ARCADIS Design & Consultancy for natural and built assets

PROSPECT SOUTH PRECINCT

Services and Water Cycle Management Review

21 FEBRUARY 2018

Incorporating Hyder

OFFICE OF STRATEGIC LANDS (OSL) ON BEHALF OF MINISTER FOR PLANNING PROSPECT SOUTH PRECINCT

Author	Susumu Yamamoto	
Checker	Rob Lenferna	
Approver	Dashpreet Singh	
Report No	01	
Date	21/02/2018	
Revision Text	05	

REVISIONS

Revision	Date	Description	Prepared by	Approved by
01	24/11/17	For Internal Review	SY	DS
02	12/01/18	First Draft	SY	DS
03	22/01/18	Second Draft	SY	DS
04	16/02/18	Final Draft	SY	DS
05	21/02/18	Final	SY	DS

CONTENTS

APPENDICES

1 INTRODUCTION

Arcadis Australia Pacific Pty Ltd has been engaged by the Office of State of Lands (OSL), NSW Department of Planning and Environment (DoP) for a site at Reservoir Road Prospect, hereafter referred to as the site.

The OSL proposes to submit a Planning Proposal to Blacktown City Council for the rezoning of the subject land, which is primarily owned by the Minister for Planning. It is the intent of the planning proposal to rezone the site from rural purposes to IN1 Industrial to support a mix of commercial and employment land uses.

Contract has been made with Blacktown City Council who have provided advice (via a letter of advice on 17 March 2017) on the studies to be carried out to meet the needs for the Planning Proposal, namely:

- An infrastructure services report demonstrating there is sufficient capacity to service the area in terms of water, sewer and electricity
- A water cycle management strategy for stormwater drainage

It is the intent of this report to provide a high-level desktop study that demonstrates the viability of the rezoning of the site with respect to utility services, roads, earthworks and stormwater.

This report undertakes a review of all available utilities in proximity of the site required to service a new industrial development. This has involved liaison with all utility authorities and lodging applications with Sydney Water and Endeavour Energy to determine the current capacity of the existing network to service the site.

This report also considers the Council stormwater standards and identifies a conceptual means of water cycle management including stormwater drainage, flooding, water quality and on-site detention.

This report details the following civil infrastructure items:

- **General Services:**
  - Locations of existing services based on information gathered from DBYD enquiry and the likely connection points to supply the site
  - Potential service upgrades required to ensure adequate capacity to the site
  - Status of engagement with Water Servicing Coordinator (WSC) and Accredited Service Provider Level 3 (ASP3) designer to prepare and submit a Feasibility Enquiry to Sydney Water Corporation (SWC) and a Connection Enquiry to Endeavour Energy (EE)
  - Timing of service upgrades
  - Land requirements - location of major service infrastructure requiring dedication of land
  - Costs to the site
  - Letters/correspondence confirming availability of supply.
- **Road Network:**
  - Road Hierarchy
  - Access Points
  - Location of civil structures such as bridges, major culverts, retaining walls etc
  - Requirements for future road reserve and road carriageway widths, and stormwater drainage requirements

- **Stormwater Management:**
  - Define internal and external catchments
  - Flood extents for 100-year ARI
  - Major trunk drainage routes and location of easements - existing and proposed
  - Address water quality issues and On-Site Detention requirements in accordance with accepted local practice.

This report should be read in conjunction with the following:

- *Greystanes Creek Retarding Basins* - Design Report, October 1987 by Willing & Partners Consulting Engineers.

1.1 Locality & Land Ownership

The area subject to this report is in the Blacktown Local Government Area between the Western Motorway to the north, the Southern Employment Lands to the south, Clunies Ross Street to the east and Prospect Highway to the west.

The site has a combined area of approximately 12.3 ha (not including roads) and is owned by the DoP, RMS and a couple of small private land ownerships.
See **Figure 1**.

Figure 1 *Prospect South – Locality Map and Land Ownership*

2 GENERAL SERVICES

The following asset owners are located within the vicinity of the site:

- Sewer - Sydney Water
- Water - Sydney Water
- Gas - Jemena
- Electrical – Endeavor Energy
- Telecommunications - Telstra
- Telecommunications - Optus

2.1 Sewer

The site drains to the Northern Suburbs Ocean Outfall System (NSOOS) Sec 9-13. Refer attached SKC-00-002 in Appendix A. Reticulation for the site will likely connect into the NSOOS Carrier, along the south-eastern boundary adjacent Girraween Creek (Greystanes Creek).

A water service coordinator has been engaged and a feasibility Section 73 application was lodged; Sydney Water confirm that the site can be serviced by existing sewer infrastructure with minor extensions. Refer to Appendix E for the feasibility letter from Sydney Water.

Sydney Water advised that the site must connect upstream of the hydro brake (i.e. the twin 1800mm sewer mains) located to the east, refer to **Figure 2** below.

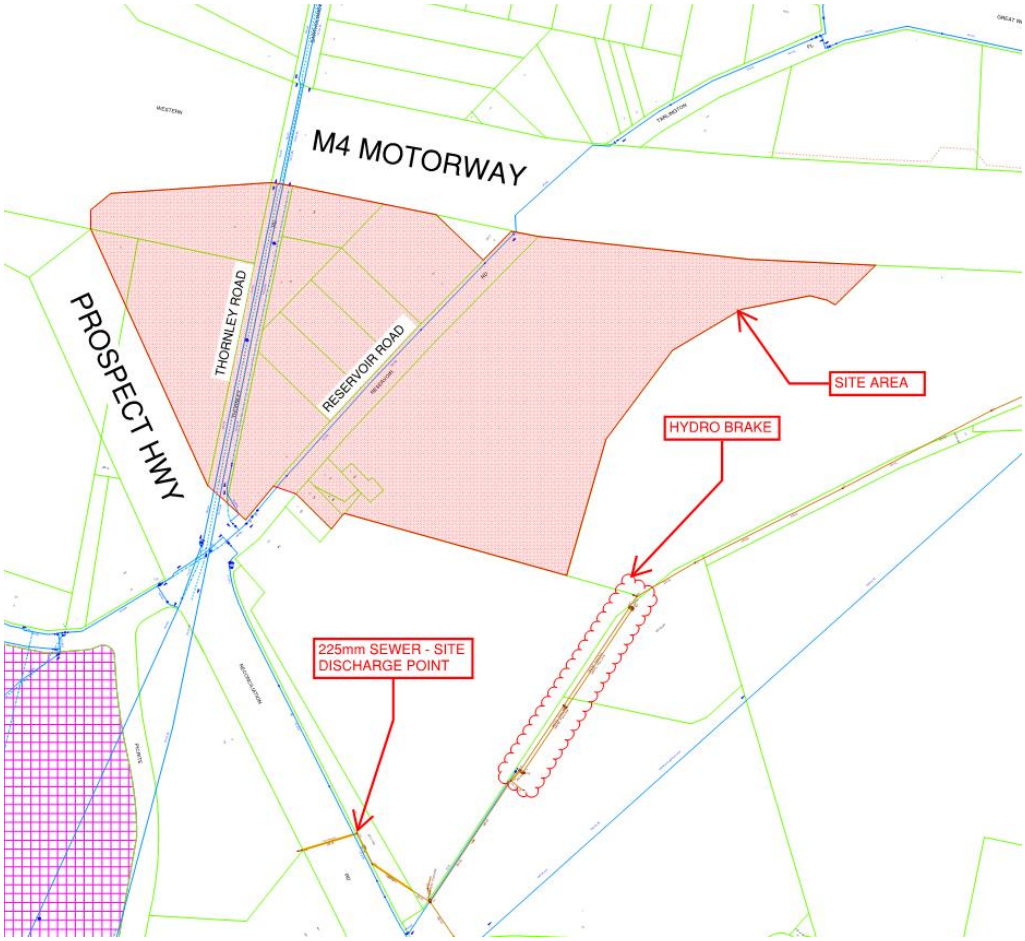


Figure 2 *Prospect South – Site Discharge Point for Sewer (source DBYD)*

A sewer extension will be required to service the site from the 225mm main located at the north-east corner of Prospect Highway and Foundation Place. The portion of the site east of Reservoir Road falls towards Girraween Creek. Due to the level difference between Reservoir Road, it is anticipated that a pump out system will need to be constructed at the low point to bring sewer back up the level of Reservoir Road.

A copy of the Sydney Water feasibility letter has been included in Appendix E for reference.

