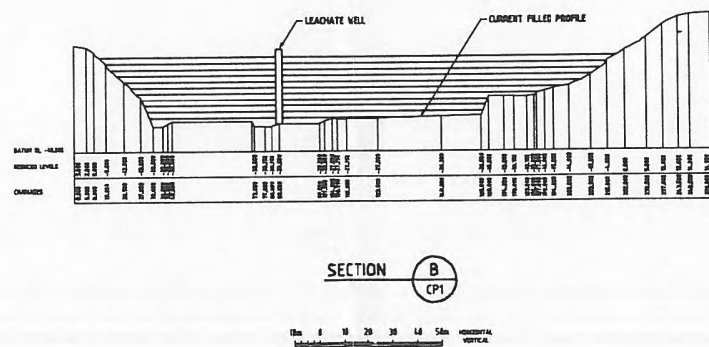
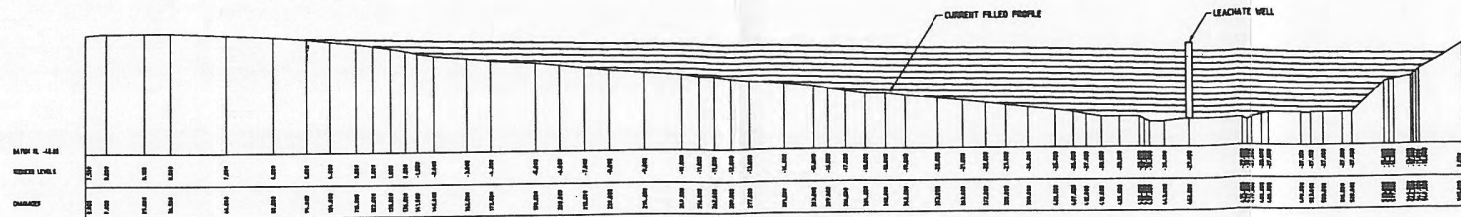


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WASTE SERVICE NSW	
ST PETERS LANDFILL	
LEACHATE COLLECTION SYSTEM	
(SOURCE: SYDNEY CITY COUNCIL)	
FIGURE 3	

Appendix C

Leachate Sump Design Plans



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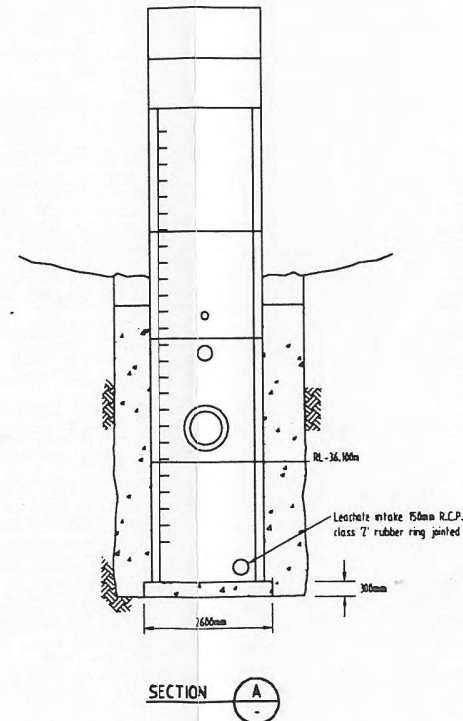
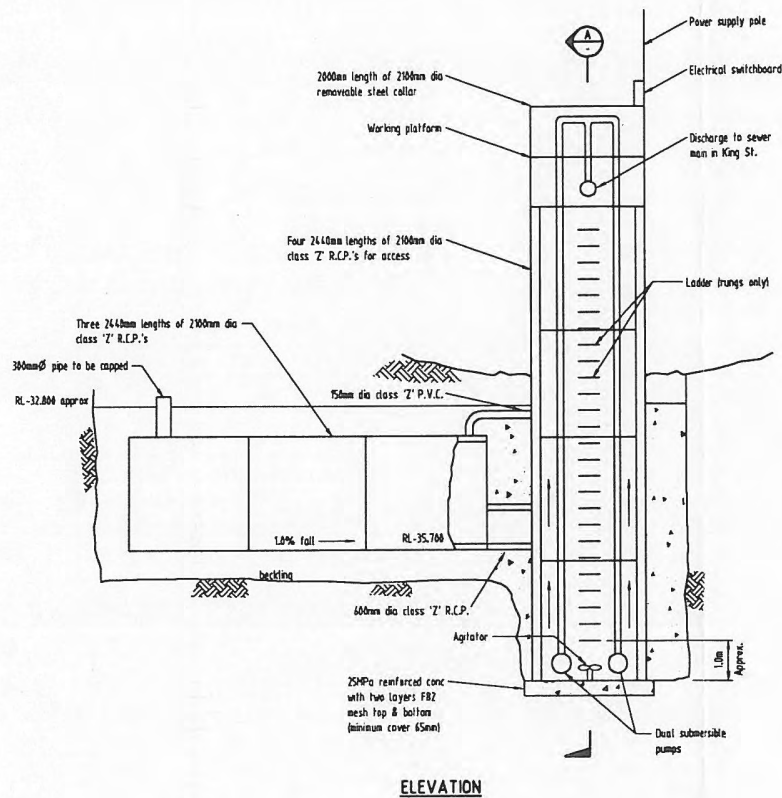
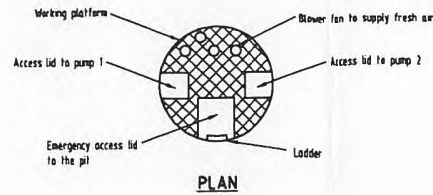
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DRAWING	D.J.M.	

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CONSULTANT	MAUNSELL PROPRIETARY LIMITED
A.C.N. 004 946 934	DATE

CLIENT	SYDNEY CITY COUNCIL
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LONGITUDINAL SECTIONS		A\36495\CP1	
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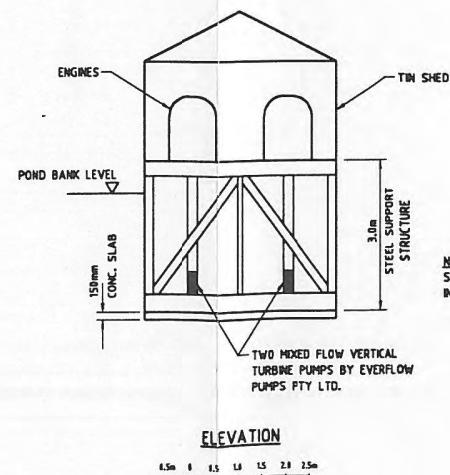
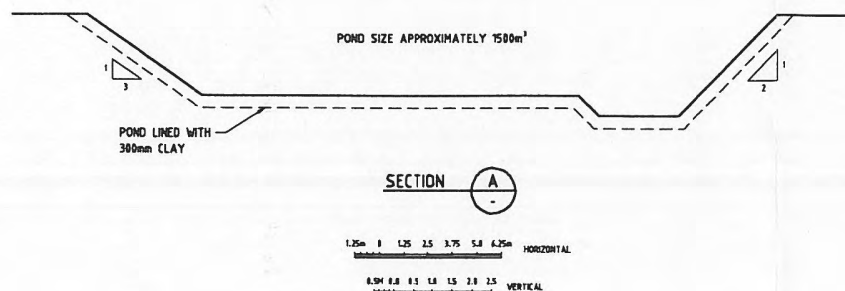
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DRAWING	D.M.				

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CLIENT	SYDNEY CITY COUNCIL
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DRAWING TITLE	LEACHATE WELL DETAILS
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DWG STATUS	CONCEPT



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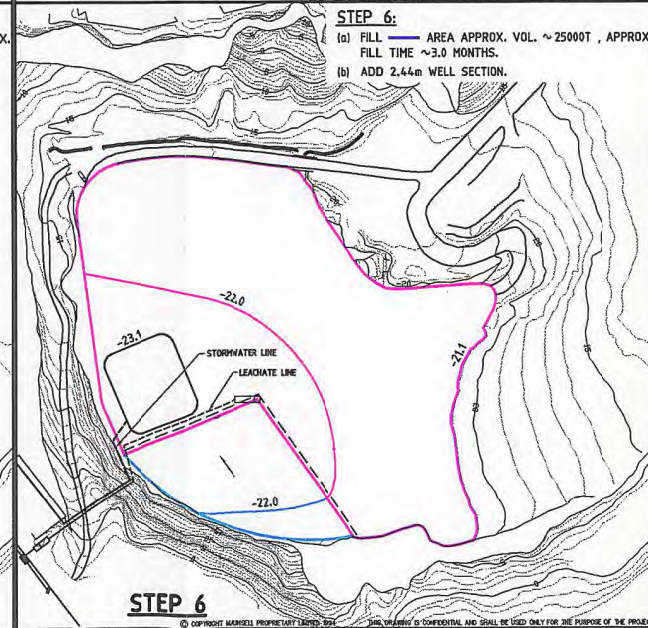
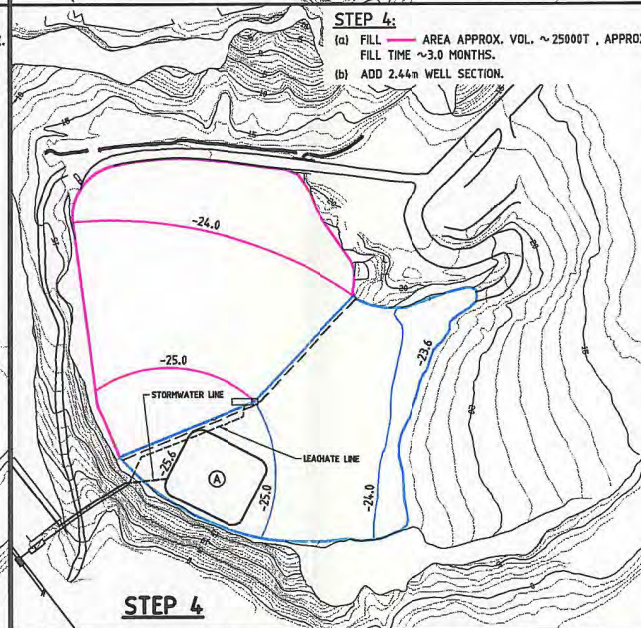
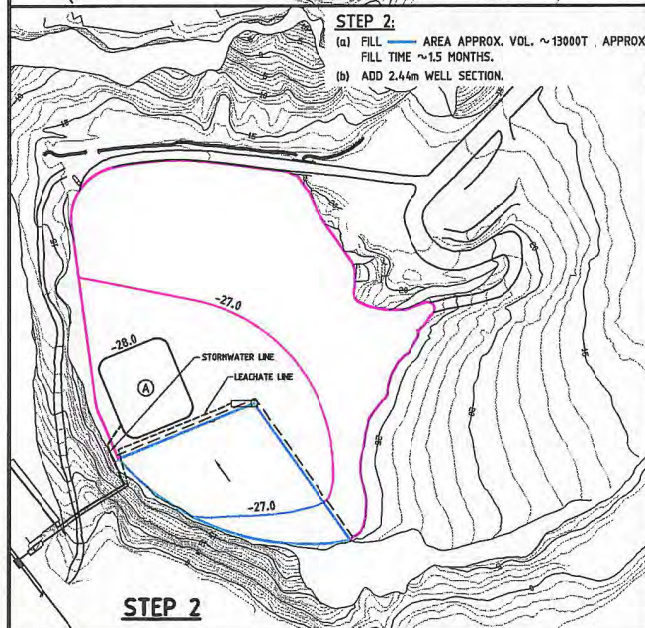
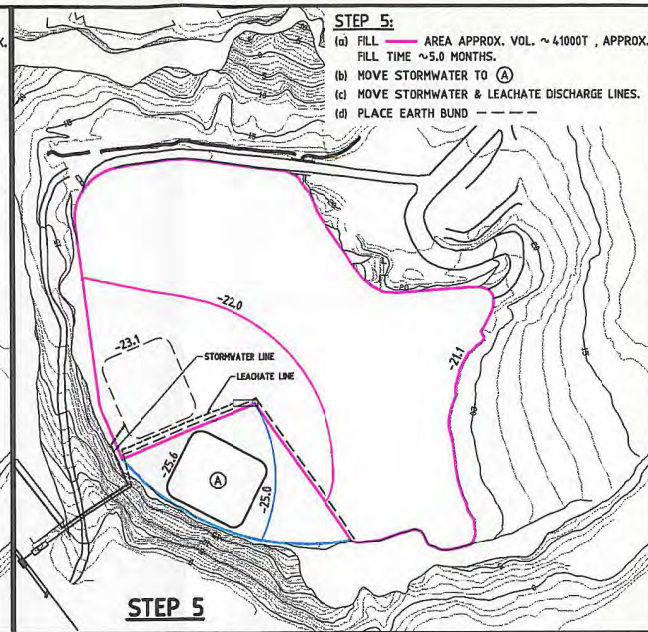
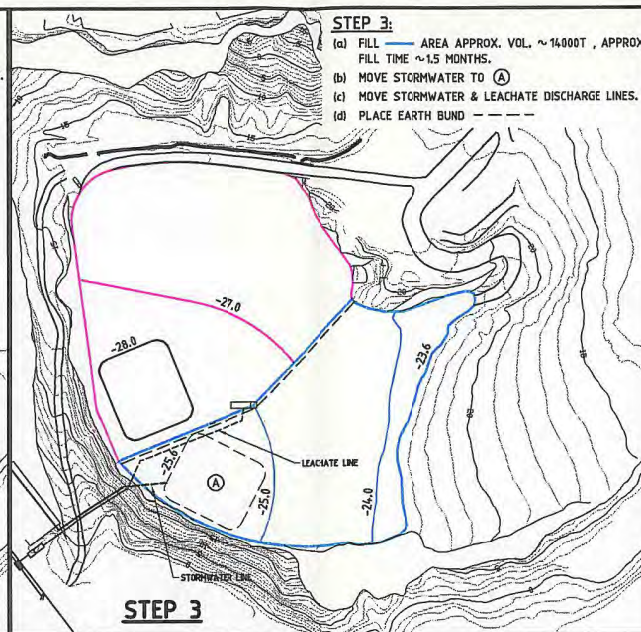
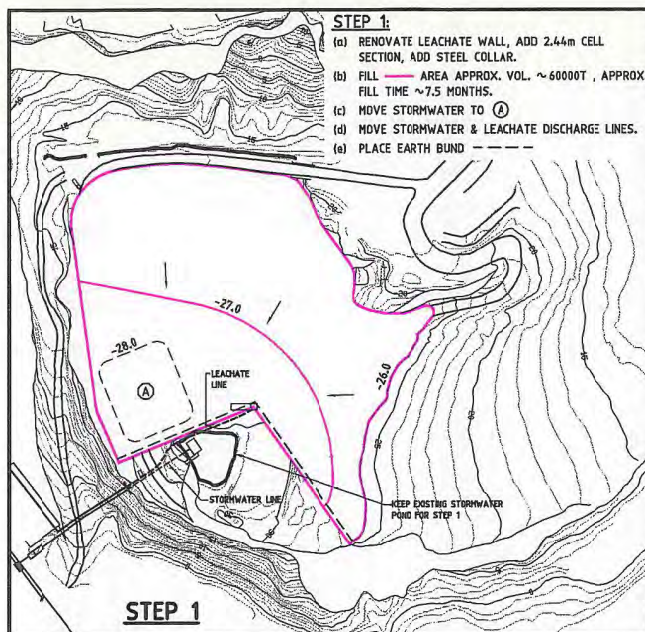
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DRAWING FILE		23A3495/CP4	
STORMWATER POND & PUMP DETAILS		DSG NO.	REV
		364.95/CP4	0
		DSG STATUS	CONCEPT



REV.	DATE	DESCRIPTION	WPN	P.D.

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VOLUMES BASED ON A DENSITY OF 0.75T/m³

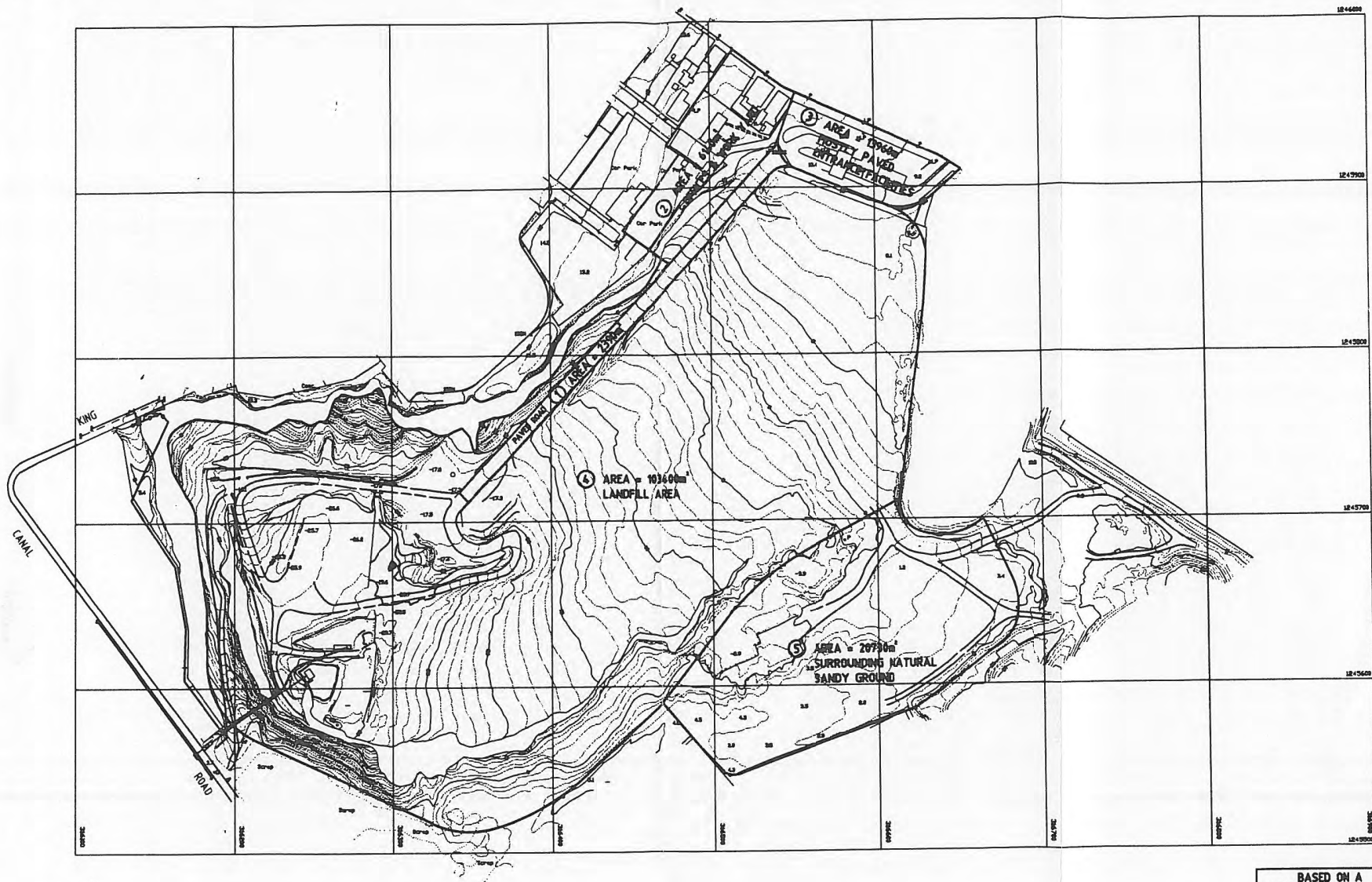
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CLIENT
SYDNEY CITY COUNCIL

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ST PETERS WASTE DISPOSAL DEPOT
DRAWING TITLE
INITIAL STAGING PLANS

DATE OF ISSUE
DATE PLOTTED
CAD REFERENCE
J:\36495\CP5
REV.
36495/CP5
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REV. STATUS
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DRAWING SUPPLIED BY
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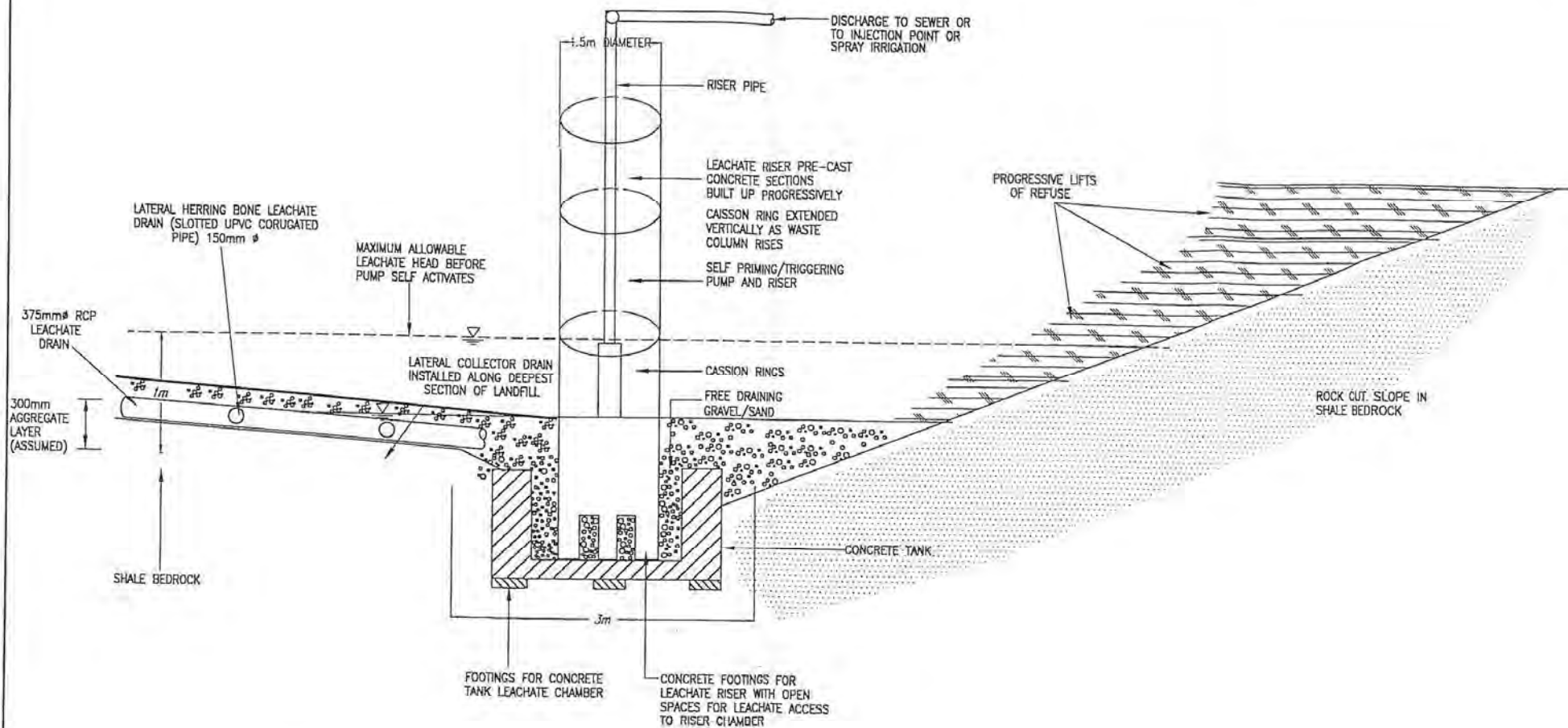
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SYDNEY CITY COUNCIL

ST PETERS WASTE DISPOSAL DEPOT
HYDROLOGIC AREAS

36495/CP6
CONCEPT



Douglas Partners
Geotechnics, Environmental, Groundwater

Sydney, Newcastle, Brisbane,
Melbourne, Perth, Darwin,
Wyang, Singleton, Campbelltown,
Townsville, Cairns, Wollongong

TITLE:

Schematic Representation of Leachate Collection
Landfill Environmental Management Plan
ST PETERS WASTE MANAGEMENT FACILITY

CLIENT: City of Sydney Council

DRAWN BY: PSCH SCALE: N.T.S.

APPROVED BY:

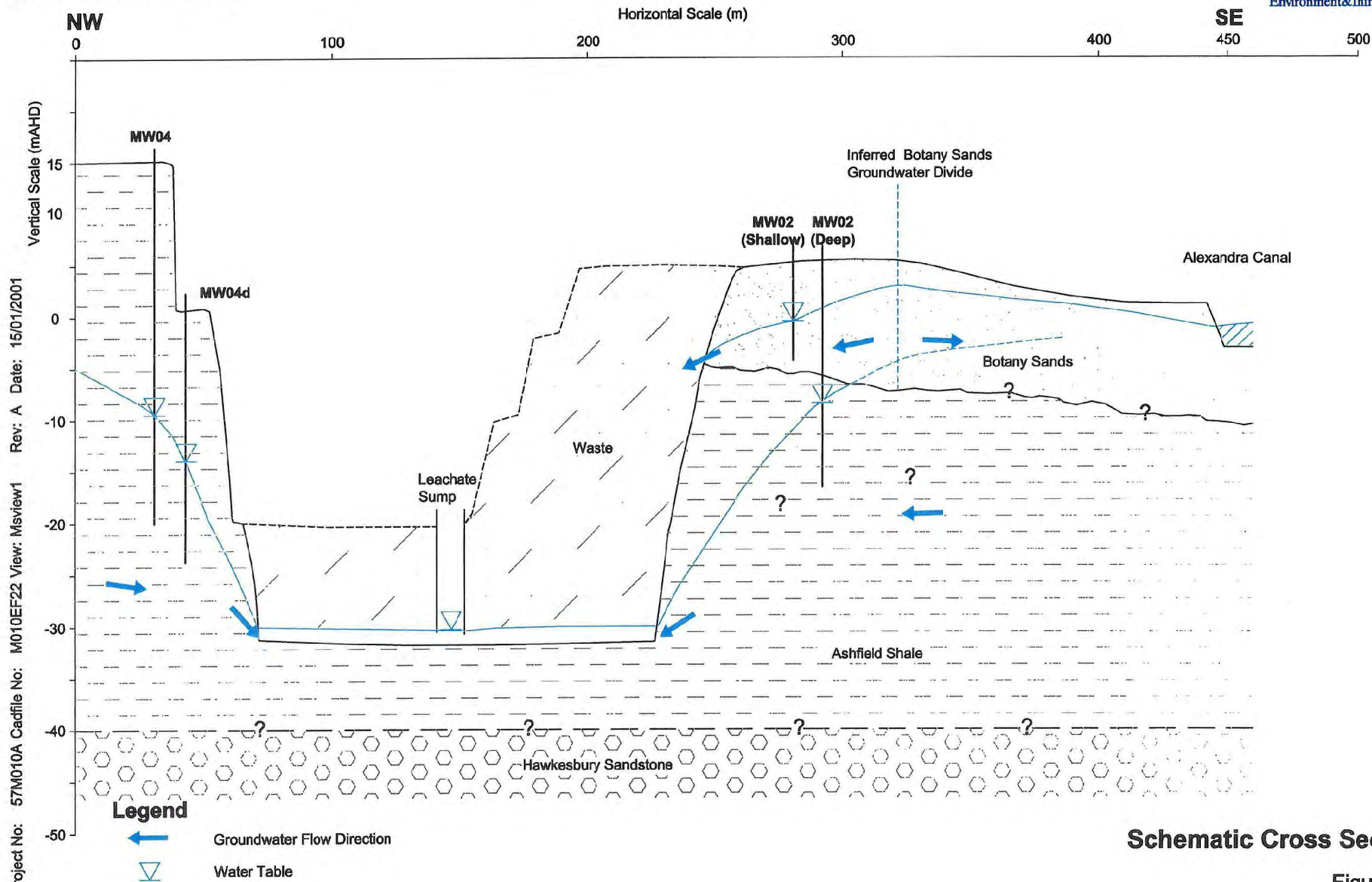
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OFFICE: SYDNEY

DATE: 22.3.2000

DRAWING No: 4

Client: Council of the City of Sydney
 Project: St Peters Waste Management Facility Enviromental Monitoring
 Location: St Peters, Sydney