2.2 Water

Several existing water mains are located within or adjacent current road reserves and easements throughout the site. Refer attached SKC-00-003 in Appendix A. These mains include trunk mains from Prospect Reservoir which service the areas of Blacktown; north of the Great Western Highway.

Water Infrastructure in the area consists of:

- 500mm diameter CICL main running along the centre of Thornley Road
- 750mm diameter SCL main running along the centre of Thornley Road
- A discontinued main running along the western side of Thornley Road
- 300mm diameter CICL main running along the northern side of Reservoir Road
- 1200mm diameter SCL main in an easement running adjacent to the south-eastern corner of the site adjacent Girraween Creek.

A water service coordinator has been engaged and a feasibility Section 73 application was lodged with Sydney Water to ascertain the likely connection points for water. Sydney Water confirm that the site can be serviced by existing infrastructure. The industrial subdivision shall be serviced via extensions from the existing 300mm watermain in Reservoir Road. The 500mm and 750mm mains in Thornley Road are not available for connection.

2.3 Gas

Neil Hilton from Jemena stated via email on 15 January 2018 that gas supply is currently not available to the site. The nearest gas main is an existing 100mm high pressure (1050kPa) - steel main to the east of the site running along Clunies Ross Street. Refer attached SKC-00-004 in Appendix A.

In subsequent discussions with Jemena, they mentioned that constructing a lead-in supply from this main to the site through what is currently Council owned vacant land is not an option Jemena wish to pursue. There are no other suitable gas supply points to Jemena's network located east of the site. The next closest network to the west is Eastern Creek which would require extensive lead-in works.

Associated costs can be provided once actual loads and consumers are identified. It is anticipated that there will be minimal consumption of gas in the site.

2.4 Electrical

A level 3 Accredited Service Provider (ASP3) was engaged and a formal technical enquiry to Endeavor Energy was lodged. Endeavor Energy (EE) confirmed that electrical supply is available to the site. Refer to Appendix D for a copy of the Technical Inquiry from Endeavour Energy.

Once the works have been satisfactorily completed and electrified, the on-site reticulation will be owned and maintained by Endeavor Energy as part of its electricity distribution network.

2.4.1 Estimated Load

The estimated load of the development has been determined at a high level using square metre rates. Endeavour Energy (EE) specify 40VA/sqm of land area for industrial developments (EE standard MDI0028). Assuming that 45% of the land area is zoned as road and parks, with the remaining 55% of the land area to be zoned as industrial, and the overall land area as approximately 122,500sqm, the estimated load is:

122,550sqm x 55% x 40VA/sqm = 2.7MVA

Powered services outside of the industrial zoning may be required, such as pump stations, and consequently the final estimate for the purpose of this study was taken as 3MVA. Note, this estimate is subject to further development details as they occur, e.g. types and density of industrial customers, and may change.

2.4.2 Existing Electrical Infrastructure and Easements

With reference to **Figure 3** below, there are four existing 11kV underground feeders adjacent to the development (on the corner of Prospect Highway and Reservoir Road) and one 11kV overhead feeder (#B207) that runs along the frontages of the development on Thornley Road & Reservoir Road. EE have advised that:

- Three of the 11kV underground feeders are dedicated to large customers and cannot be used (#35002, #35003, #35012)
- The remaining 11kV underground feeder (#35011) currently has 2.8MVA capacity
- The 11kV overhead feeder (#B207) currently has 2.7MVA capacity however it is restricted to 1.0MVA by the supplying zone substation's own capacity
- There are currently no applications by other parties to consume the above capacity

The total currently available capacity on EE's nearby 11kV network is 3.8MVA, and therefore no significant upgrades to EE's network beyond the development boundaries are expected to be required.

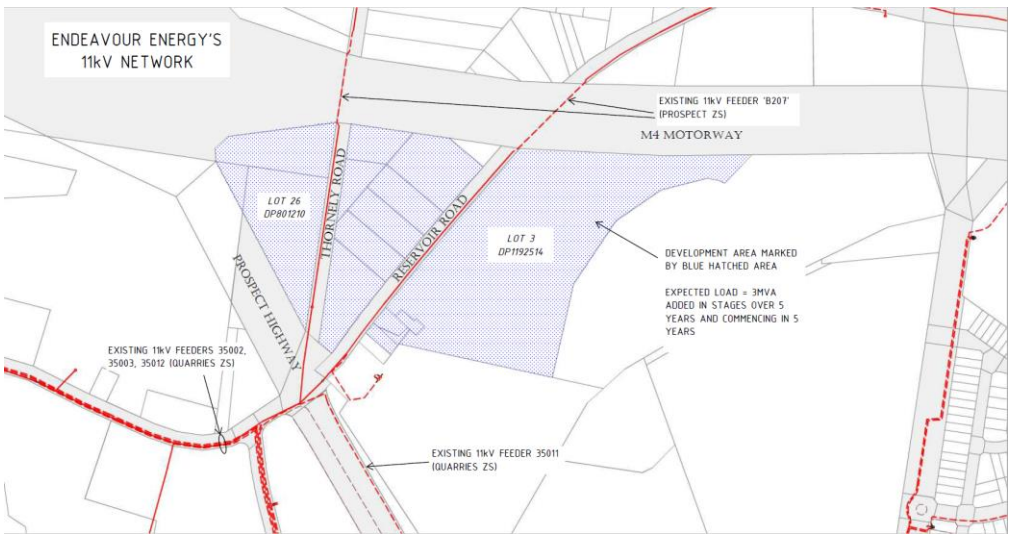


Figure 3 *Prospect South – Endeavour Energy 11kV Network*

There are three existing EE 33kV underground transmission feeders that run the length of Reservoir Road and cross under the M4 motorway. EE have advised that there are currently no works proposed on these feeders and they are expected to remain in service for the foreseeable future. Refer to the **Figure 4** below and attached SKC-00-005 in Appendix A. Roadworks on Reservoir Road will need to be sensitive to

the cable locations otherwise protection (e.g. concrete encasement) or relocation of the cables may be required.

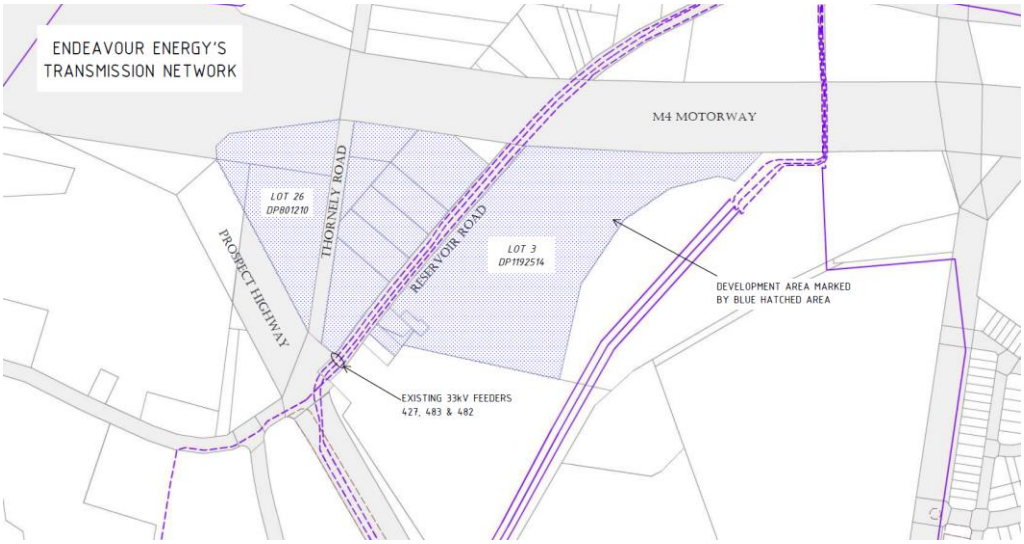


Figure 4 *Prospect South – Endeavour Energy Transmission Network*

2.4.3 Electrical Supply

The development will likely require a series of Endeavour Energy (EE) 11kV/LV substations that are interconnected to EE's 11kV network using underground cabling. EE have suggested that the existing overhead mains on the street frontages of the development should be undergrounded as part of the works.

EE have advised that they would fund any works required within zone substations (e.g. circuit breaker upgrades) as well as contributions to 11kV/LV substations. All other works (e.g. 11kV and LV feeder works), would be developer funded. Note, this is subject to EE funding policy and may change. An application must be submitted, and subsequent design certified or approvals granted, before Endeavour Energy reserves capacity on the network or spare ducts for the development.