Schematic Cross Section

Figure 2.2

Project No: 57M010A Cadfile No: M010EF22 View: Msv101 Date: 15/01/2001

Appendix D

Stormwater/Surface Water Plans

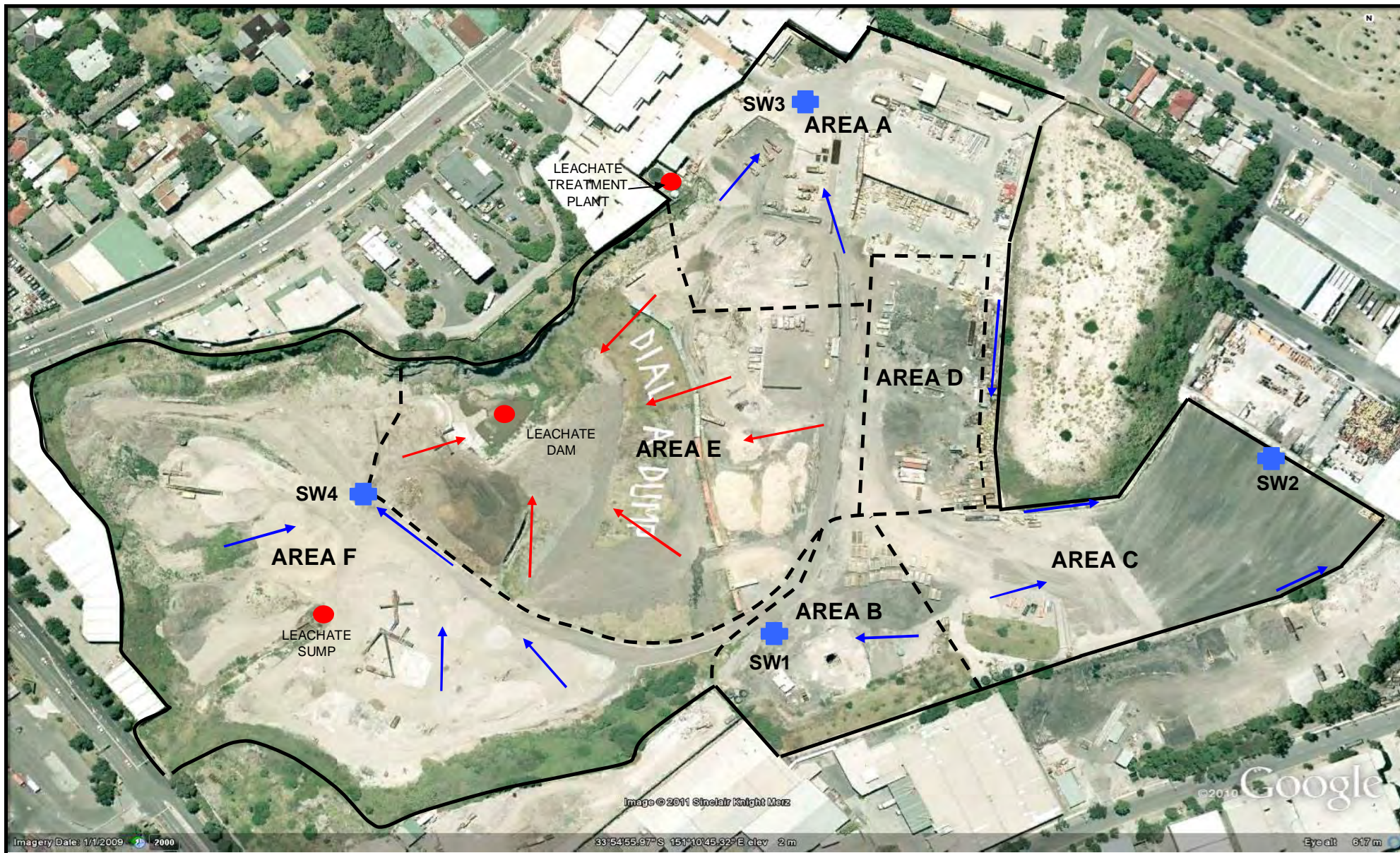


FIGURE 3 (REVISED): SITE WATER MANAGEMENT FEATURES REVISED MARCH 2012

Project: Alexandria Landfill Site Revised SWLMP, March 2012

Location: Albert Street, St Peters, Sydney

Client: DADI

Project No: AJ01



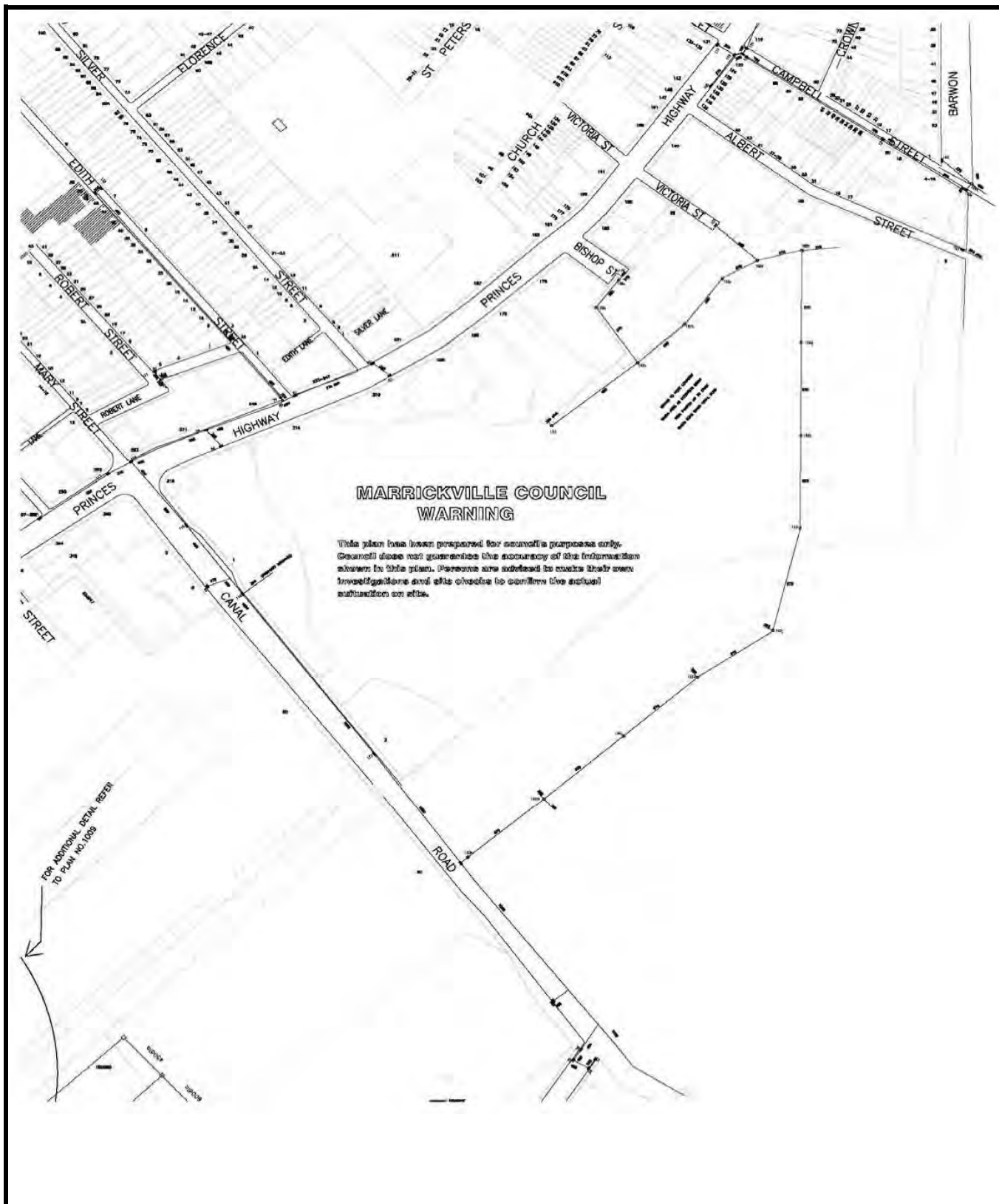


FIGURE 4: MARRICKVILLE COUNCIL STORMWATER NETWORK

Project: Alexandria Landfill Site, Revised SWLMP, March 2012
 Location: Albert Street, St Peters, Sydney
 Client: DADI
 Project No: AJ01



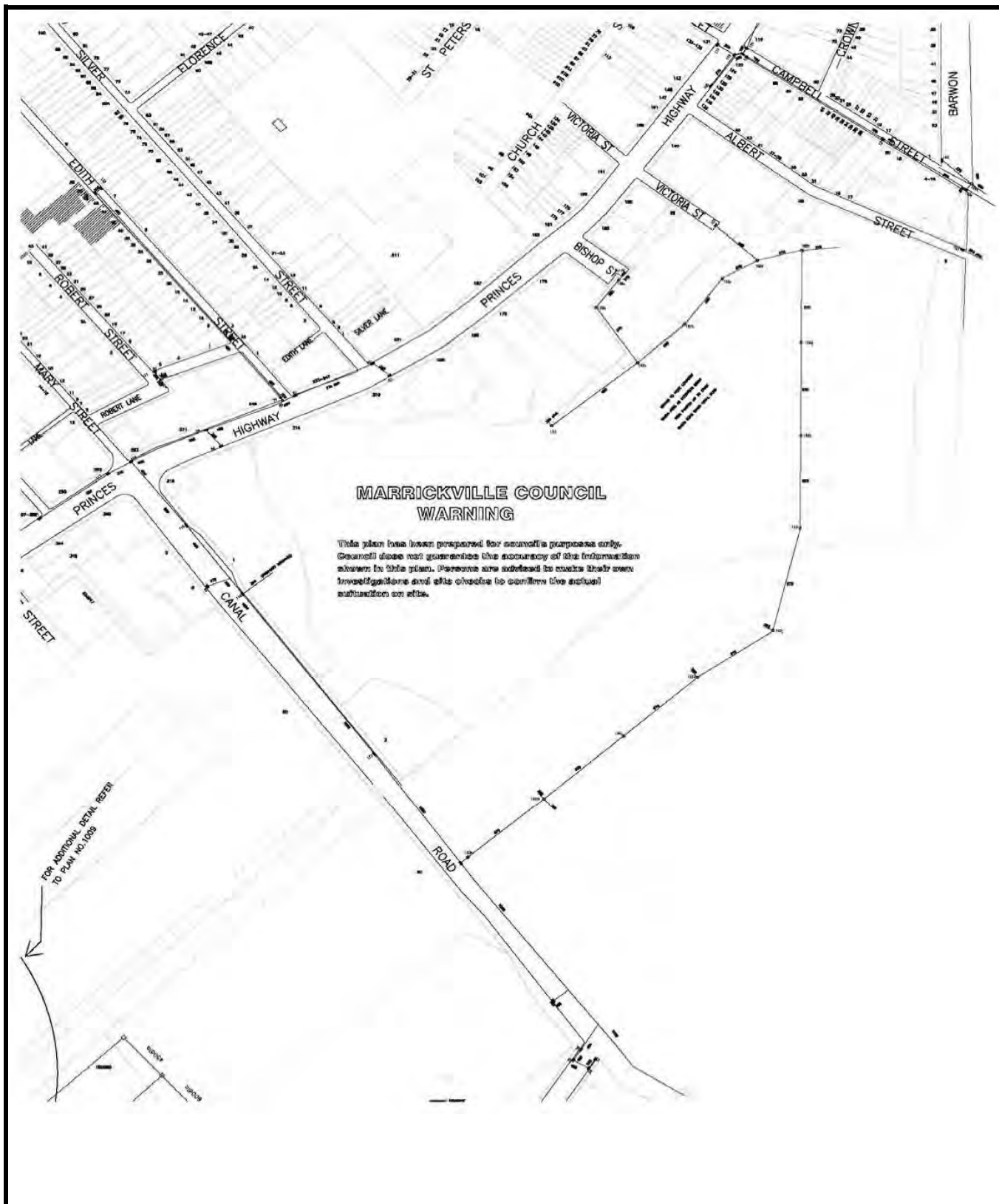


FIGURE 4: MARRICKVILLE COUNCIL STORMWATER NETWORK

Project: Alexandria Landfill Site, Revised SWLMP, March 2012
 Location: Albert Street, St Peters, Sydney
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 Project No: AJ01





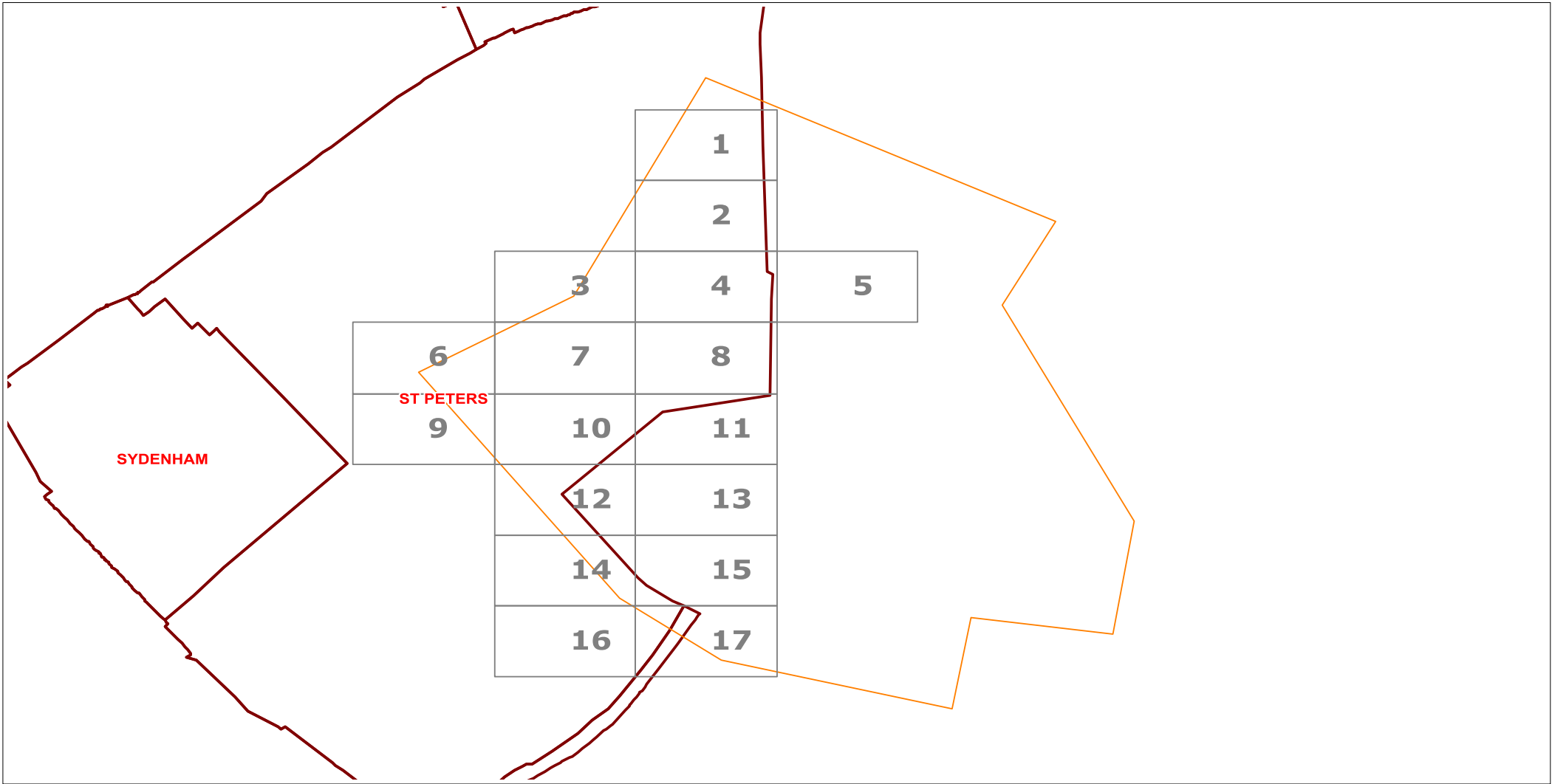
FIGURE 5: OFF-SITE STORMWATER NETWORK

Project: Alexandria Landfill Site, Revised SWLMP, March 2012

Location: Albert Street, St Peters, Sydney

Client: DADI

Project No: AJ01



Create Date: 15/07/2014

Scale 1:1000

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900

60

WEST ST

PIPE DIAMETER

HOUSE NUMBERS

STREET NAME

SUBURBS

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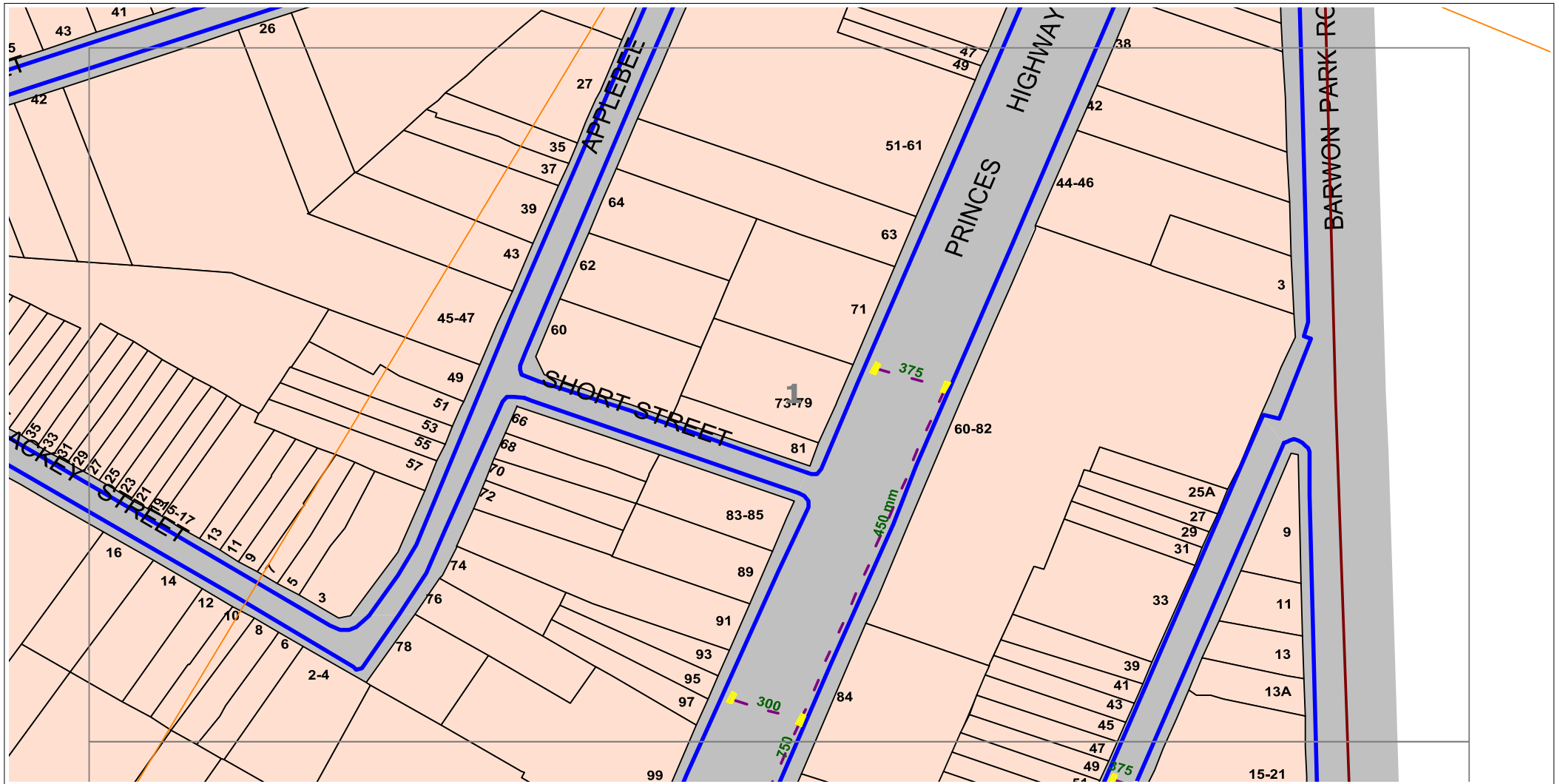
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PIT