The total currently available capacity on EE's nearby 11kV network is 3.8MVA, however there is a risk that other future developments nearby consume part or all of the spare capacity in the meantime. If that were to occur, the developer may be required to install a new 11kV underground feeder from the nearest zone substation that has capacity. This would likely be EE's 'Quarries' zone substation, located approximately 1km south of the development at the end of Picrite Close, Pemulwuy. Fortunately, there are currently spare conduits for the majority of the route.

2.5 Telecommunications

The site is currently serviced by the Pendle Hills Exchange service area.

Telecommunications Infrastructure in the area consists of:

- Optical fibre is currently located in the site along the southern side of Reservoir Road. Refer attached SKC-00-006 in Appendix A
- Local cable currently services businesses within the site along Reservoir Road and Thornley Road

David Da Silva from NBN Co. stated via email on 15 January 2018 that the site lies within a proposed NBN area and this infrastructure will be made available to new developments on application.

Associated costs can be provided once a layout is developed and further investigation by NBN Co's planning team is undertaken to determine if there are any infrastructure lead-in costs to the developer.

3 ROAD NETWORK

The site is situated adjacent to two major roads; the Western Motorway and Prospect Highway, providing good links to the regional road network.

3.1 Local Road Network

Final confirmation of internal road network is subject to future Development Applications. Discussions with Council indicate that they would be prepared to close Thornley Road. However, Council has received objections from the relevant utility authorities with assets in the road reserve. Refer to Appendix C for the letter correspondence with Council.

We understand that the Thornley Road reserve will be zoned per the adjoining land. Therefore a future owner / developer my wish to pursue the closure of Thornley Road and maintain the existing infrastructure by way of easements or relocate them (subject to viability).

By contrast, Reservoir Road has some heritage significance, therefore it will likely stay as a corridor.

Regardless, Council will likely require the upgrade of roads associated with new development on the site to meet their requirements for industrial development.

The required road cross sections are based on Blacktown City Council's DCP (2015), Table 5.1 – Recommended Road Hierarchy and Road Widths. Refer attached SKC-00-007 in Appendix A. The relevant information has been tabulated in Table 1.

Table 1 *Summary of Road Widths*

Road Type	Total Road Reserve	Carriageway	Footpath (both sides)	Number of lanes
Industrial (Other)	20.5m	13.5m	3.5m	2 travel lanes 2 parking lanes
Industrial (Collector)	23.0m	15.5m	3.75m	2 travel lanes 2 parking lanes

There are two internal roads currently providing access to properties within the site:

- Thornley Road, as shown in Photographs B005 to B006 Appendix B has a 20m road reserve width and an approximate 5.2m carriageway width
- Reservoir Road, as shown in Photographs B007 to B008 Appendix B has a 20m road reserve width and an approximate 6.3m carriageway width.

Current road reserves are indicated in SKC-00-008 Appendix A. The carriageway widths were measured from survey information provided.

It should be noted that Blacktown City Council have initially advised that they are considering the adoption of drainage swales to roads within industrials areas, which may increase the overall width of the road reserve.

4 STORMWATER MANAGEMENT

4.1 The Site

The site is bounded by the Western Motorway to the north, the existing council regional detention basin to the south east, Girraween Creek to the east and Prospect Highway to the west. Two internal roads; Thornley and Reservoir Road run north-south and divide the site into three parcels of land. Grades within the site vary from 2% to 5% with some relatively steep areas. There are several natural depression and gullies traversing the site, which drain the site and the external catchments towards Girraween Creek Tributary that exits the site via twin culverts under the Western Motorway. Refer attached SKC-00-009 in Appendix A.

4.2 Site Analysis

4.2.1 Catchment Description

The site drains to Girraween Creek, which is a tributary of Toongabbie Creek and is located in the Upper Parramatta River Catchment. A stormwater management plan was prepared for this catchment by the four Councils (Blacktown, Holroyd, Parramatta & Baulkham Hills) and the Upper Parramatta River Catchment Trust.

4.2.1.1 External Catchments

Draining through the site are external catchments as represented in the catchment plan, refer attached SKC-00-010 in Appendix A. The Western Motorway runoff drains to the site via a series of swales, detention basins and water quality treatment measures located adjacent the Motorway to the north of the site. Another catchment crosses Prospect Highway from the west through a series of culverts discharging into the site. The Northern Employment Lands of the adjoining Greystanes Estate drain to the existing detention basin located on Girraween Creek Tributary located at south-east of the site.

The conceptual Development Area plan SKC-00-012 in Appendix A nominally shows possible drainage easements within the site to convey external catchment across the site through to Girraween Creek to the east. The external catchment flow can be conveyed through the site either via open channnels or within a pipe and pipe network.

4.2.1.2 Internal Catchments

The site in general drains to Girraween Creek Tributary, which runs along the south-eastern side of the site and ultimately exits the site via the twin culverts crossing under the Western Motorway. There are several culverts crossing Thornley Road and Reservoir Road which allow the passage of water along the natural depressions towards Girraween Creek Tributary: Refer attached SKC-00-009 in Appendix A. It should be noted that these culverts have not been maintained and their hydraulic capacity is unknown, as shown in Photographs B.017 to B.018 in Appendix B.

The existing retarding basin located adjacent the site to the east, on Girraween Creek before it exits the site via the culverts under the Western Motorway. The detention basin was built in the 1980s as part of the flood mitigation strategy for the Upper Parramatta River Catchment and is currently owned and maintained by Blacktown City Council. The presence of the detention basins and their function of reducing peak flows would have also led to a reduced size of the culvert under the Motorway.

4.2.2 Flooding

Indicative flood widths for the 100 year Average Recurrence Interval (ARI) event under existing conditions were based information compiled from the following sources:

- Blacktown City Council Flood Risk Map
- Greystanes Creek Retarding Basins - Design Report, 1987 prepared by Willing & Partners Consulting Engineers.

The latest flood mapping provided by Blacktown City Council identify areas of low, medium and high flood risk, see **Figure 5**.

Figure 5 *Blacktown City Council Flood Risk Map*

As evident from **Figure 5** the eastern side of the site largely unaffected by the 100 year ARI storm event (i.e. medium flood risk area) with only a very minor affection. The western side of the site (west of Reservoir Road) is subject to minor local flooding. Consequently, the development is within the flood fringe and any Planning Proposal will be subject to the conditions outlined in Section 9.0 of Blacktown City Council Development Control Plan (Part A). One of the main considerations for the site is that for industrial and commercial buildings, the floor level shall be minimum 300mm above the designated flood level.

4.2.3 Creek corridors and overland flow paths

The local sub-catchments drain through the site via natural creeks and overland flow paths. The major overland flow paths within the site are represented in the Flood Extent Plan SKC-00-011 in Appendix A.

Girraween Creek is a tributary of Toongabbie Creek and is located in the Parramatta River Catchment. Overall the creek is not in a natural condition. Extensive flood mitigation work has been carried out over recent years; the creek bed has been realigned and is partially engineered with concrete culverts and gabion mattresses. Refer Photographs B011 to B012 in Appendix B.

Girraween Creek traverses in a north-south direction and is located east of the site outside the site boundary. The creek flow is attenuated by an existing retarding basin, as shown in Photographs B.015 to B.016 in Appendix B, also see SKC-00-0012 in Appendix A for the existing retarding basin location in plan. An engineered earth mound and culvert serve to restrict flows before discharging from the adjoining land via twin culverts under the Western Motorway. Refer Photographs B009 to B010 in Appendix B.

4.3 Stormwater Management

4.3.1 Stormwater Management Plan for the Site

a) The development of this site would increase the impervious areas and would subsequently increase the flow volumes, peak flow rates and pollutant loads discharged downstream of the site. WSUD principles should be to be used to identify the required measures to mitigate the potential impacts of urban development in this site. The overall WSUD strategy for the site aims to meet the following targets:

- Attenuate flows to a maximum of the pre-development or rural flow rates, whichever is the lesser. This shall be addressed over a range of storms from the 2-year ARI to the 100-year ARI.
- Pollutant reduction rates of:
  - 90% for gross pollutants
  - 85% for total suspended solids (TSS)
  - 65% for total phosphorus (TP)
  - 45% total nitrogen (TN)
  - 90% for hydrocarbons.