ROADS

PROPERTY



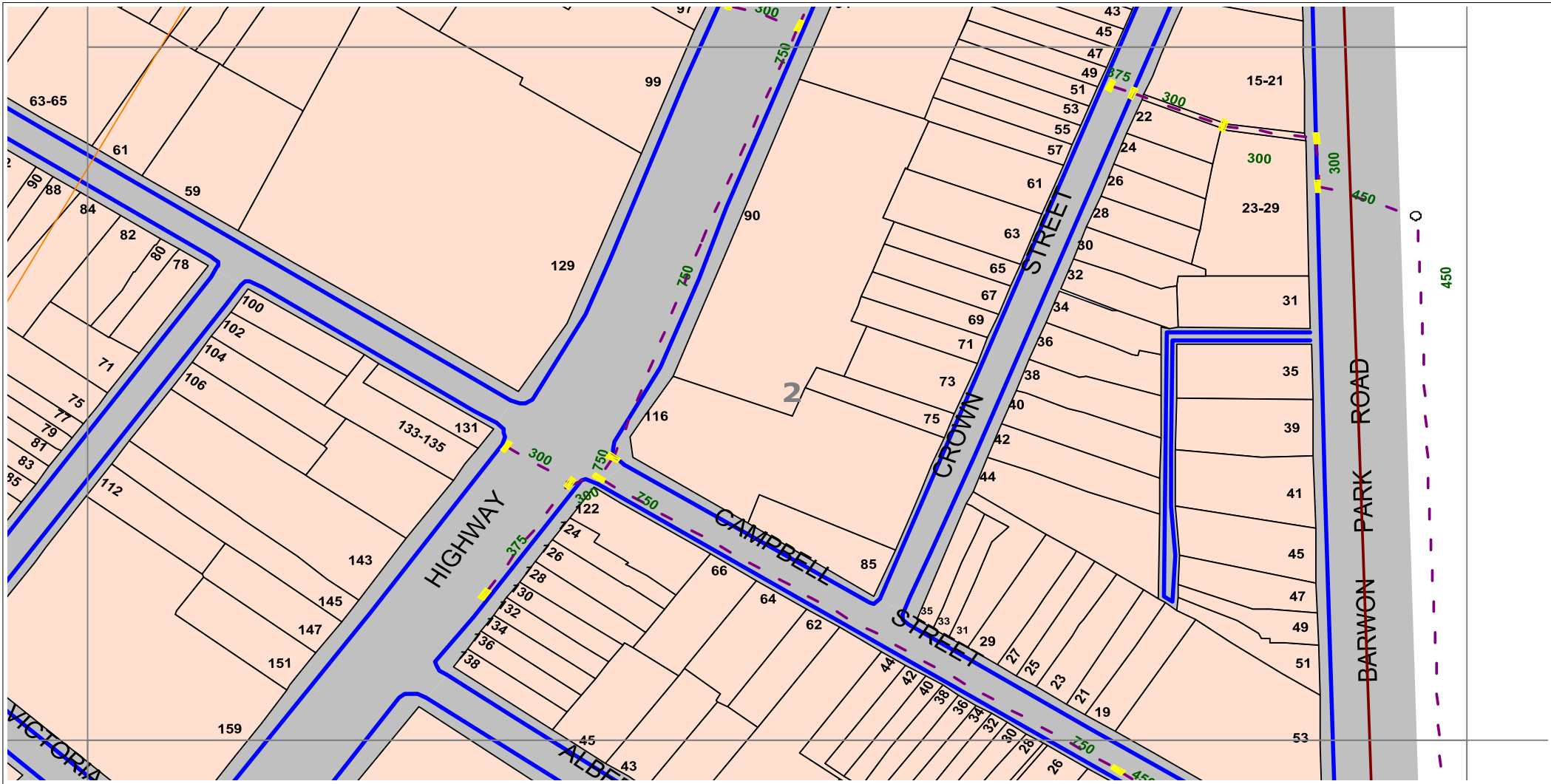
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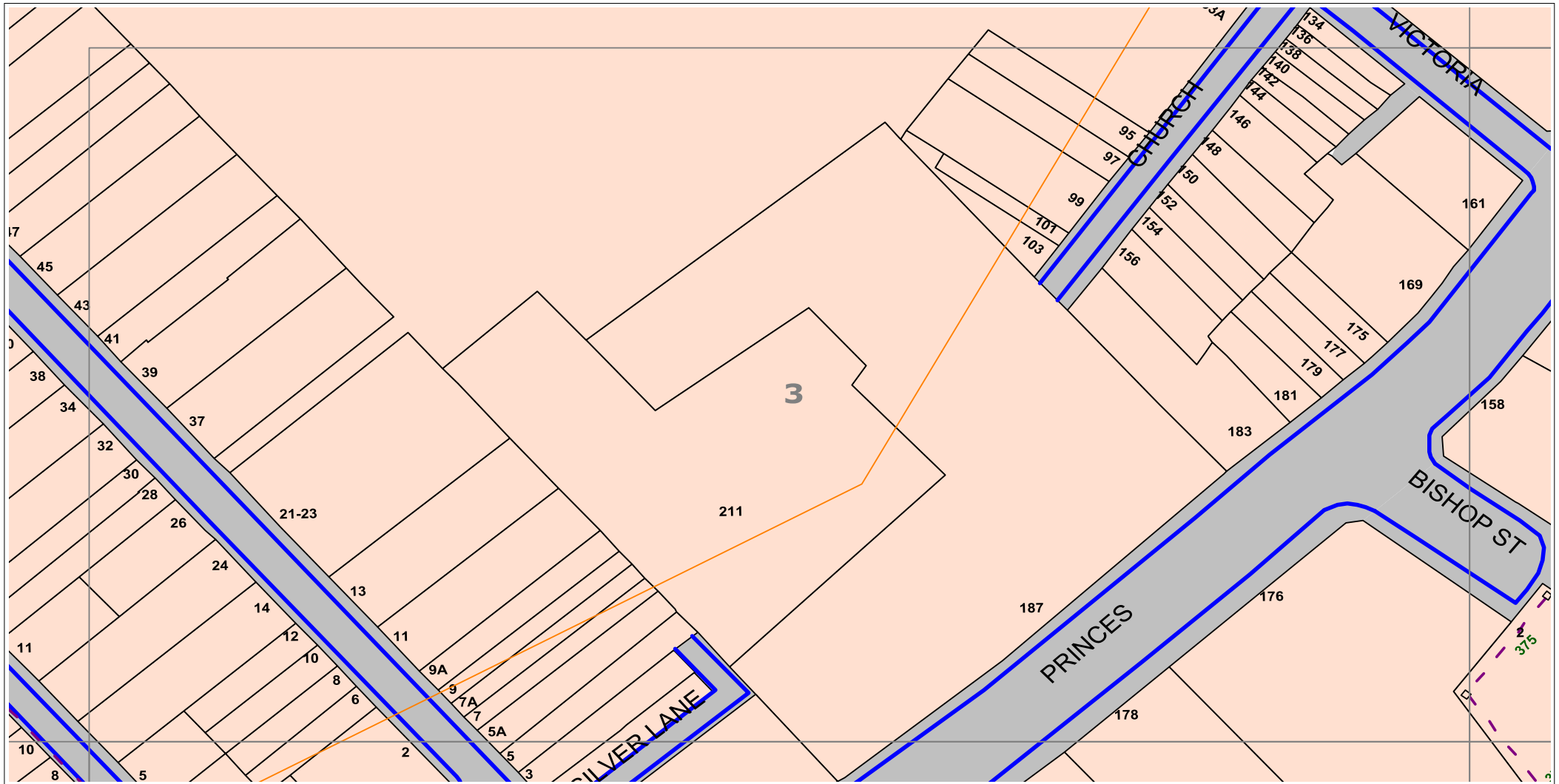
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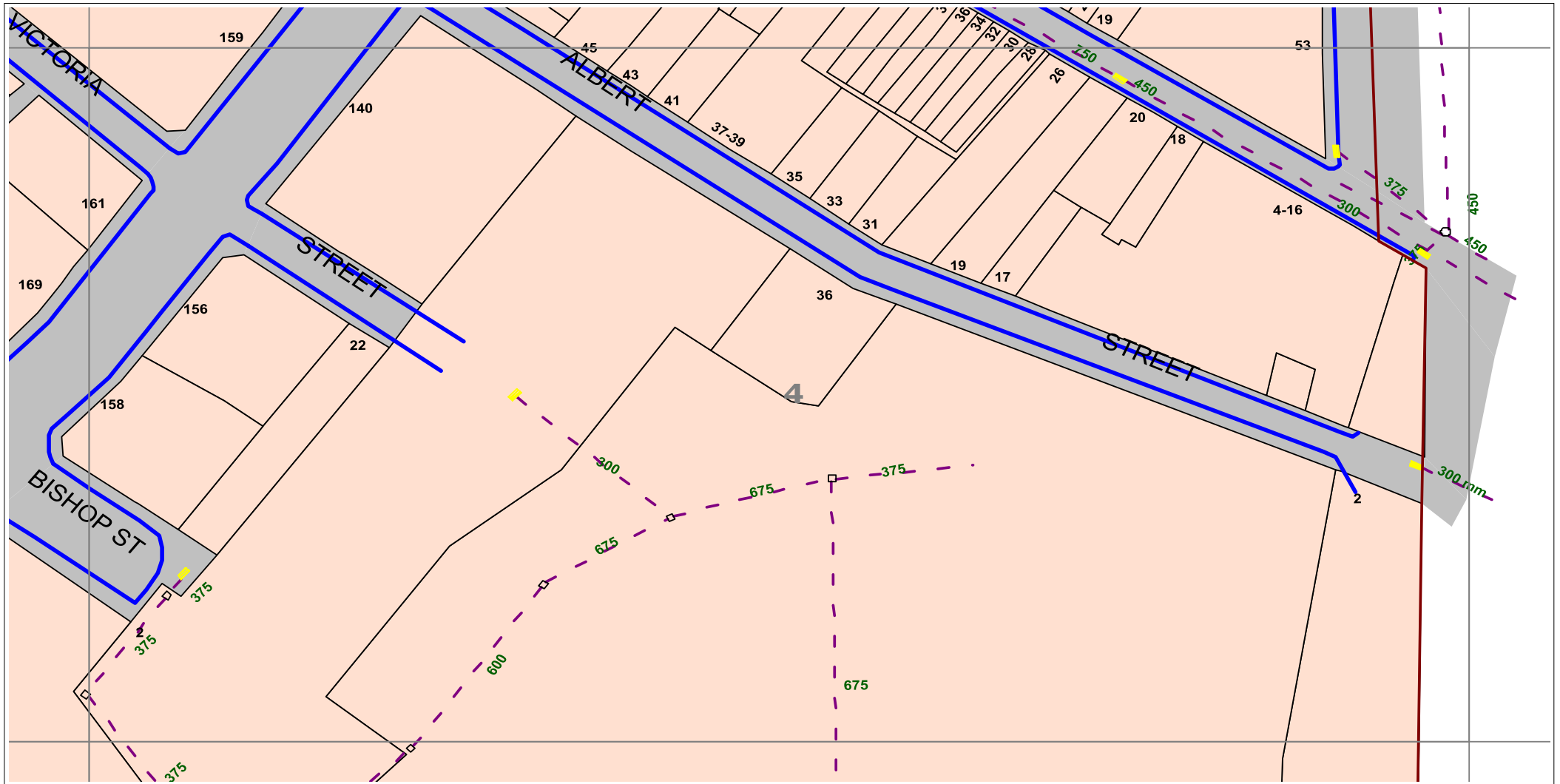
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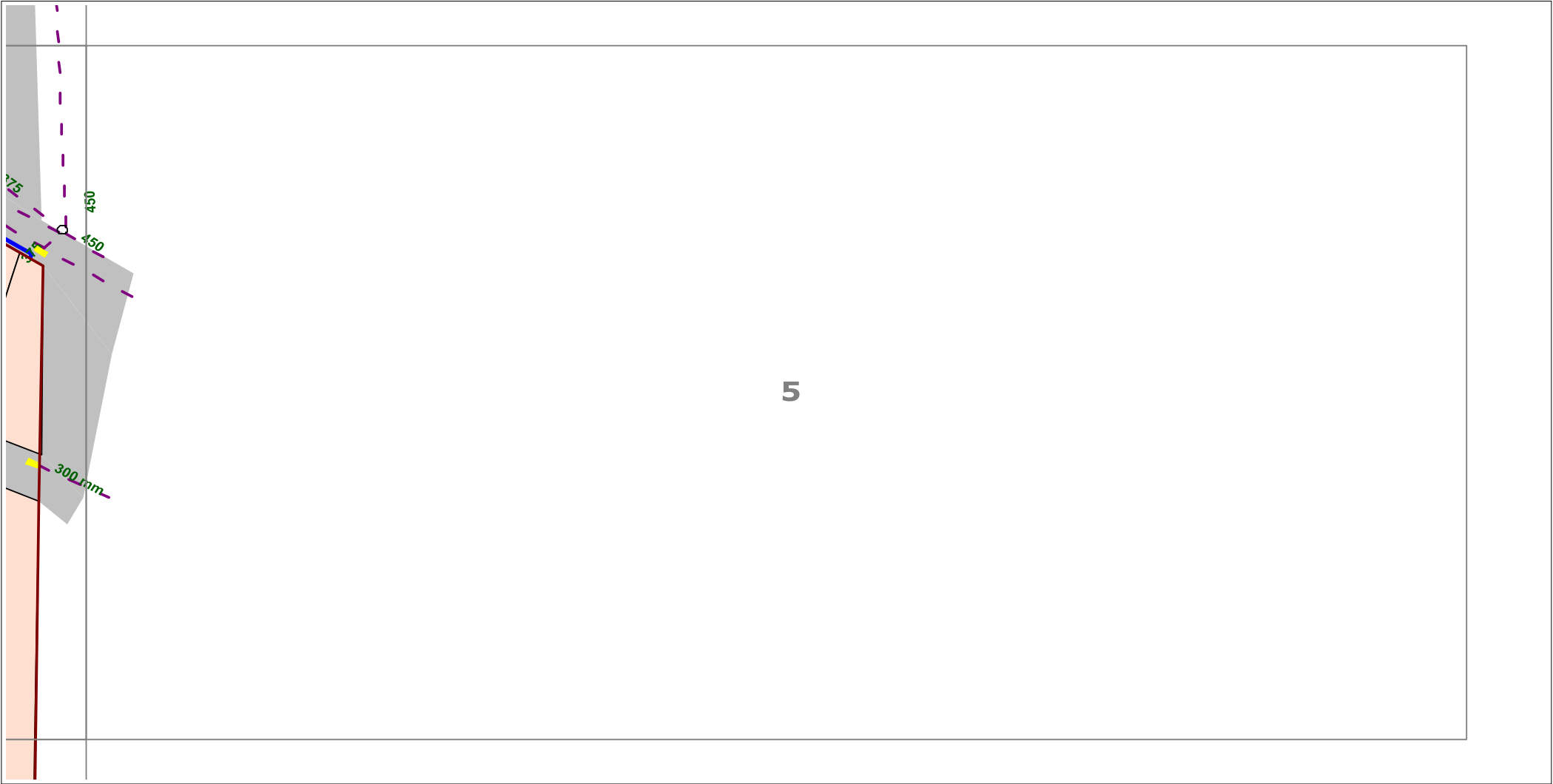
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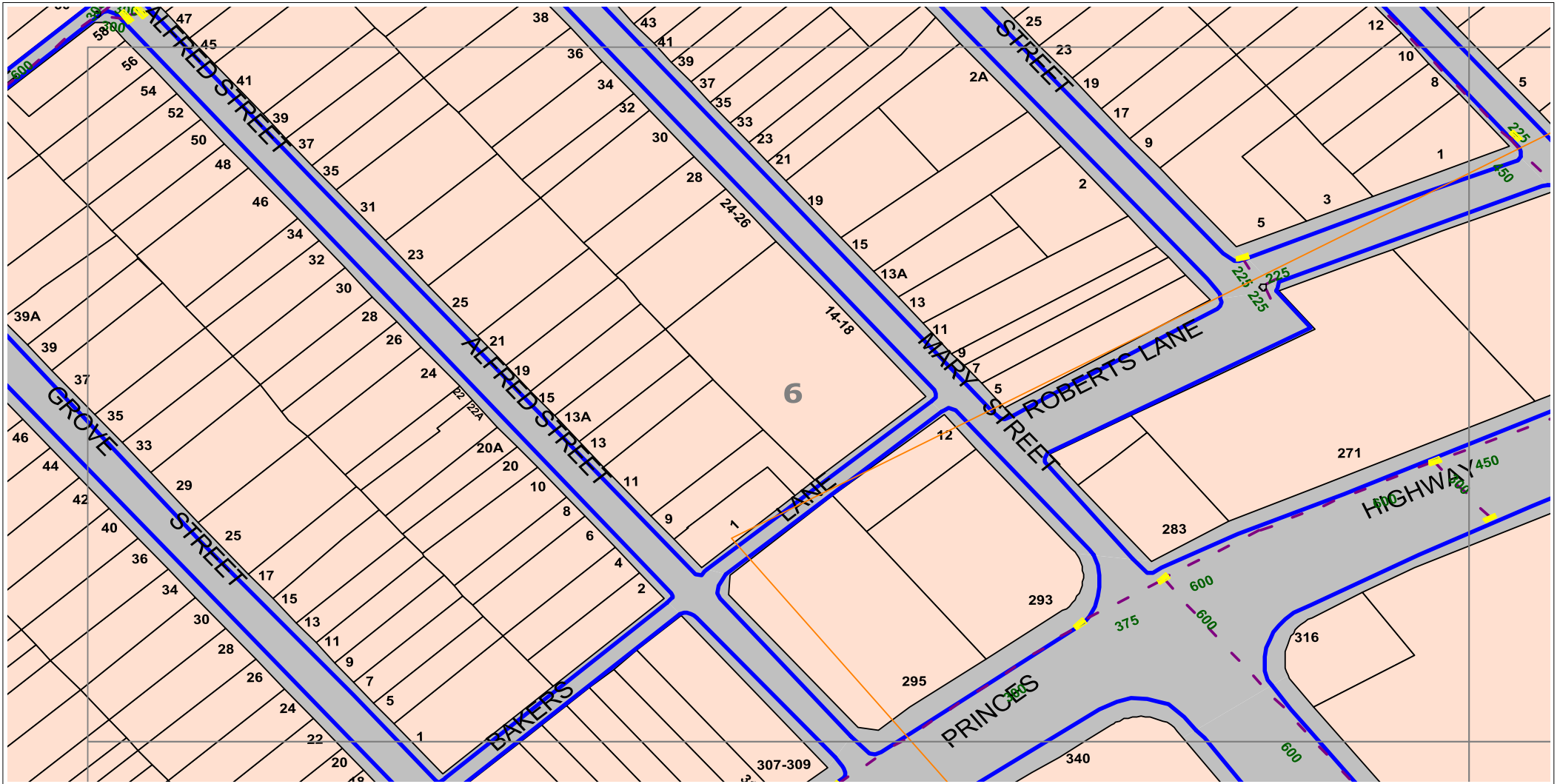
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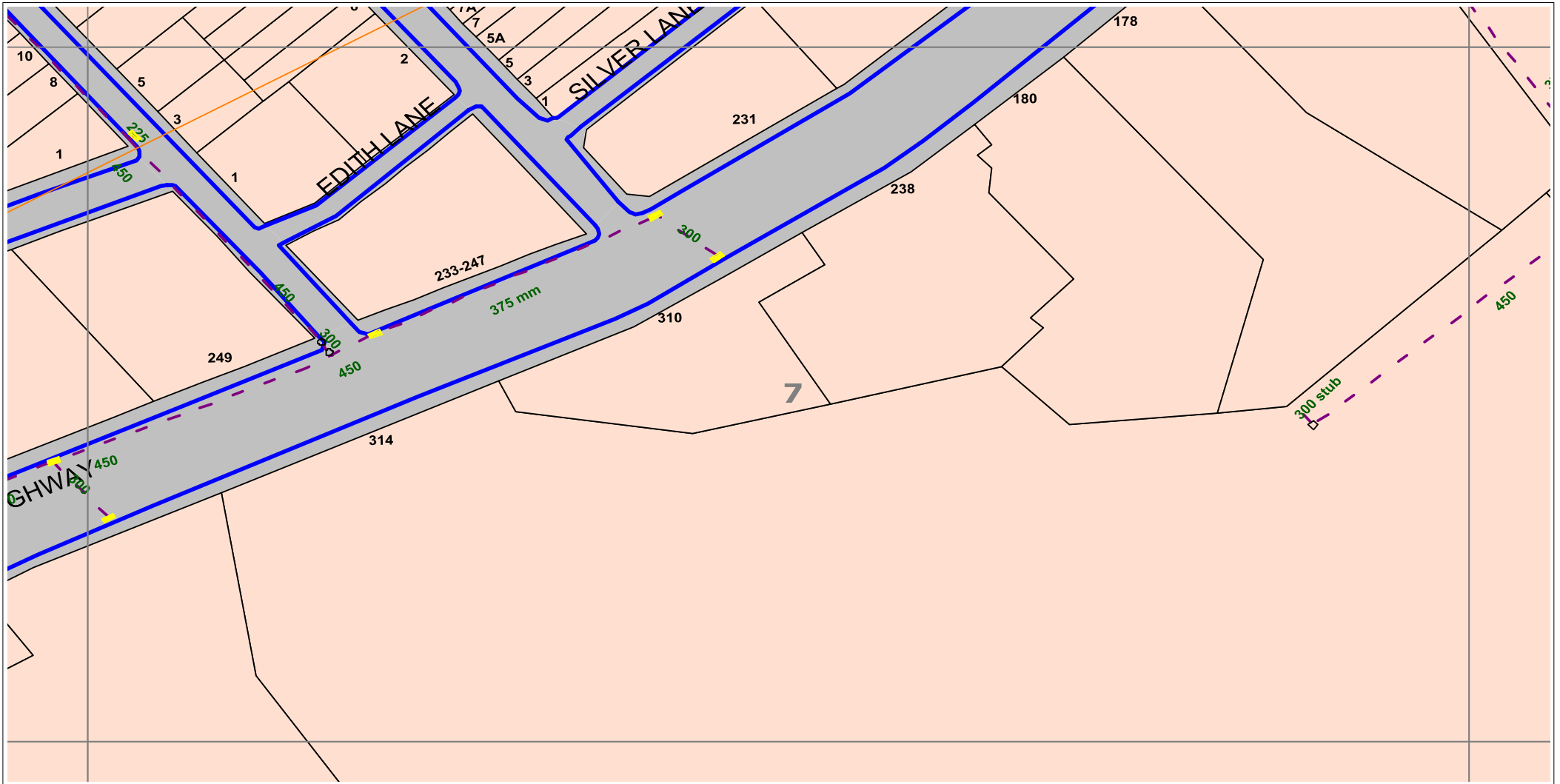
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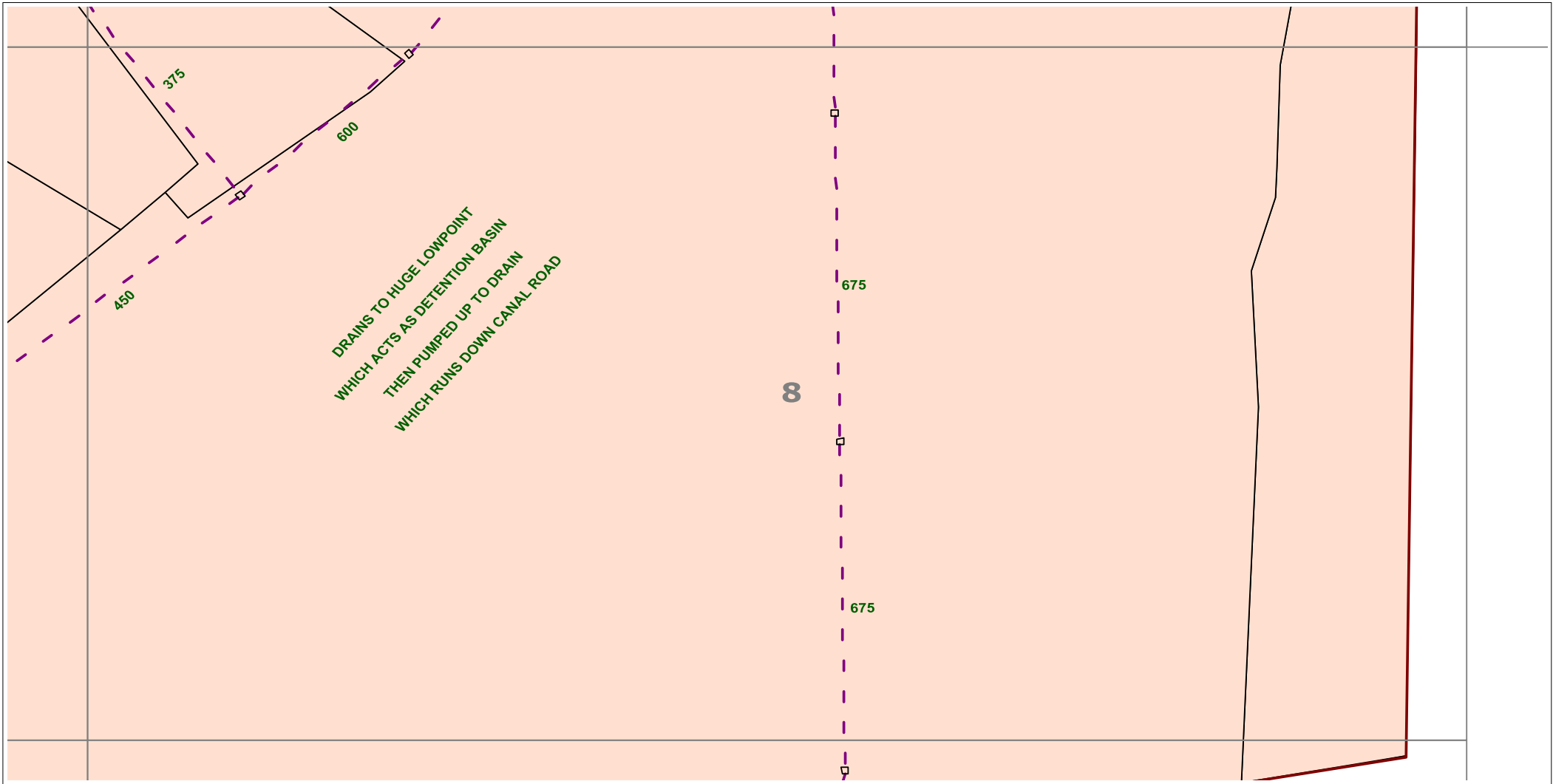
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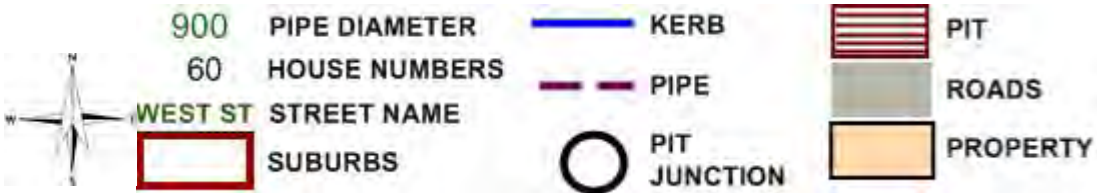