  These retention criteria are specified in Blacktown City Council's DCP (2015), Part J Water Sensitive Urban Design and Integrated Water Cycle Management.
- Indicative sizing for flood control storage is based on the Upper Parramatta River Catchment OSD policy, which is to allocate 470m^3/ha to control both the 1.5-year ARI and the 100-year ARI design storms. Taking the current site area at 12.25ha, the required total storage volume is approximately 5,800m^3. This total volume may be provided across one or multiple OSD basins located at the stormwater discharge points of the site.

b) The development of this site should not result in increase in flood peak flows, and velocities from the existing detention basin, see SKC-00-0012 in Appendix A. The existing flood extents within the site (including the maximum water levels for the existing detention basin) should be protected from development and not altered. If this existing basin is to be relocated further downstream, a full investigation should be carried out to ensure that the proposed structure would provide similar performance to the existing basin in relation to downstream flood mitigation.

4.3.2 Controls

Stormwater works on the site are likely to be required in accordance with Blacktown City Council drainage requirements. Blacktown City Council should be approached for specific details on their requirements but the main issues for on-site stormwater management are noted following:

4.3.2.1 General

a) Development Applications must be accompanied by a site-specific Stormwater Management Plan, where appropriate, designed to:

   i. be consistent with Blacktown City Council stormwater requirements

   ii. include appropriate water quantity and quality control systems, accompanied by a management plan in accordance with Council and manufacturer's specifications

   iii. implement effective source controls of stormwater pollution and discharge

   iv. manage flooding and water quality impacts on site to ensure that there are no adverse downstream impacts

   v. ensure all permanent structures and devices are at source and off-line of any open watercourse

   vi. implement sediment control measures, stormwater quality improvement devices or other innovative technology to minimise water pollution

   vii. incorporate bank stabilisation, revegetation, energy dissipating structures and upstream detention basins to minimise erosion of waterways.

a) Natural materials and channel forms, rather than engineered forms are to be used where possible.

b) Applicants are required to show how WSUD principles have been included in the design of the stormwater system for the site.

c) WSUD techniques (such as vegetated swales, filter strips and bio-retention systems) are to be incorporated into the conventional drainage system to treat rainfall events up to the 3-month ARI.

d) Stormwater management and drainage works are to be constructed in accordance with Council's drainage standards and other relevant guidelines and standards, including:

   i. Managing Urban Stormwater: Strategic Framework (Draft), Environment Protection Authority (March 1998)

   ii. Managing Urban Stormwater: Treatment Techniques, Environment Protection Authority (November 1997)

   iii. Managing Urban Stormwater: Council Handbook (Draft), Environment Protection Authority (1997)

   iv. Managing Urban Stormwater: Soils and Construction, Department of Housing (August 1998)

   v. Water Sensitive Urban Design Guidelines – Technical Guidelines for Western Sydney, Upper Parramatta River Catchment Trust and URS (May 2004)

   vi. Stormwater Quality Control Policy, Blacktown City Council (June 2005).

e) Adequate provision must be given to the implementation of a surface and roof water runoff collection and disposal system. All stormwater must be reticulated to the site stormwater system or a suitable location approved by Council.

f) Where stormwater drainage needs to discharge across an adjacent property, the Development Application must include information establishing that the written agreement of all relevant downstream property owners to drain water over their property has been obtained. Such agreement must state that downstream property owners have no objection to the discharge of stormwater through their properties to reach Council's drainage system nor do they have objection to the creation of necessary easements over the pipelines. If an easement is necessary over downstream properties this must be created prior to the release of the Subdivision Certificate or Occupation Certificate.

   Discussions have been held with Blacktown City Council about the need for an easement for stormwater flows that discharge from the site into the existing retarding basin and Girraween Creek to the east. Council has indicated that easements are not normally required under these circumstances and would not be required in this case.

4.3.2.2 Major Drainage System

a) The major drainage system shall be designed to safely convey stormwater flows under normal operating conditions for the critical 100-year ARI flood event. In the event of blockage of pits and/or pipes, or for storm events greater than the design event, adequate overland flow paths shall be provided on the roads or landscaped areas to ensure safety and control damage to property.

b) The effects of failure during extreme storm events shall be assessed and adequate provision shall be made for evacuation of personnel up to the critical PMF event.

c) Where the major drainage system is not located within road reserves, drainage easements/ reserves shall be created across the area occupied by infrastructure and include an easement to allow access for maintenance purposes.

d) New development shall not adversely impact the performance of existing drainage structures within the area.

e) All major drainage and stormwater detention basins shall be constructed within land dedicated for stormwater use.

f) During the maintenance period, performance monitoring of major drainage, basins and stormwater quality control (WSUD) structures must be undertaken to demonstrate satisfactory performance. The monitoring shall be in line with design parameters. Council will not accept handover of any device until it is demonstrated to be working efficiently.

g) The drainage system shall provide for detention structures in appropriate locations to minimise any adverse effect on existing downstream drainage paths.

h) The frequency of bank-full flows shall not increase as a result of the development. Flows are to be attenuated to a maximum of the pre-development or rural flow rates, whichever is the lesser. This shall be addressed over a range of storms from the 2-year ARI to the 100-year ARI.

i) The major drainage system for the development shall generally follow the natural drainage system.

j) Design of drainage works shall include a minimum freeboard of 0.5m to the 100-year ARI critical water level.

4.3.2.3 Minor Drainage System

a) The minor drainage system shall have the capacity to convey stormwater flows under normal operating conditions for the ARI specified in Council's Drainage Design Standard and shall link to the major drainage system.

b) The minor drainage system shall be designed to:

   i. enable the safe passage of vehicles and pedestrians

   ii. prevent ponding for a prolonged period

   iii. prevent damage to property such as buildings and landscaped areas.

c) The minor drainage system will need to be either piped or in bioretention / grass swales, and will ideally be located within the road reserves. Where this is not possible, drainage easements shall be provided.

d) Road drainage shall:

   i. provide water quality treatment to achieve objectives outlined in Council's current 'Stormwater Water Quality Control Policy' and 'Engineering Guide for Development'

ii. incorporate drainage systems and other infrastructure to allow treated runoff from development sites to be transferred to the major drainage system as necessary.

4.3.2.4 Detention Basins and Constructed Wetlands

a) Detention basins shall be located on or adjacent to the natural drainage system and meet the requirements of Council and relevant State Government agencies.

b) Suitable numerical modelling shall be undertaken for the detailed design of detention storages to ensure an acceptable level of hazard downstream for all storm events up to and including the PMP/PMF.

c) Wetlands shall be located adjacent to existing drainage channels. They should be located off line to ensure that they are not damaged during floods and that trapped material is not resuspended.

d) Bioretention basins, detention basins and wetlands shall:

   i. include appropriate safety features, especially with regard to edge treatments

   ii. be designed to prevent induced salinity

   iii. be sized to limit pollutant export loads to the levels specified in the water quality section of this site (below).

e) The detention basin shall be sized and designed to attenuate flows to a maximum of the pre-development or rural flow rates, whichever is the lesser. This shall be addressed over a range of storms from the 2-year ARI to the 100-year ARI. The effects of the PMF on the basin shall be assessed and measures prepared to avoid catastrophic failure.

4.3.2.5 Water Quality

a) To maintain stormwater quality to the required levels downstream, a “treatment train” approach shall be taken where various types of pollutants are removed by a number of water quality devices acting in series. This system allows for flexibility of the individual on-lot development with the co-ordinated site approach for the road system and regional drainage treatment.

b) The site water quality treatment strategy is required to provide a water quality control mechanism to Council’s satisfaction. This could include an individual device or combination of devices to ensure that the appropriate water quality standard is achieved. Pollutants generated from within the site shall be treated on site.

c) Best practice WSUD techniques are to be used for treating stormwater quality to the required standard and for the attenuation of flows to the predevelopment level.

d) The pollution retention criteria specified in Council’s Stormwater Quality Control Policy and Engineering Design Guidelines are required to be met on a site scale.

e) An appropriate stormwater quality model (such as MUSIC) shall be used to demonstrate that the proposed stormwater quality control measures would meet the pollution retention criteria provided above.

4.3.2.6 Maintenance and Monitoring

a) Where development incorporates stormwater treatment devices, WSUD measures or revegetation/enhancement of watercourses, the developer will be responsible for the maintenance for 3 years beginning from practical completion. A maintenance plan prepared by a suitably qualified person shall be submitted to Council for approval.

b) Where wetlands and revegetation/ enhancement of watercourses has occurred, an appropriately qualified horticulturalist/ ecologist with experience in bush regeneration techniques and aquatic environments is to develop a wetland/watercourse and vegetation maintenance plan for Council's approval.

c) For stormwater treatment devices, WSUD measures and watercourses, a performance monitoring program is to be developed and implemented for the life of the maintenance period. This is to demonstrate that the stormwater treatment devices and WSUD measures are performing to the design criteria and that the watercourse is establishing and meeting the requirement for revegetation and enhancement.

d) Results from the maintenance and performance monitoring schedule are to be provided to Council on a 3-month basis. If it is demonstrated that the stormwater treatment devices and WSUD measures are not performing to design requirements and watercourses and riparian corridor enhancement is failing, appropriate alterations are to be undertaken prior to hand over to Council.