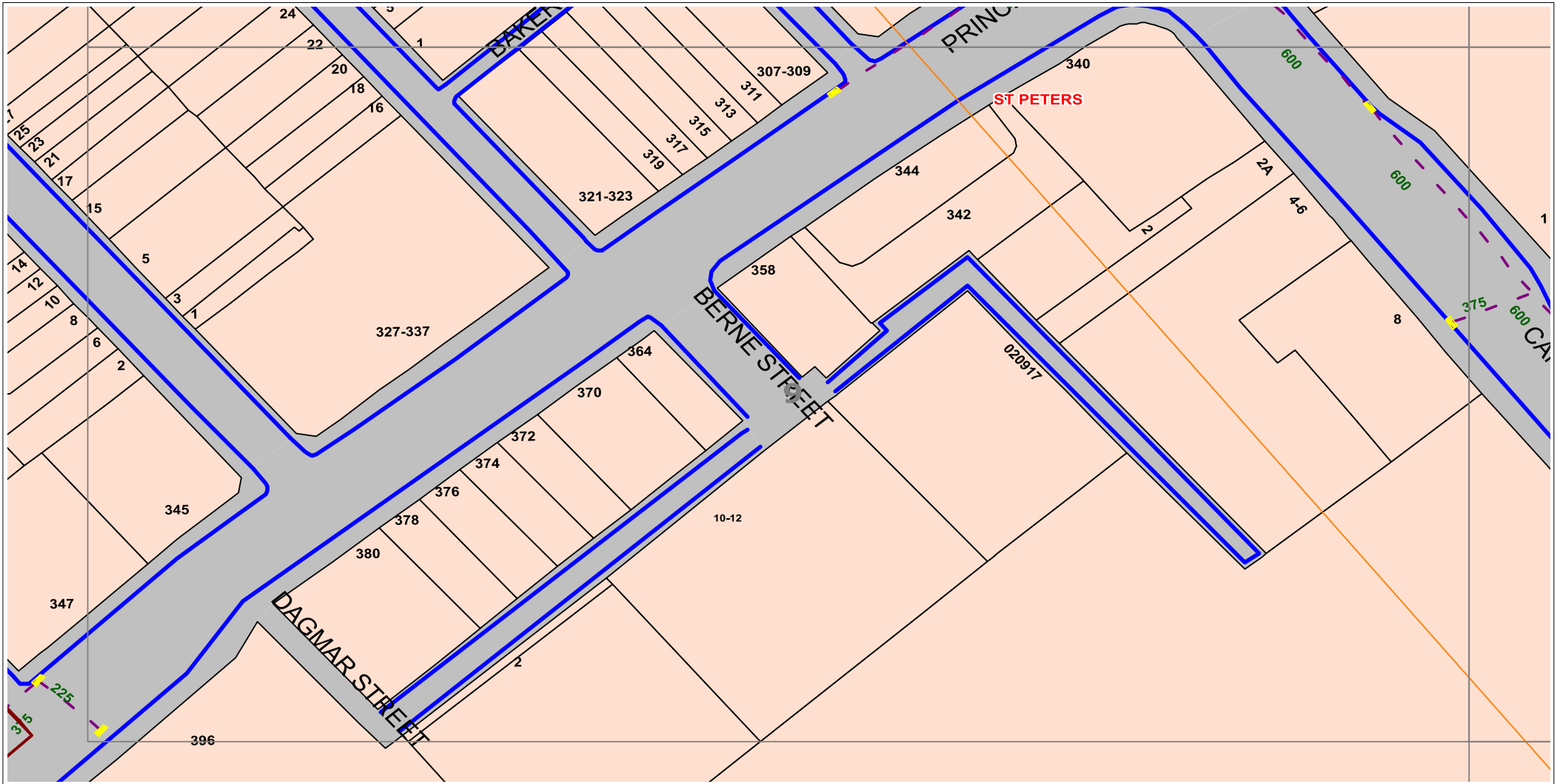
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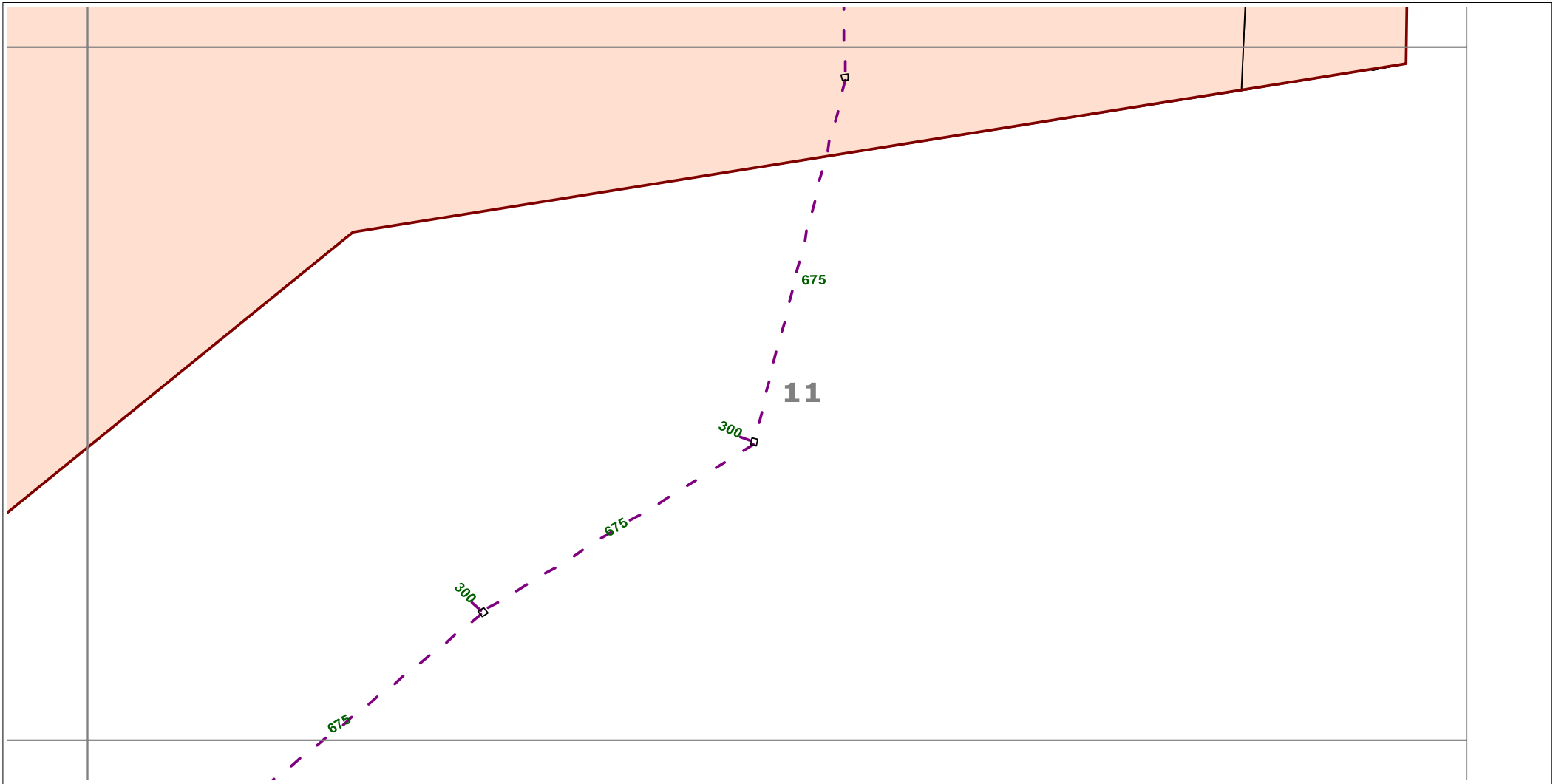
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Create Date: 15/07/2014

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900

60

WEST ST

PIPE DIAMETER

HOUSE NUMBERS

STREET NAME

SUBURBS

KERB

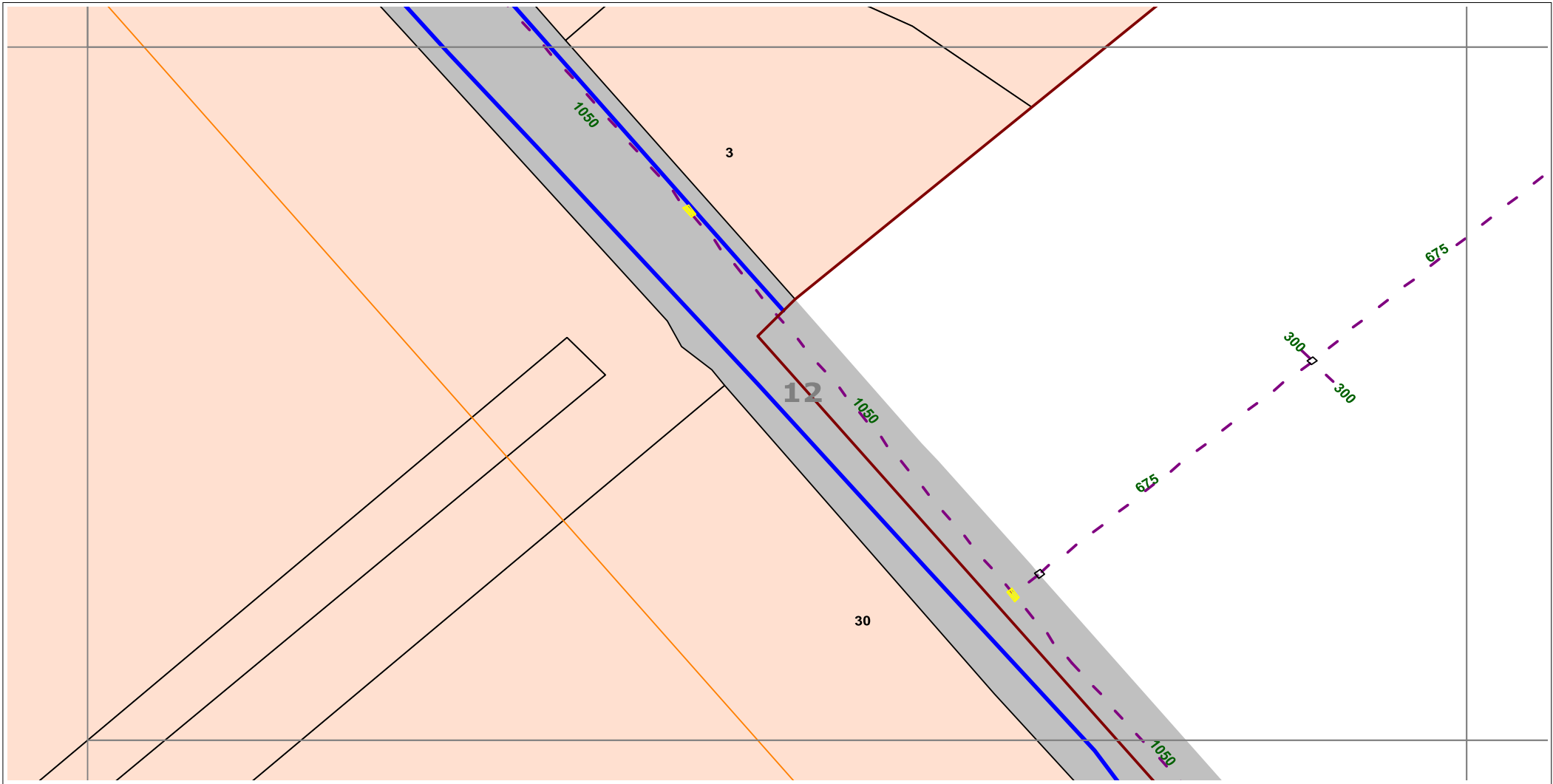
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PIT JUNCTION

PIT

ROADS

PROPERTY



Create Date: 15/07/2014

Scale 1:1000

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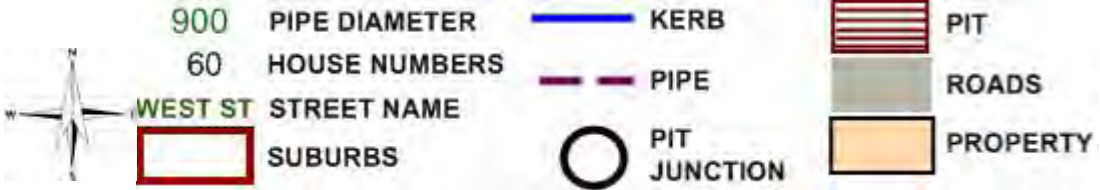


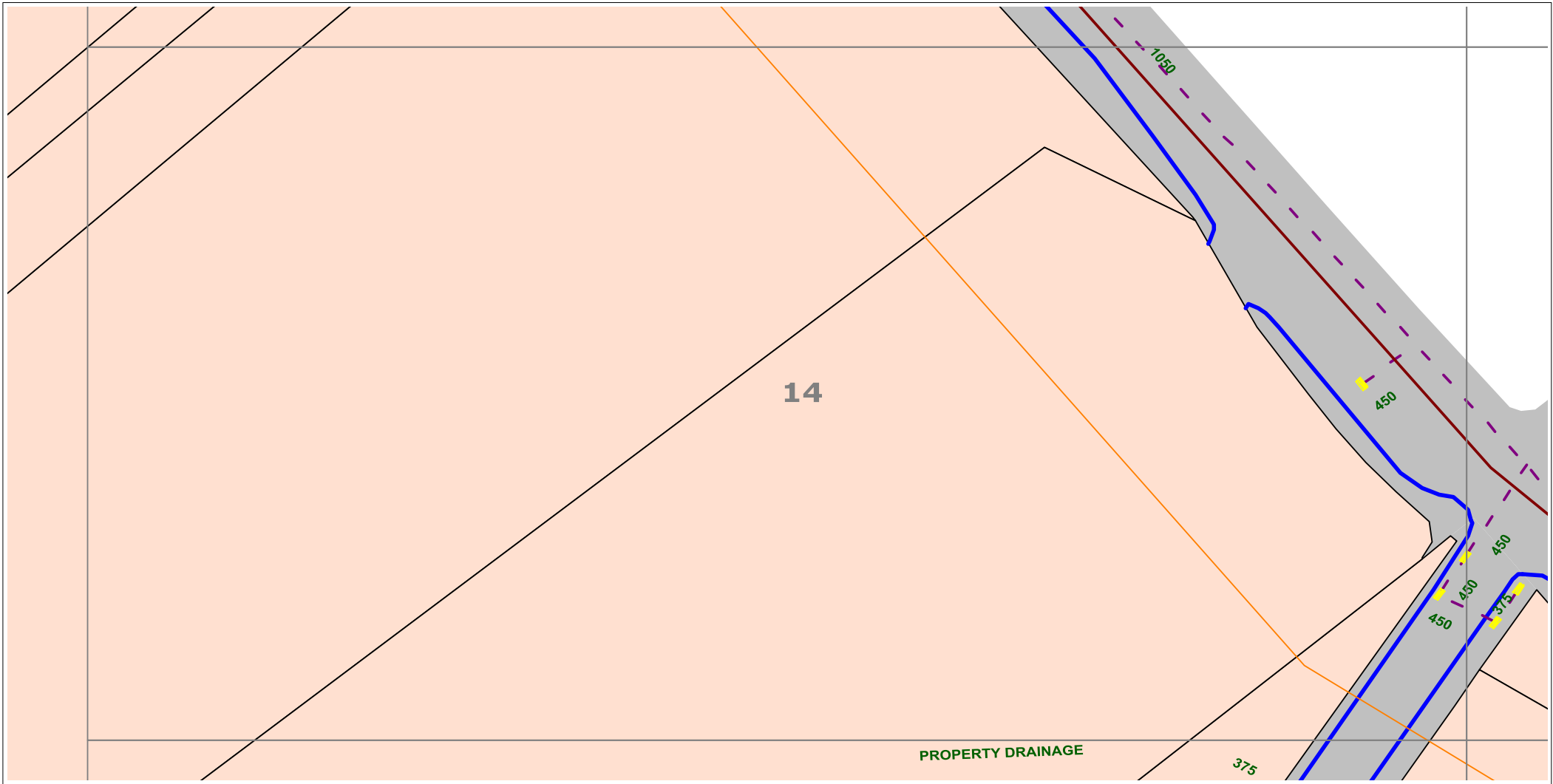
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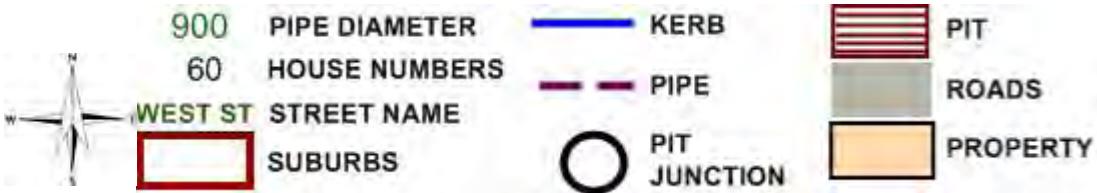


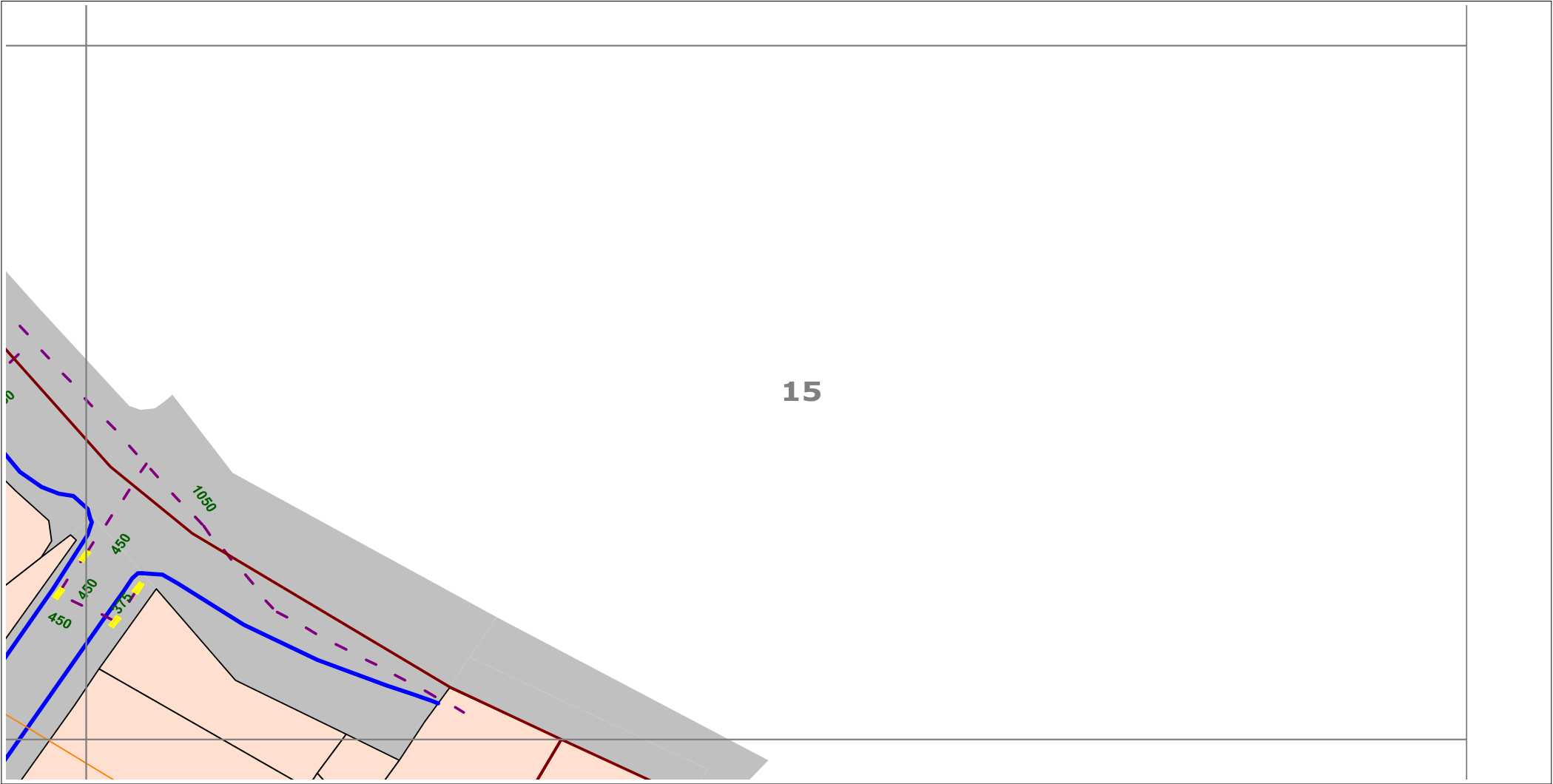
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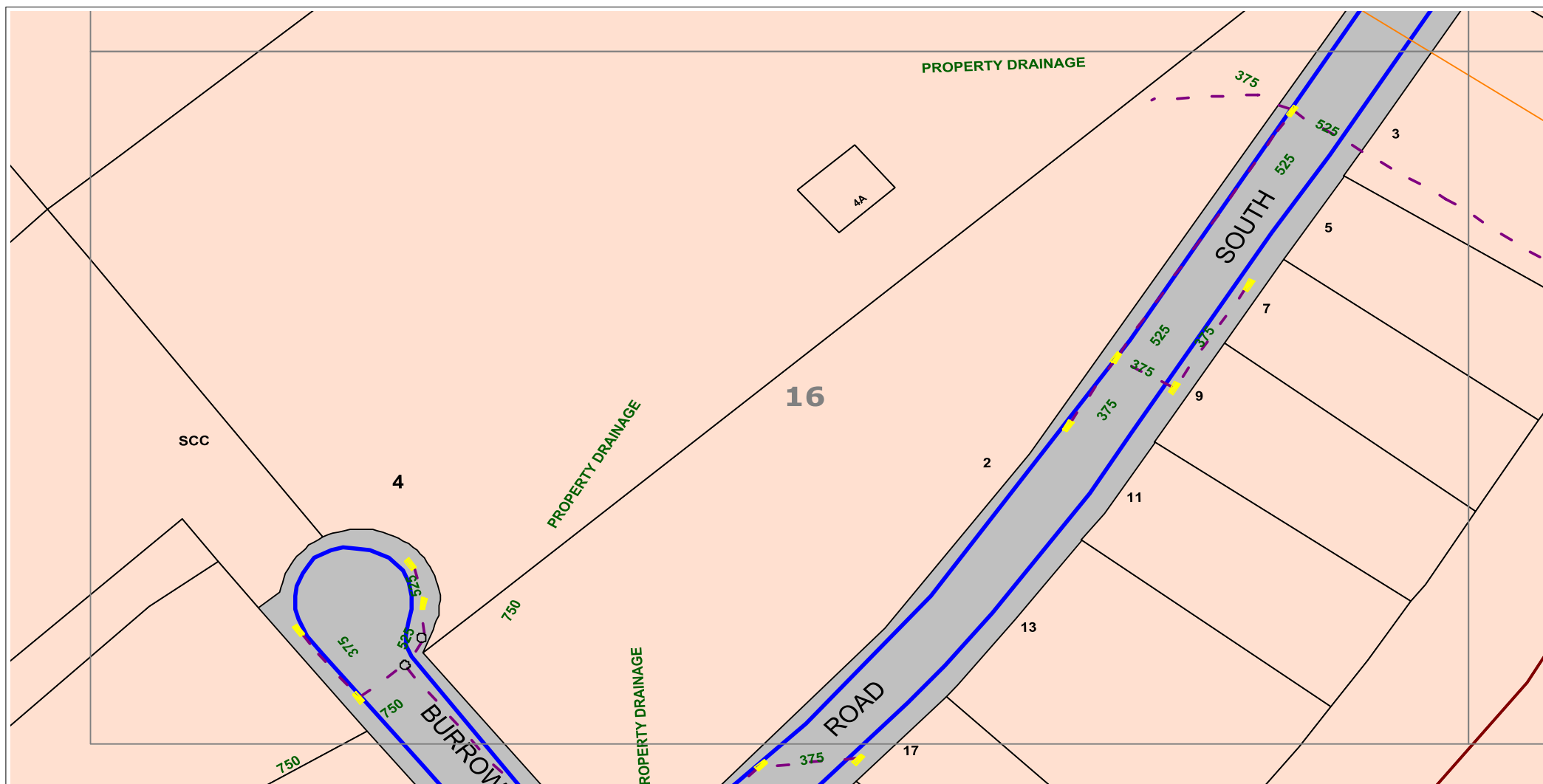
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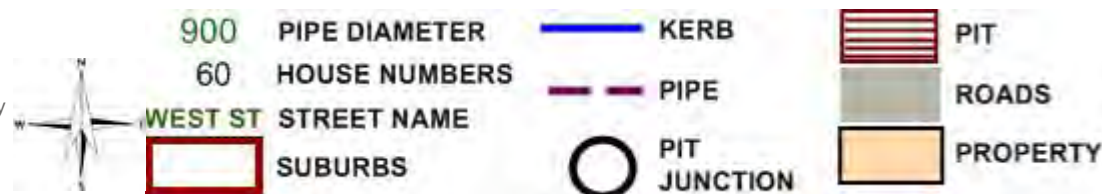


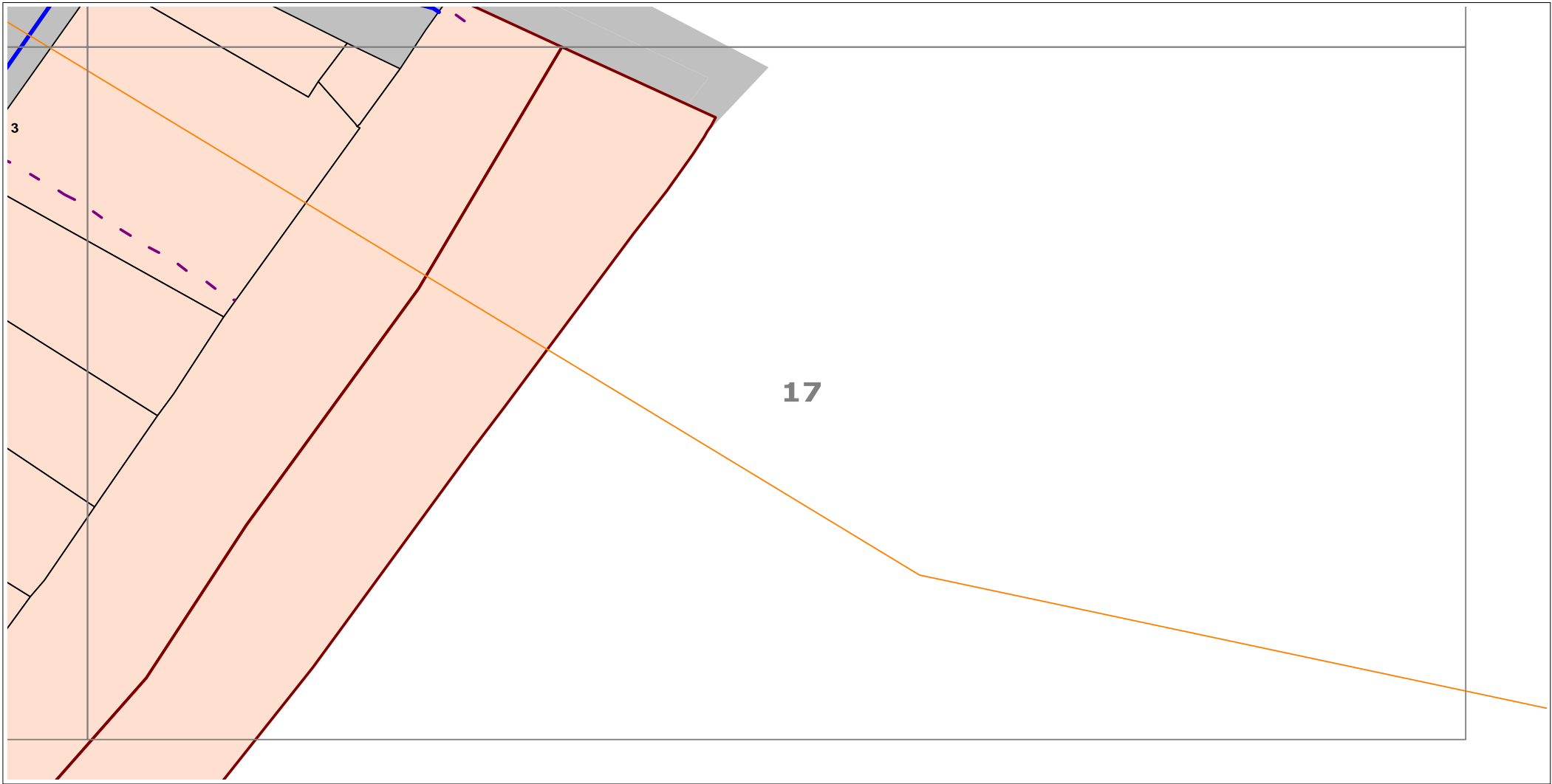
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Appendix E

Former Sydney Water Corporation Trade Waste Agreement (TWA)

Consent to Discharge Industrial Trade Wastewater

SYDNEY WATER CORPORATION

and

ALEXANDRIA LANDFILL PTY LTD

A.C.N. 098 849 971

Trading as

ALEXANDRIA LANDFILL PTY LTD

A.B.N. 26 098 849 971

ACTIVITY: GARBAGE TIP (GE06)

RISK INDEX: 05

CONSENT NO: 29304

CONNECTION NO: 2

PROPERTY NUMBER: 4059264

This **CONSENT** is made on
Executed for and on behalf of
Sydney Water Corporation

day: month: year:

By

.....
(Signature)
Sally Armstrong
Manager, Business Customer Services

In the presence of:

Witness

.....
(Signature)

Executed for and on behalf of
the **Customer**:

.....
(Print name of witness)

.....
(Signature)

By

.....
IAN MALOUF SOLE DIRECTOR/SECRETARY
(Print name and position of person signing)
who warrants s/he has sufficient authority to execute this consent.

In the presence of:

Witness

.....
(Signature)
JACQUELINE BRAUMAN
(Print name of witness)

This consent must be executed by the Customer prior to execution by Sydney Water and submitted by the Customer to Sydney Water for its consideration. Submission of a consent executed by the Customer under no circumstances obliges Sydney Water to enter into or complete the consent. Submission of an executed consent by the Customer constitutes an application for a consent which Sydney Water may in its reasonable discretion reject, or with the consent of the Customer modify any of the proposed terms thereto.

SCHEDULE 1
(SUBJECT TO PUBLIC DISCLOSURE)

TRADE WASTEWATER WHICH MAY BE DISCHARGED

1. Trade wastewater substances

- (a) The Customer may discharge trade wastewater into the Sewer in a manner whereby the substance characteristics of the trade wastewater are of a type and discharged at a rate, level or concentration equal to or less than that described in this schedule.
- (b) The Customer must not discharge trade wastewater into the Sewer in a manner whereby the trade wastewater discharged;
- (i) contains, possesses or produces a substance characteristic not provided in, or which may be determined as being contrary to that described in this schedule.
- (ii) is at or of a rate, level, or concentration not provided in, or which may be determined as being contrary to, that described in this schedule.

SUBSTANCE	LTADM (kg/day)	MDM (kg/day)	Standard (mg/L)
AMMONIA (AS N)	1.50000	25.00000	100.000
SUSPENDED SOLIDS	5.00000	20.00000	600.000
TOTAL DISSOLVED SOLIDS	450.00000	674.00000	10000.000
BARIUM	0.21000	1.00000	5.000
IRON	0.70000	4.00000	50.000

RECONCILIATION PROCEDURES:

LONG TERM AVERAGE DAILY MASS:

The Long Term Average Daily Mass is a twelve month arithmetic average of ALL daily mass discharges as calculated for each composite sample. The Daily Mass discharged is to be calculated for each of the above substances, and checked against the above Long Term Average Daily Mass (kg/day) on the basis of average concentrations of substances discharged (mg/L) over any 24 hour period as determined from composite samples, obtained by either the Customer (in accordance with Schedule 2) or Sydney Water, or a combination of sample results by both.

This average concentration (mg/L) is to be multiplied by the total discharge (kL) as recorded by the Customer's discharge flow meter over the 24 hour period in order to calculate the Daily Mass of substances discharged (kg). Exceeding the Long Term Average Daily Mass does not constitute a Breach, but may incur a Critical Mass Charge as detailed in Schedule 3.

ACCEPTANCE STANDARD:

The Composite Sample Concentration is to be determined for each of the above substances, and checked against the above Acceptance Standard (mg/L) for each sample obtained. Exceeding the Acceptance Standard constitutes a Breach and will also incur an increased Quality Charge as detailed in Schedule 3.

The Discrete Sample Concentration is to be determined for each of the substances identified at Schedule 2, 2 (b) and checked against the above Acceptance Standard (mg/L) for each sample obtained. Exceeding the Acceptance Standard constitutes a Breach.

MAXIMUM DAILY MASS:

The Daily Mass discharged is to be calculated for each of the above substances, and checked against the above Maximum Daily Mass (kg/day) on the basis of average concentrations of substances discharged (mg/L) over any 24 hour period as determined from composite samples, obtained by either the Customer (in accordance with Schedule 2) or Sydney Water, or a combination of sample results by both.

This average concentration (mg/L) is to be multiplied by the total discharge (kL) as recorded by the Customer's discharge flow meter over the 24hour period in order to calculate the Daily Mass of substances discharged (kg). Exceeding the Maximum Daily Mass constitutes a Breach.

2. The trade wastewater discharged must at all times have the following properties:

- | | | |
|----------------------------------|---|---|
| Temperature | - | Not to exceed 38 degrees Celsius. |
| Colour | - | Determined on a system specific basis |
| pH | - | Within the range 7.0 to 10.0. |
| Fibrous material | - | None which could cause an obstruction to Sydney Water's sewerage system. |
| Gross solids (other than faecal) | - | A maximum linear dimension of less than 20 mm, a maximum cross section dimension of 6 mm, and a quiescent settling velocity of less than 3 m/h. |
| Flammability | - | Where flammable and/or explosive substances may be present, the Customer must demonstrate to the satisfaction of Sydney Water that there is no possibility of explosions or fires occurring in the sewerage system. The flammability of the discharge must never exceed 5% of the Lower Explosive Limit (LEL) at 25° Celsius. |

3. Rate of discharge of waste to sewer:

- (a) Instantaneous maximum rate of gravitated discharge 6.0 litres per second
- (b) Maximum daily discharge 620.0 kilolitres
- (c) Average daily discharge 121.0 kilolitres

RECONCILIATION PROCEDURE:

The data obtained from applying these procedures is to be checked by the interface of a chart recorder to the Customer's flow metering equipment, or by the installation of flow metering equipment by Sydney Water, for a minimum of 7 days.

SCHEDULE 2
(SUBJECT TO PUBLIC DISCLOSURE)

SAMPLING, ANALYSIS, FLOW RATES AND VOLUME DETERMINATION

1. The Customer must provide and make available for the purpose of sampling and analysis;
 - (a) Sampling point located at the pretreatment discharge excluding domestic sewage prior to the point of connection to the Sewer.
 - (b) Equipment necessary to allow collection of composite automatic samples on either a flow proportional or a time basis.
2. The Customer is to undertake collection and analysis of samples in accordance with the schedule detailed below:
 - (a) Composite samples are to be obtained:
 - (i) over one full production day by combining equal volumes taken at 5 kilolitre intervals. The volumes are to be such that at least 5,000 millilitres are obtained over the full day. The reading of the flowmeter meter is to be obtained at the commencement and conclusion of the sampling day.
 - (ii) on 12 July 2011 and every 22 days thereafter. If trade wastewater is not discharged on this day, then the sample is to be taken on the next day that trade wastewater is discharged. Trade wastewater includes all non-domestic wastewater discharged to sewer from the premises, including cleaning waste.
 - (b) Discrete samples are to be obtained as detailed below, and analysed according to the procedures and methods specified in Sydney Water's published analytical methods, to determine the concentrations or levels of the following substance characteristics:

pH	at the start and finish of each sample day
AMMONIA (AS N)	at the finish of each sample day
 - (c) Composite samples are to be analysed according to the procedures and methods specified in Sydney Water's published analytical methods, or methods otherwise agreed to and detailed hereunder, to determine the concentrations or levels of the following substance characteristics:

AMMONIA (AS N)
SUSPENDED SOLIDS
TOTAL DISSOLVED SOLIDS
BARIUM
IRON
 - (d) The Customer, or the laboratory contracted by the customer, is to submit results of analyses to Sydney Water within 21 days from the date the sample was taken. All analysis results are to be submitted on the sample analysis report provided as appendices 1 and 2 to this Consent OR in such format as may be specified from time to time by Sydney Water.
 - (e) All data requested on the sample analysis report must be provided.
 - (f) Sydney Water must be notified in writing within 7 days of;
 - (i) any failure to obtain samples in accordance with the provisions of Schedule 2; or
 - (ii) any loss of any analytical data.Where data is unavailable, lost or not provided, the Quality Charge and Critical Substance Charge, as detailed in Schedule 3, will be assessed on the basis of the highest Composite Sample concentration recorded in the 12 months prior to the date of the missing sample data.
3. The volume of wastewater discharged must be obtained from the reading of the total flow on the Customer's flowmetering system.

The rate of waste discharged is to be obtained by the reading of the instantaneous flow rate indicator on

the Customer's flowmetering system, or from any chart recorder interfaced to the Customer's flowmetering system.

The flowmetering system is to be calibrated at least annually at the Customer's expense, by a person or company approved by Sydney Water and a copy of the calibration certificate supplied to Sydney Water within one month of the certificate being received by the Customer.

If the Customer's flowmetering system fails to record data for any period, Sydney Water is to be advised in writing by the Customer within 7 days of any such failure becoming known by the Customer. An estimate of any data not recorded is to be made as follows:

Average of the waste discharged, registered for the four weeks before and/or after the failure to record.

SCHEDULE 3

(SUBJECT TO PUBLIC DISCLOSURE)

PAYMENTS

The charges are effective from 1 July 2011 and will continue until otherwise advised by Sydney Water.

All trade waste fees and charges are subject to CPI adjustments from 1 July each year in accordance with Determination No 1, 2008 made by the Independent Pricing and Regulatory Tribunal (IPART).

1. CHARGES FOR TRADE WASTEWATER DISCHARGE

Sydney Water will conduct a reading of the Customer's discharge meter at approximately 90 day intervals. The volume of trade wastewater discharged for the period since the previous reading will be calculated.

Charges are based on the Daily Mass calculated from composite samples and corresponding meter readings for each sampling day in the billing period, and calculated in accord with (c), (d), (e), and (f) below. The charge for each sampling day is then multiplied by a flow weighting factor to give a flow weighted charge. The total charge for each substance for the billing period is equal to the sum of the flow weighted charges for the billing period.

Total Charge = the sum of the flow weighted charges for the billing period

Flow Weighted Charge = (charge for all sample days) x (flow weighting factor) and:

$$\text{Flow Weighting Factor} = \frac{(\text{total volume discharged during billing period})}{(\text{sum of volumes discharged during all sample days during billing period})}$$

In this formula volume discharged refers to the volume of trade wastewater discharged.

(a) Mass Discharged:

For each substance, the Mass Discharged is calculated by multiplying the Composite Sample concentration by the Trade Wastewater discharge for that sample day.

(b) Chargeable Tradewaste Mass:

(i) For the following substances, the Chargeable Tradewaste Mass is equal to the Mass Discharged:

SUBSTANCE
BARIUM
IRON

(ii) For the following substances, the Chargeable Tradewaste Mass is calculated by subtracting the Equivalent Domestic Mass from the Mass Discharged. The Equivalent Domestic Mass is defined as the Domestic Concentration multiplied by the Trade Wastewater discharge.

SUBSTANCE	DOMESTIC CONCENTRATION mg/L
AMMONIA (AS N)	35.000
SUSPENDED SOLIDS	200.000
TOTAL DISSOLVED SOLIDS	450.000

If the resulting Chargeable Tradewaste Mass is zero or negative, then no Quality or Critical Mass charges will apply for that substance for that sample day.

(iii) Where a Critical Mass Charge applies, the Chargeable Tradewaste Mass will be reduced in accord with paragraph (d) (iv), below.

(c) Quality Charge:

- (i) For the following substances, the Quality Charge is determined by multiplying the Chargeable Tradewaste Mass by the Rate for that substance:

SUBSTANCE	STANDARD MASS CHARGING RATE \$ per kg
AMMONIA (AS N)	2.0730
SUSPENDED SOLIDS	0.8870
TOTAL DISSOLVED SOLIDS	0.0059
BARIUM	13.8970
IRON	1.3840

- (ii) For the following substances, the Quality Charge is determined by multiplying the Chargeable Tradewaste Mass by the Rate, where the Rate is a function of the composite sample concentration recorded for that sample day:

SUBSTANCE	STANDARD MASS CHARGING RATE \$ per kg
N/A	N/A

(d) Critical Mass Charge:

- (i) Where the customer has been notified that a given substance is Critical or Over Capacity and the Mass Discharged is greater than the 1.5 times the Long Term Average Daily Mass (LTADM) for that substance, then the Chargeable Critical Mass is calculated by subtracting 1.5 times LTADM from the Mass Discharged, except where (ii), below, applies.
- (ii) Where the customer has been notified that a given substance is Critical or Over Capacity and the Equivalent Domestic Mass is greater than 1.5 times the LTADM the Chargeable Critical Mass is calculated by subtracting the Equivalent Domestic Mass from the Mass Discharged.
- (iii) Where the customer has been notified that a given substance is Critical or Over Capacity and paragraph (i) or (ii) above applies, the Chargeable Tradewaste Mass calculated in (b), above, will be reduced by the Chargeable Critical Mass.
- (iv) The Critical Mass Charge Rate is a function of the Rate and Mass Discharged and LTADM for that substance:

SUBSTANCE STATUS	CHARGING RATE MULTIPLIER	MASS AFFECTED BY CHARGING RATE MULTIPLIER
Critical	2.00	Mass discharged >1.50 LTADM
Over Capacity	3.00	Mass discharged >1.50 LTADM

- (v) The Critical Mass Charge is the product of the Chargeable Critical Mass, the rate for that substance and the charging rate multiplier.

(e) Concentration Breach Charge:

Where the Composite Sample concentration is greater than the Acceptance Standards specified in Schedule 1 (with the exception of sulphate), any charges calculated in (c) or (d) above will be doubled for that sampling day.

(f) Failure to collect required samples:

Where the Customer fails to collect and analyse samples in accord with this consent the above charges will be assessed on the basis of the highest composite concentrations recorded for any billing period within the previous 12 months and the average daily discharge for the current billing period.

2. CHARGES FOR INSPECTIONS

- (a) If, in the opinion of Sydney Water, it is necessary for a Customer Service Representative to exercise rights under clause 6.1, the Customer will incur no liability for payment for any such exercise unless Customer Service Representative has already exercised rights under clause 6.1 on 5 occasions within a period of one year.
- (b) If it is necessary, in the opinion of Sydney Water, to carry out more than 5 inspections within a period of one year, the additional inspections will be charged. The rate for additional inspections is \$78.50 per

hour per Sydney Water employee attending, up to a maximum of two employees, with a minimum charge of \$39.55.

- (c) Any inspection required following up an alleged breach or a default notice will result in a fee payable even if the number of inspections nominated in paragraph 2 (a) has not been exceeded.
- (d) For the purposes of 2 (a) and 2 (b), above, one year is defined as the period from 1 July to 30 June the following year.

3. CHARGES FOR ADMINISTRATION OF TRADEWASTE CONSENT

A consent fee of \$591.25 per quarter is payable from 1 July 2011.

4. CHARGES FOR VARIATION OR RENEWAL OF TRADEWASTE CONSENT

Where a Variation is made to the Consent a fee of \$343.35 will be payable. There will be no charge for renewal.

5. CHARGES FOR PROCESSING GREASE TRAP WASTE

Charges for processing grease trap waste under the 'Wastesafe' Management System are as follows:
(Not Applicable)

6. PAYMENT OF FEES AND CHARGES

An account will be issued for all fees and charges. Any fees or charges payable by the Customer must be paid by the Customer within 30 days of the receipt by the Customer of the account detailing those fees and charges.

SCHEDULE 4
ADDITIONAL REQUIREMENTS

1. EFFLUENT IMPROVEMENT PROGRAM

N/A

2. WASTE MANAGEMENT PLAN

The existing pre-treatment will result in the generation of 0.1 tonne per annum of waste substances in the form of a sludge containing generally solids. The waste substances are, and will continue to be disposed of, in compliance with the requirements of the Department of Environment and Climate Change.

3. OTHER REQUIREMENTS

1) Tipping Bucket Rain Gauge

The tipping bucket rain gauge is to be maintained in a clean and working manner at all times.

The rain gauge is to be set at a 203 mm rainfall catch and after 2 tips the controller will set the pump timer to a 4 hour time delay for discharge of the first flush.

The rain gauge is to be calibrated at least annually at the Customer's expense, by a person or company approved by Sydney Water and a copy of the calibration certificate supplied to Sydney Water within one month of the certificate being received by the Customer.

4. BACKFLOW REQUIREMENTS

a) A Backflow Containment Device must be installed and maintained at the water meter outlet/property boundary in accordance with Sydney Waters Backflow Containment Policy.

b) Individual Backflow and Zone protection is required on any tap located within 5 metres of any Trade Waste Apparatus

SCHEDULE 5
APPARATUS, PLANT AND EQUIPMENT

EXISTING: COLLECTION WELL 30 kL
 1 X 80 KL BIOLOGICAL TREATMENT PLANT (BATCH DISCHARGE)
 1 X 100 KL biological treatment plant (batch discharge)
 1 X RAINFALL SENTINEL MEA 2211
 1 X ABB MAGMASTER ELECTROMAGNETIC FLOW METER

PROPOSED: n/a

SCHEDULE 6
SPECIAL CONDITIONS

1. DANGEROUS DISCHARGES

In this Schedule, the term "may pose a danger to the environment, the Sewer or workers at a sewage treatment plant";

- (a) means an occurrence whereby matter is discharged to the Sewer which either alone or in conjunction with other matter discharged cannot be adequately treated or may cause corrosion or a blockage, explosion or the production of dangerous gases in the Sewer or may adversely affect the operation of a sewer or sewage treatment plant; and
- (b) includes, but not so as to restrict the generality of paragraph (a), matter or substances, which is or are
 - (i) toxic or corrosive;
 - (ii) petroleum hydrocarbons;
 - (iii) heavy metals;
 - (iv) volatile solvents;
 - (v) phenolic compounds;
 - (vi) organic compounds.

2. UNINTENDED DISCHARGES

- (a) For purposes of avoiding unintended discharges to the Sewer or the stormwater drainage system, all matter and substances on the Premises must be processed, handled, moved and stored in a proper and efficient manner.
- (b) Any substance on the Premises which, if discharged to the Sewer, may pose a danger to the environment, the Sewer or workers at a sewage treatment plant or may harm any sewage treatment process must be handled, moved and stored in areas where leaks, spillages or overflows cannot drain by gravity or by automated or other mechanical means to the Sewer or the stormwater drainage system.

3. NOTIFICATION

In the event of a discharge of matter to the sewer that poses or may pose a danger to the environment, the Sewer or workers at a sewage treatment plant the Customer must immediately notify:

(a) MALABAR STP CONTROL ROOM TEL: (02) 9931 8319 FAX: (02) 9931 8366

(b) BUSINESS CUSTOMER SERVICES
DACEYVILLE OFFICE: TEL: (02) 9694 6500 FAX: (02) 9662 0419

(c) BUSINESS CUSTOMER SERVICES EMERGENCY CONTACT
CITY & EAST TEL: 0408 256 470

(d) BUSINESS CUSTOMER SERVICES EMERGENCY CONTACT
ALTERNATE CONTACT TEL: 0418 221 516

4. PROVISION OF SAFE ACCESS

The Customer shall provide safe access to Sydney Water employees visiting the site. In the event that unsafe conditions are identified the Customer must take reasonable steps to correct unsafe conditions and create safe access.

5. ELECTRONIC REPORTING OF SAMPLE ANALYSIS RESULTS

Sydney Water reserves the right to vary this consent to specify the option of reporting by electronic mail as outlined in Schedule 2, 2 (d).

SCHEDULE 7

- 1. Premises for which Consent is granted**
10-34 ALBERT ST, ST PETERS NSW 2044
- 2. Industrial or other commercial activities for which Consent granted**
GARBAGE TIP (GE06)
- 3. Discharge point for which Consent granted**
BOUNDARY TRAP
- 4. The date for purposes of clause 3.1 is 1 July 2011**
- 5. The period for purposes of clause 3.2 is 24 months.**
- 6. The receiving Treatment Plant is MALABAR Sewage Treatment Plant**

SCHEDULE 8
NOTICES AND COMMUNICATION ADDRESSES

SYDNEY WATER:	CUSTOMER SERVICE REPRESENTATIVE BUSINESS CUSTOMER SERVICES 71 GARDENERS RD, DACEYVILLE 2032	TEL: (02) 9694 6500 FAX: 1300 364 403 A.H: 132 092
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CUSTOMER:	GENERAL MANAGER ALEXANDRIA LANDFILL PTY LTD PO BOX 1040 MASCOT NSW 1460	TEL: 9519 9999 FAX: 9516 5559
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SCHEDULE 9
AUTHORISED OFFICERS

SYDNEY WATER:	MANAGER BUSINESS CUSTOMER SERVICES 71 GARDENERS RD, DACEYVILLE 2032	TEL: (02) 9694 6500 FAX: 1300 364 403 A.H: 132 092
----------------------	--	--

Postal Address: PO BOX 399
PARRAMATTA NSW 2124

Email: Sally.armstrong@sydneywater.com.au

CUSTOMER:	GENERAL MANAGER ALEXANDRIA LANDFILL PTY LTD 10-36 ALBERT STREET ST PETERS NSW 2044	TEL: 9519 9999 FAX: 9516 5559
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Email:

SCHEDULE 10
NOMINATED REPRESENTATIVES

SYDNEY WATER:	BUSINESS MANAGER - SALES & SERVICE BUSINESS CUSTOMER SERVICES 71 GARDENERS RD, DACEYVILLE 2032	TEL: (02) 9694 6500 FAX: 1300 364 403 A.H: 132 092
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CUSTOMER:	CHRISTOPHER BIGGS ALEXANDRIA LANDFILL PTY LTD 10-36 ALBERT STREET ST PETERS NSW 2044	TEL: 9519 9999 FAX: 9516 5559
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APPENDIX 1
SAMPLE ANALYSIS REPORT (COMPOSITE) DISCHARGE METER

Consent Number: 29304	
Company Name: ALEXANDRIA LANDFILL PTY LTD	
Company Address: 10-34 ALBERT ST, ST PETERS NSW 2044	
Sample Type:	
<input type="checkbox"/> 6 (composite, manual time based)	Start date: ____/____/____
<input type="checkbox"/> 7 (composite, manual flow proportional)	Finish date: ____/____/____
<input type="checkbox"/> 8 (composite, automatic time based)	Start time: ____:____ am/pm
<input type="checkbox"/> 9 (composite, automatic flow proportional)	Finish time: ____:____ am/pm
grabs taken in sample period: _____	Initial meter reading: _____ kL
sample intervals min/kL _____	Final Meter reading: _____ kL
mL per grab: _____	Volume discharged: _____ kL

Laboratory:		
	Acceptance Standard	Measured Units
Substance	Acceptance Standard (mg/L)	Measured Concentration(mg/L)
AMMONIA (AS N)	100.000	
SUSPENDED SOLIDS	600.000	
TOTAL DISSOLVED SOLIDS	10 000.000	
BARIUM	5.000	
IRON	50.000	

COPY OF ORIGINAL ANALYTICAL LABORATORY REPORT TO BE ATTACHED

NOTE: LABORATORY REPORT MUST CERTIFY NATA REGISTRATION FOR EACH ANALYSIS

Comments: _____

Customer Signature: _____ Date: ____/____/____

Designation: _____

OFFICE USE ONLY

TERRITORY: D7

Sample No:

--	--	--	--	--

PLEASE RETURN TO:
businesscustomers.labdata@sydneywater.com.au

APPENDIX 2
SAMPLE ANALYSIS REPORT (DISCRETE SAMPLE)

Consent Number:	29304
Company Name:	ALEXANDRIA LANDFILL PTY LTD
Company Address:	10-34 ALBERT ST, ST PETERS NSW 2044

Sample Type: DISCRETE

Date

Time

Laboratory:

Substance	Acceptance Standard (units or mg/L)	Measured Units or Concentration.
pH at start	7 - 10	
pH at finish	7 - 10	
NH3 at finish	100.000	

COPY OF ORIGINAL ANALYTICAL LABORATORY REPORT TO BE ATTACHED

NOTE: LABORATORY REPORT MUST CERTIFY NATA REGISTRATION FOR EACH ANALYSIS

Comments: _____

Customer Signature: _____ Date: ____/____/____

Designation: _____

OFFICE USE ONLY

TERRITORY: D7

Sample No:

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PLEASE RETURN TO
businesscustomers.labdata@sydneywater.com.au

Appendix F

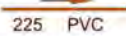








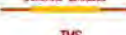





Sewerage System Plans

Guide to reading Sydney Water DBYD Plans









Legend

Sewer

Sewer Main (with flow arrow & size type text)	
Disused Main	
Rising Main	
Maintenance Hole (with upstream depth to invert)	
Maintenance Hole with Overflow	
Ventshaft EDUCT	
Ventshaft INDUCT	
Property Connection Point (with chainage to downstream MH)	
Concrete Encased Section	
Terminal Maintenance Shaft	
Maintenance Shaft	
Rodding Point	
Lamphole	
Vertical	
Pumping Station	

Pressure Sewer

Pressure Sewer Main	
Pump Unit (Alarm, Electrical Cable, Pump Unit)	
Property Valve Boundary Assembly	
Stop Valve	
Reducer / Taper	
Flushing Point	



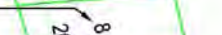


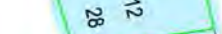

Vacuum Sewer

Pressure Sewer Main	
Division Valve	
Vacuum Chamber	
Clean Out Point	






















Stormwater

Stormwater Pipe	
Stormwater Channel	
Stormwater Gully	
Stormwater Maintenance Hole	




Property Details

Boundary Line	
Easement Line	
House Number	
Lot Number	
INFORMATION ELSEWHERE see Guide ref 12345 (work-as-executed diagram available via website)	
Proposed Land	
Sydney Water Heritage Site (please call 132 092 and ask for the Heritage Unit)	

Water

WaterMain - Potable (with size type text)	
Disconnected Main - Potable	
Proposed Main - Potable	
Water Main - Recycled	
Special Supply Conditions - Potable	
Special Supply Conditions - Recycled	
Restrained Joints - Potable	
Restrained Joints - Recycled	
Hydrant	
Maintenance Hole	
Stop Valve	
Stop Valve with By-pass	
Stop Valve with Tapers	
Closed Stop Valve	
Air Valve	
Valve	
Scour	
Reducer / Taper	
Vertical Bends	
Reservoir	
Recycled Water is shown as per Potable above. Colour as indicated	

Private Mains

Potable Water Main	
Recycled Water Main	
Sewer Main	
Symbols for Private Mains shown grey	

Pipe Types

ABS	Acrylonitrile Butadiene Styrene	AC	Asbestos Cement
BRICK	Brick	CI	Cast Iron
CICL	Cast Iron Cement Lined	CONC	Concrete
COPPER	Copper	DI	Ductile Iron
DICL	Ductile Iron Cement (mortar) Lined	DIPL	Ductile Iron Polymeric Lined
EW	Earthenware	FIBG	Fibreglass
FL BAR	Forged Locking Bar	GI	Galvanised Iron
GRP	Glass Reinforced Plastics	HDPE	High Density Polyethylene
IBL	Internal Bitumen Lined	MS	Mild Steel
MSCL	Mild Steel Cement Lined	PE	Polyethylene
PC	Polymer Concrete	PP	Polypropylene
PVC	Polyvinylchloride	PVC - M	Polyvinylchloride, Modified
PVC - O	Polyvinylchloride, Oriented	PVC - U	Polyvinylchloride, Unplasticised
RC	Reinforced Concrete	RC-PL	Reinforced Concrete Plastics Lined
S	Steel	SCL	Steel Cement (mortar) Lined
SGW	Salt Glazed Ware	SPL	Steel Polymeric Lined
SS	Stainless Steel	STONE	Stone
VC	Vitrified Clay	WI	Wrought Iron
WS	Woodstave		

Further Information

Please consult the [Dial Before You Dig enquiries](#) page on the Sydney Water website

For general enquiries please call the Customer Contact Centre on **132 092**

In an emergency, or to notify Sydney Water of damage or threats to its structures, call 13 20 90 (24 hours, 7 days)