5 LIMITATIONS

Arcadis provides this study with the following limitations noted:

- This report has been developed based on publicly available information and information sourced through dial before you dig service.
- Arcadis has not undertaken or reviewed any geotechnical reports relating to the ground conditions of the subject site or the surrounding nature, Therefore, this report does not make and reference to any work required to address the geotechnical conditions of the site.
- Arcadis has not undertaken or reviewed any contamination reports relating to the subject site. Therefore, this report does not make any reference to any remediation required for the site.
- Arcadis's estimate of the development yield is assumed to be 55% of the Net Developable Area (NDA), which is based on the information provided to Arcadis by DBL Property.

CONCLUSION

This report has been prepared to review the servicing and water cycle management issues for the site to support a planning proposal that seeks to rezone the existing land for industrial use.

Investigations undertaken indicate that all utilities including electrical, sewer and water utilities are readily available to the site. Telecommunication is also available to the site, however gas supply is not and would require a significant investment to extend services to the site.

There are no access issues, but roadways are likely to need to be upgraded in accordance with Blacktown City Council requirements.

The stormwater management system proposed for the land must comply with Blacktown City Council's requirements and Upper Parramatta River Catchment Trust guidelines.

Based on the findings of this report, Arcadis cannot foresee any reason why this site would not be considered suitable for rezoning and future industrial development.

APPENDIX A

Drawings

SKC001 - Locality Plan

SKC002 - Sewer Plan

SKC003 - Water Plan

SKC004 - Gas Plan

SKC005 - Electricity Plan

SKC006 - Telstra Plan

SKC007 - Road Cross Sections

SKC008 - Internal Road Reserves

SKC009 - Site Analysis

SKC010 - Catchment Plan

SKC011 – Flood Extents

SKC012 – Development Area Plan

APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE

REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	09/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D. SINGH

DRAWING NAME: LOCALITY PLAN

DRAWING No: SKC-00-001

REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:59AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC001-NSO4002-NSX-00-LOCALITY-PLAN.dwg

APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: SEWER PLAN

DRAWING No: SKC-00-002

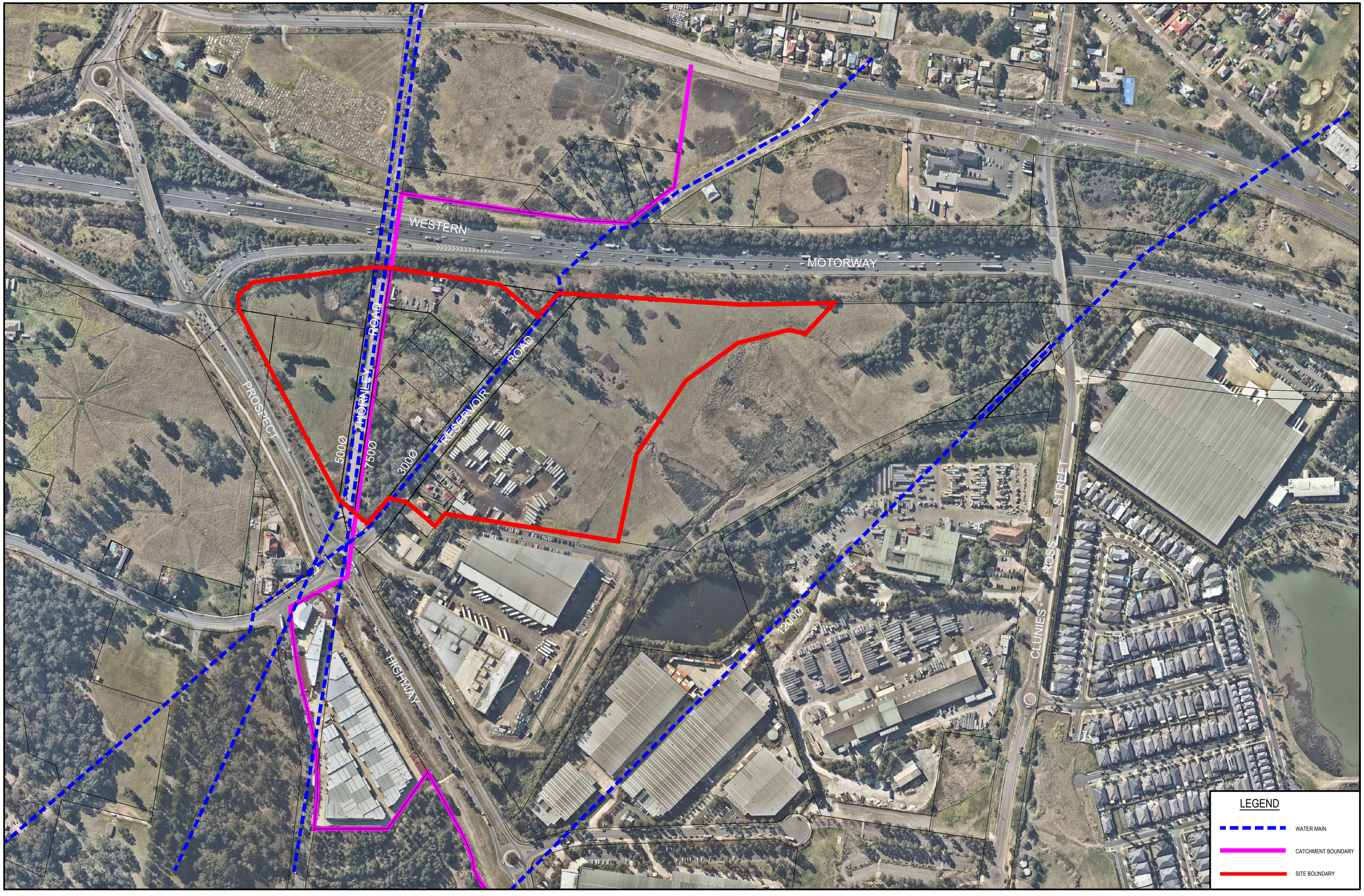
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:06AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC002-NS04002-NSX-00-SEWER-PLAN.dwg



APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE

REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/2018

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: WATER PLAN

DRAWING No: SKC-00-003

REV: 01

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:12AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC003-NS04002-NSX-00-WATER-PLAN.dwg

APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets

Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289

Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: GAS PLAN

DRAWING No: SKC-00-004

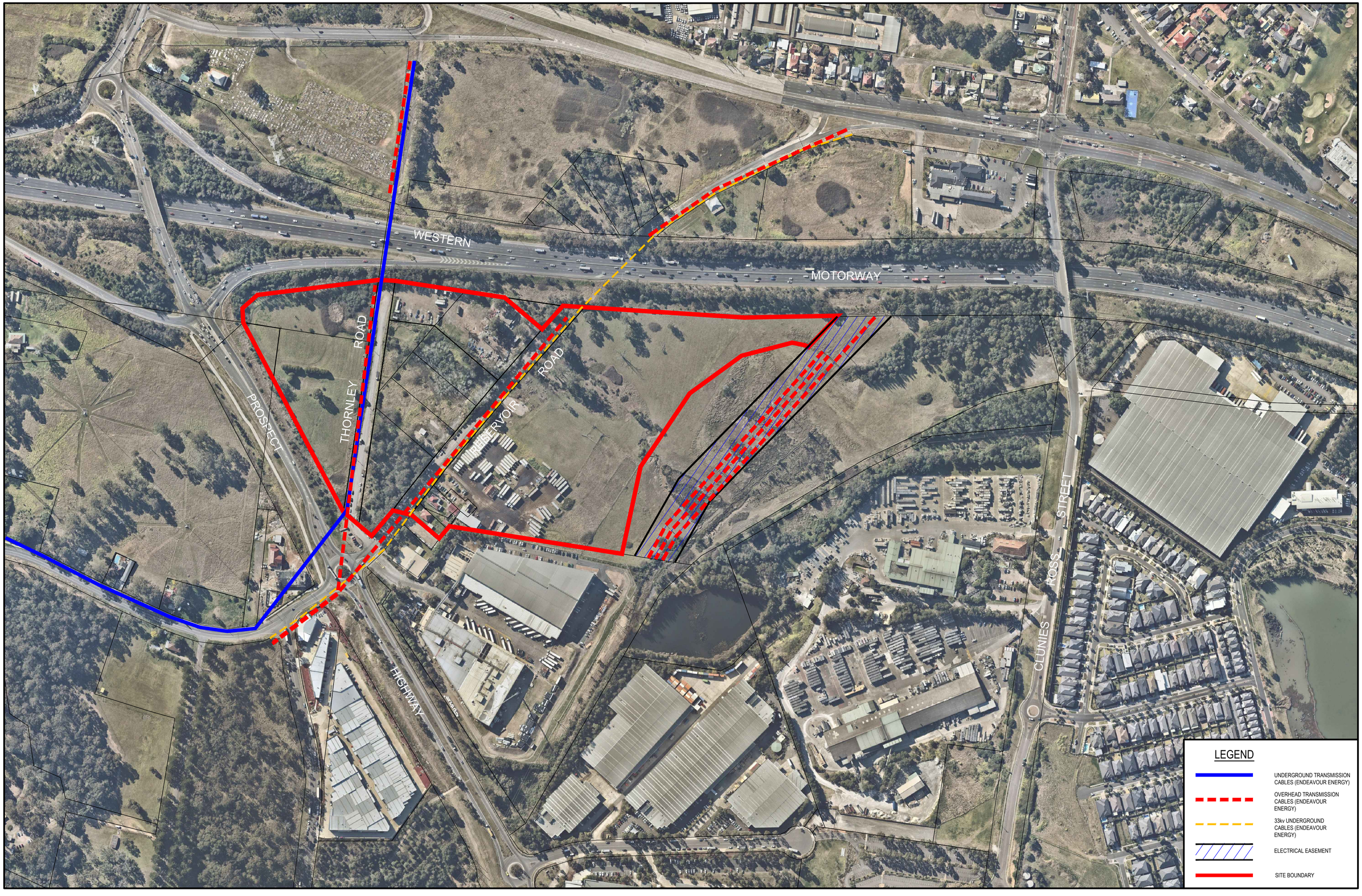
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:18AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC004-NS04002-NSX-00-GAS-PLAN.dwg



APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE

REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: ELECTRICAL PLAN

DRAWING No: SKC-00-005

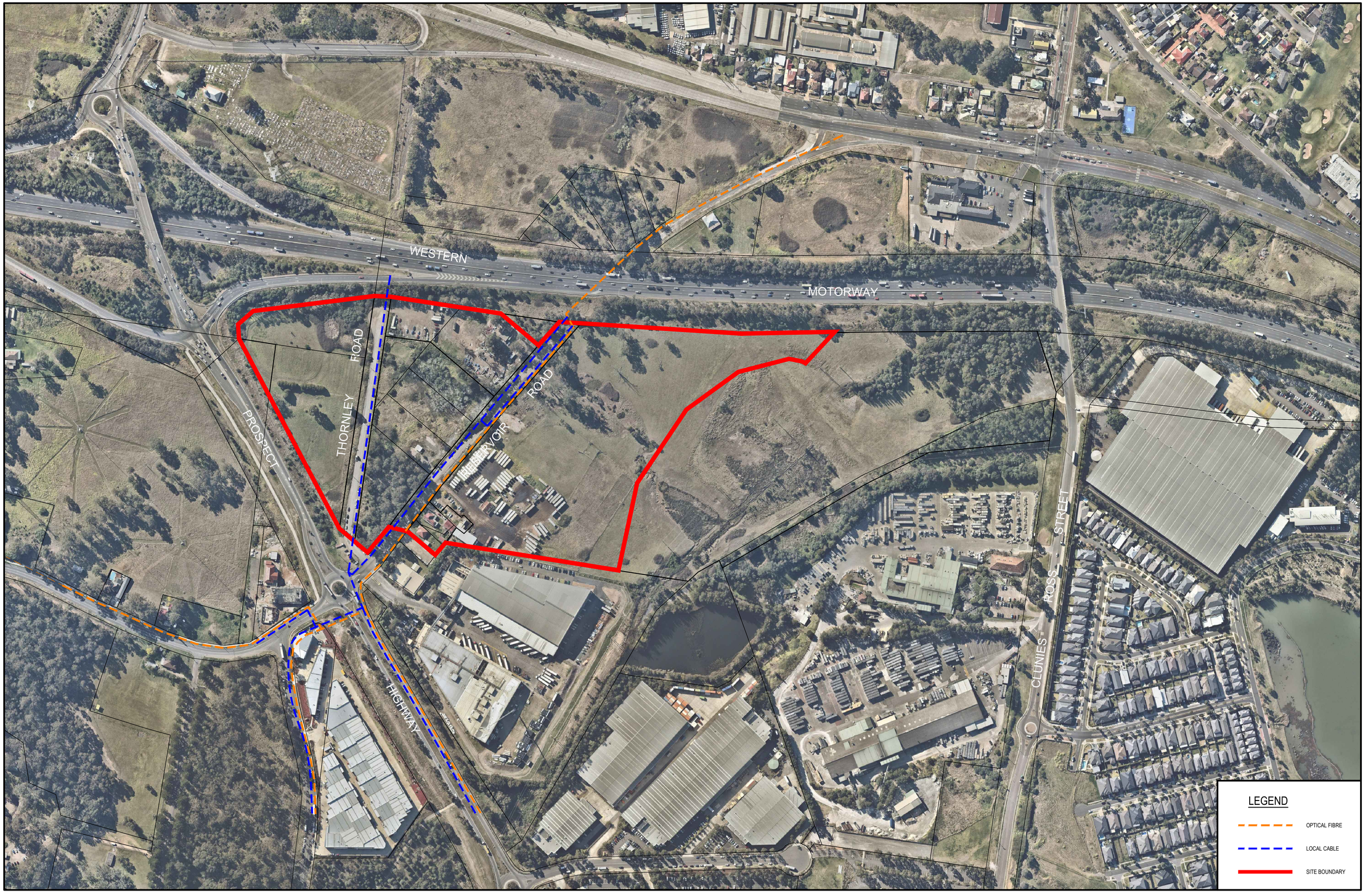
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:20AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC005-NS04002-NSX-00-ELECTRICAL-PLAN.dwg



APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets

Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289

Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE

REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: TELECOMMUNICATIONS PLAN

DRAWING No: SKC-00-006

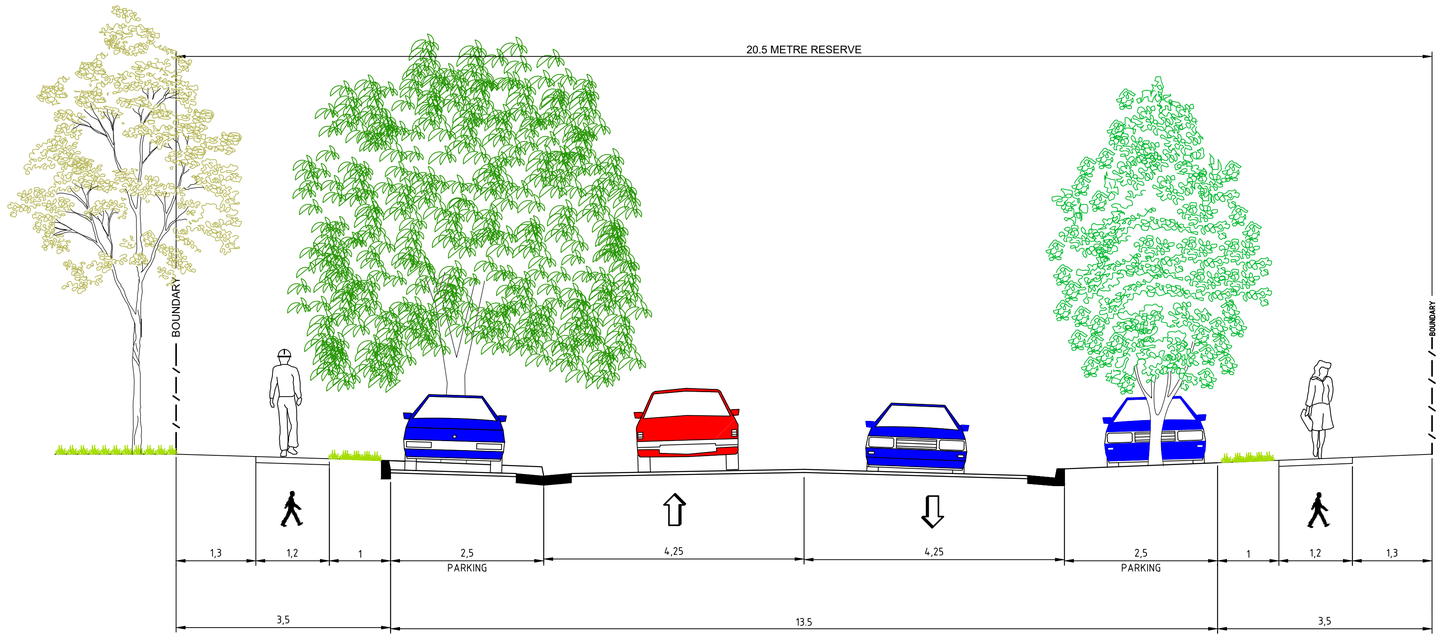
REV: 02

DATE: 24/01/18

PROJECT:

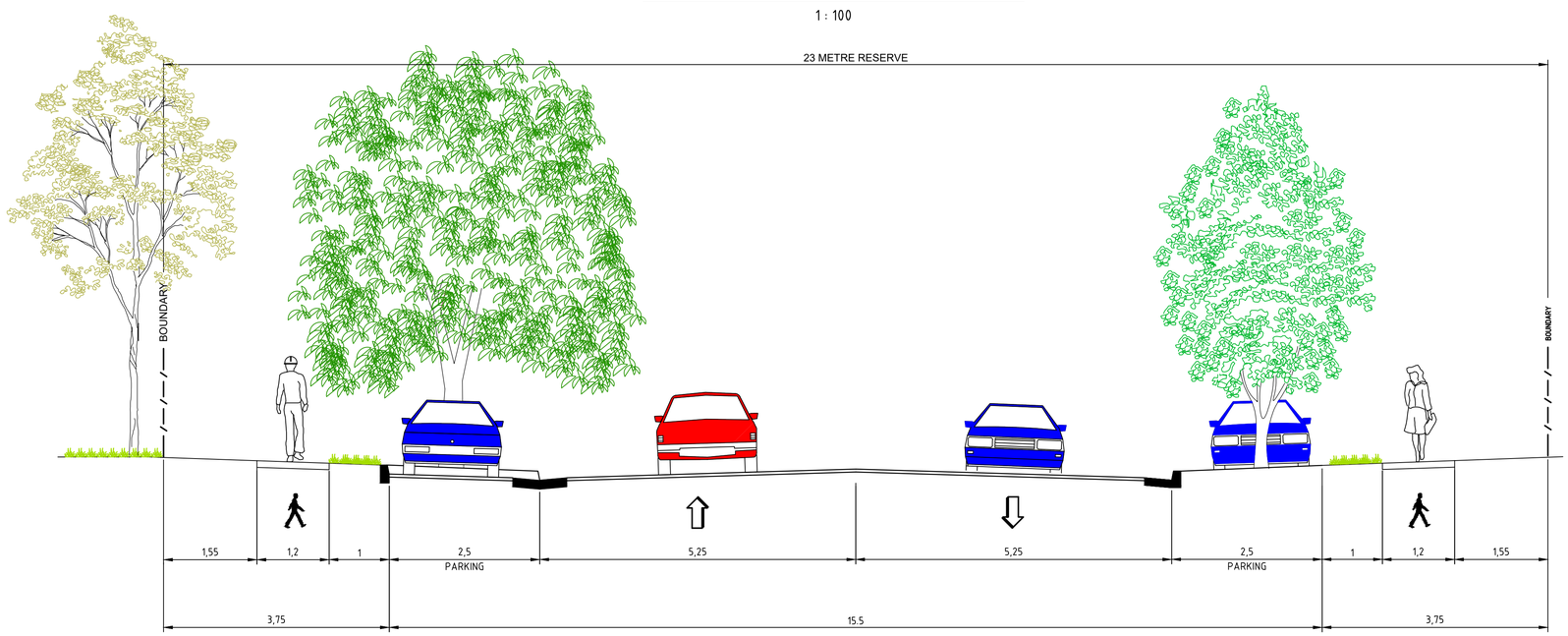
PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:22AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC006-NS04002-NSX-00-TELSTRA-PLAN.dwg



20.5m ROAD RESERVE (INDUSTRIAL OTHER)

1 : 100



23m ROAD RESERVE (INDUSTRIAL COLLECTOR)

1 : 100

NOTE:
ROAD WIDTHS BASED ON BLACKTOWN CITY COUNCIL'S DCP (2015), TABLE 5.1

APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 2 4 6 8 10m

1 : 100

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:100

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: ROAD CROSS SECTION

DRAWING No: D.SINGH

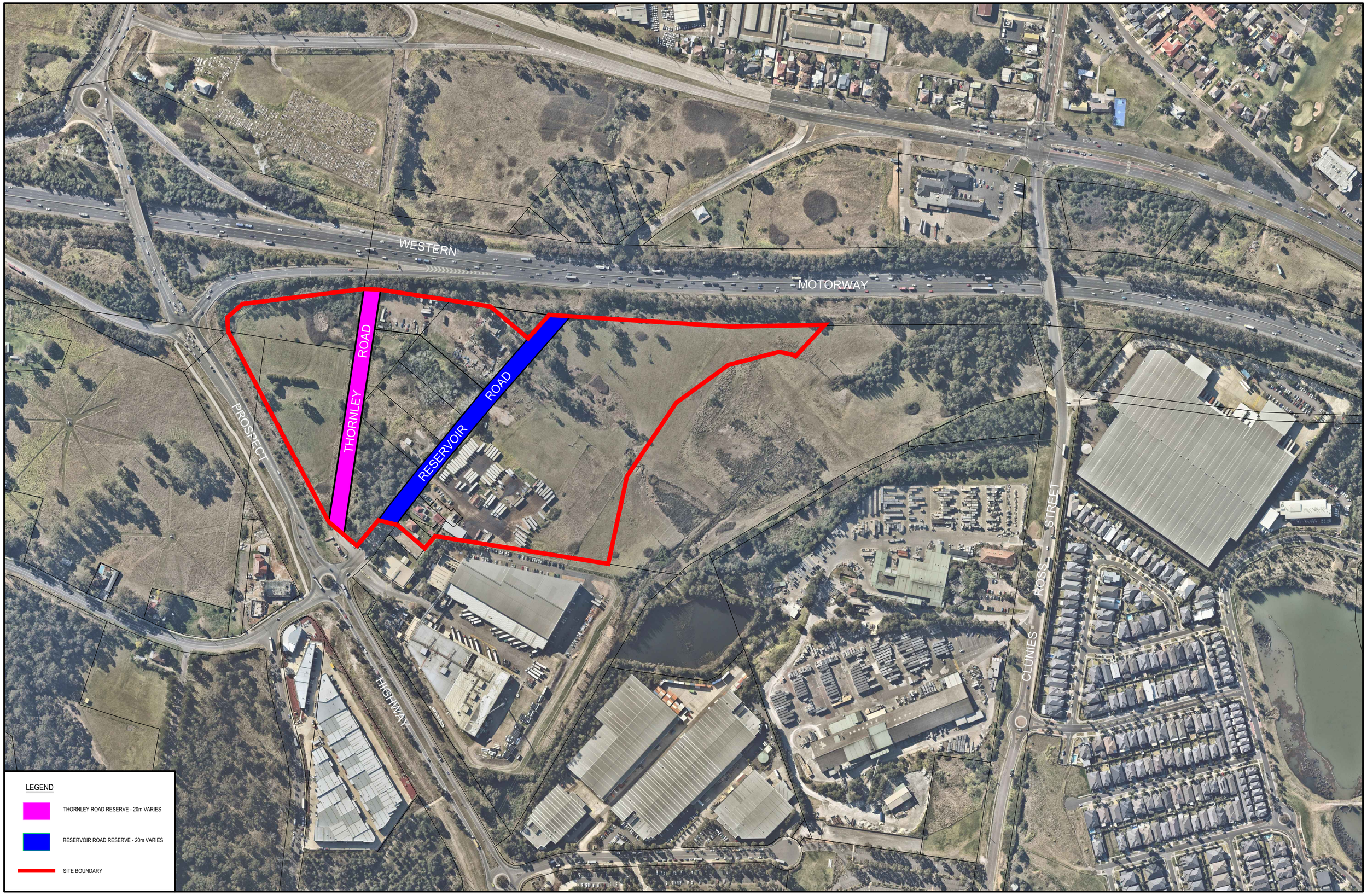
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:25AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC007-NS03786-NSX-00-TYPICAL-CROSS-SECTIONS.dwg



APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: ROAD RESERVES

DRAWING No: SKC-00-008

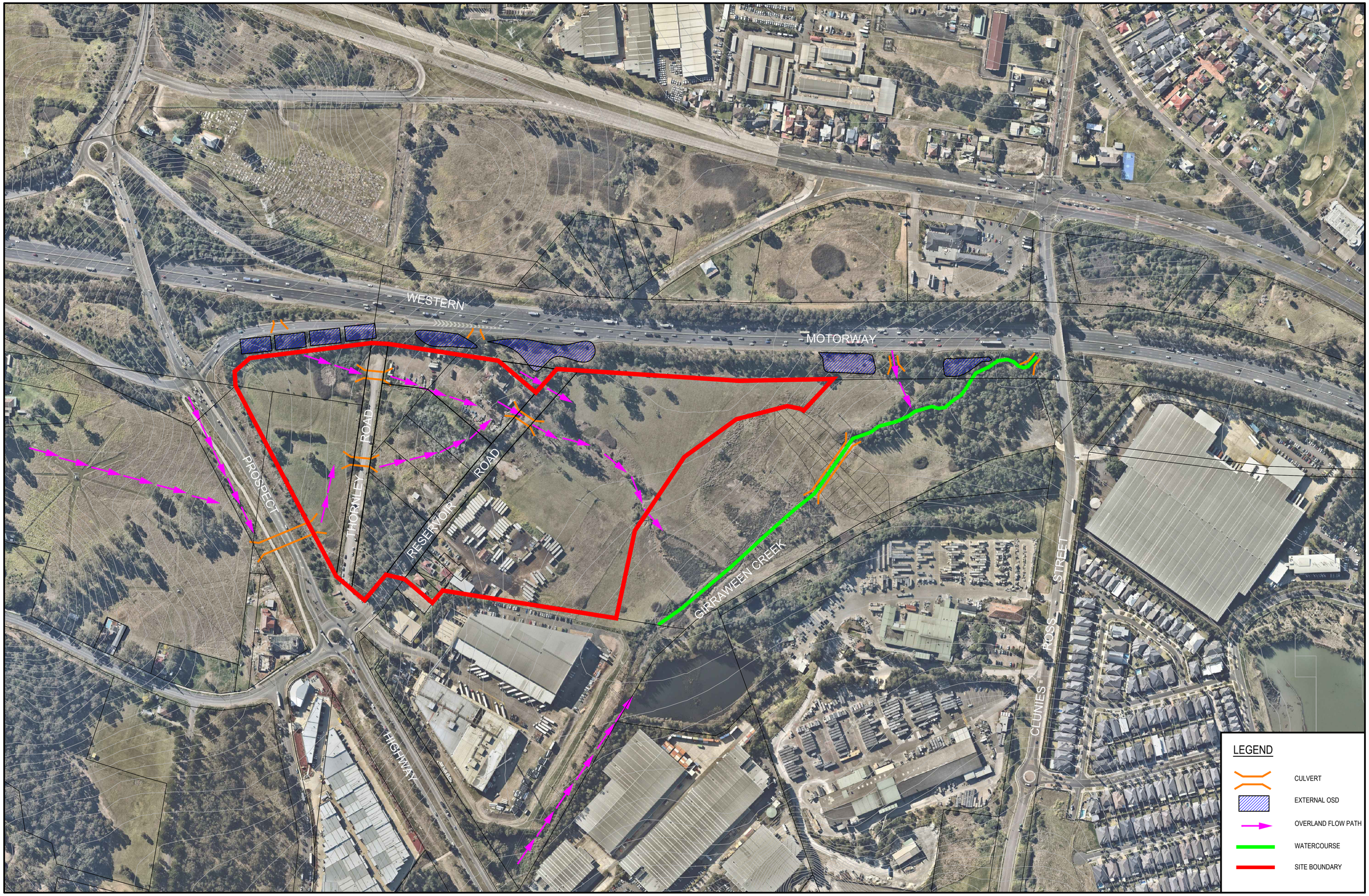
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:28AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC008-NS03786-NSX-00-INTERNAL-ROAD-RESERVES.dwg



APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: SITE ANALYSIS

DRAWING No: SKC-00-009

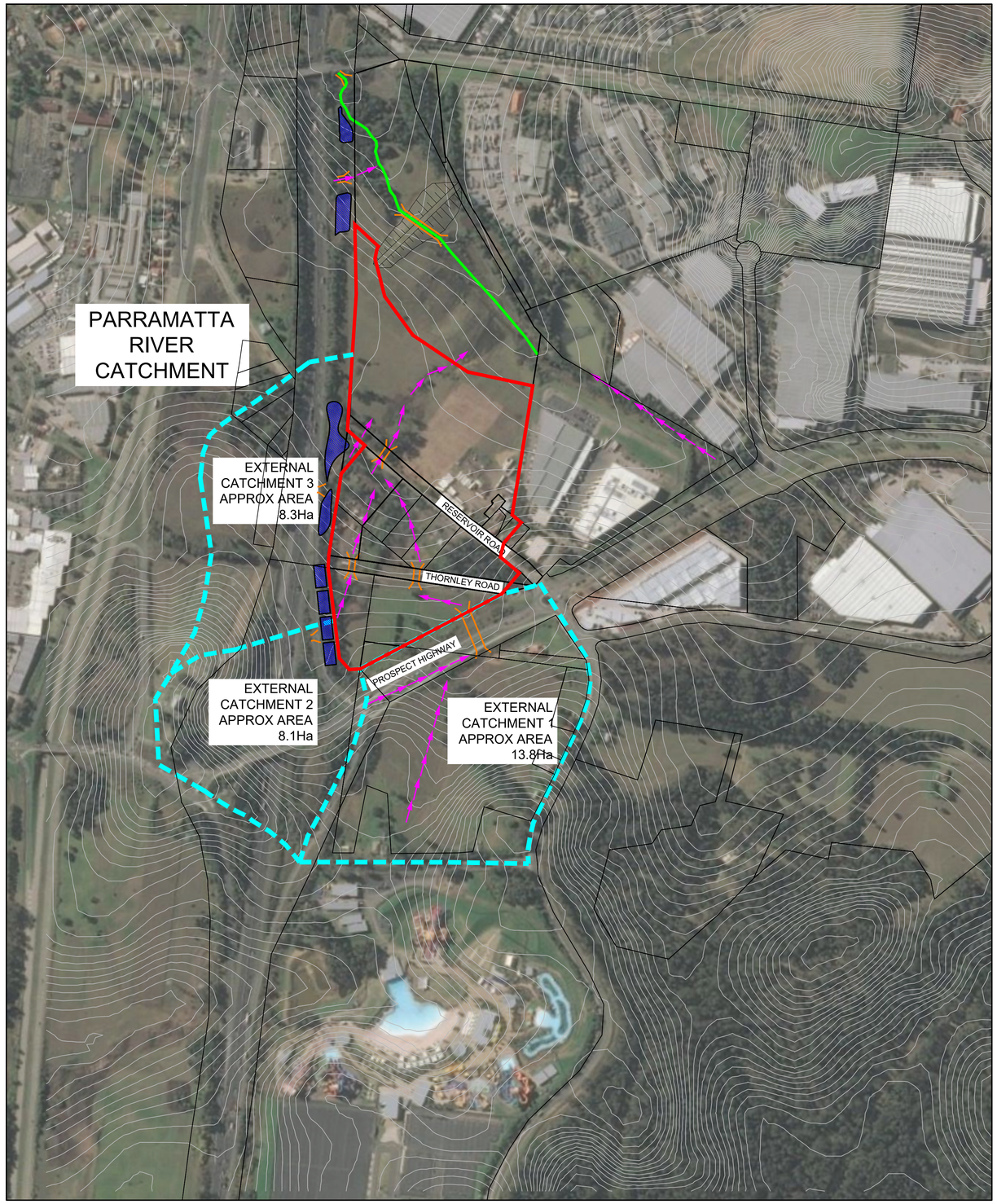
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:32AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC009-NS04002-NSX-00-SITE-ANALYSIS.dwg



LEGEND

- OVERLAND FLOW PATH
- WATERCOURSE
- CULVERT
- EXTERNAL OSD
- SUB - CATCHMENT BOUNDARY
- SITE CATCHMENT

APPLICANT:

CONSULTANT:
ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 100 200 300 400m

1 : 4000

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:4000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: CATCHMENT PLAN

DRAWING No: SKC-00-010

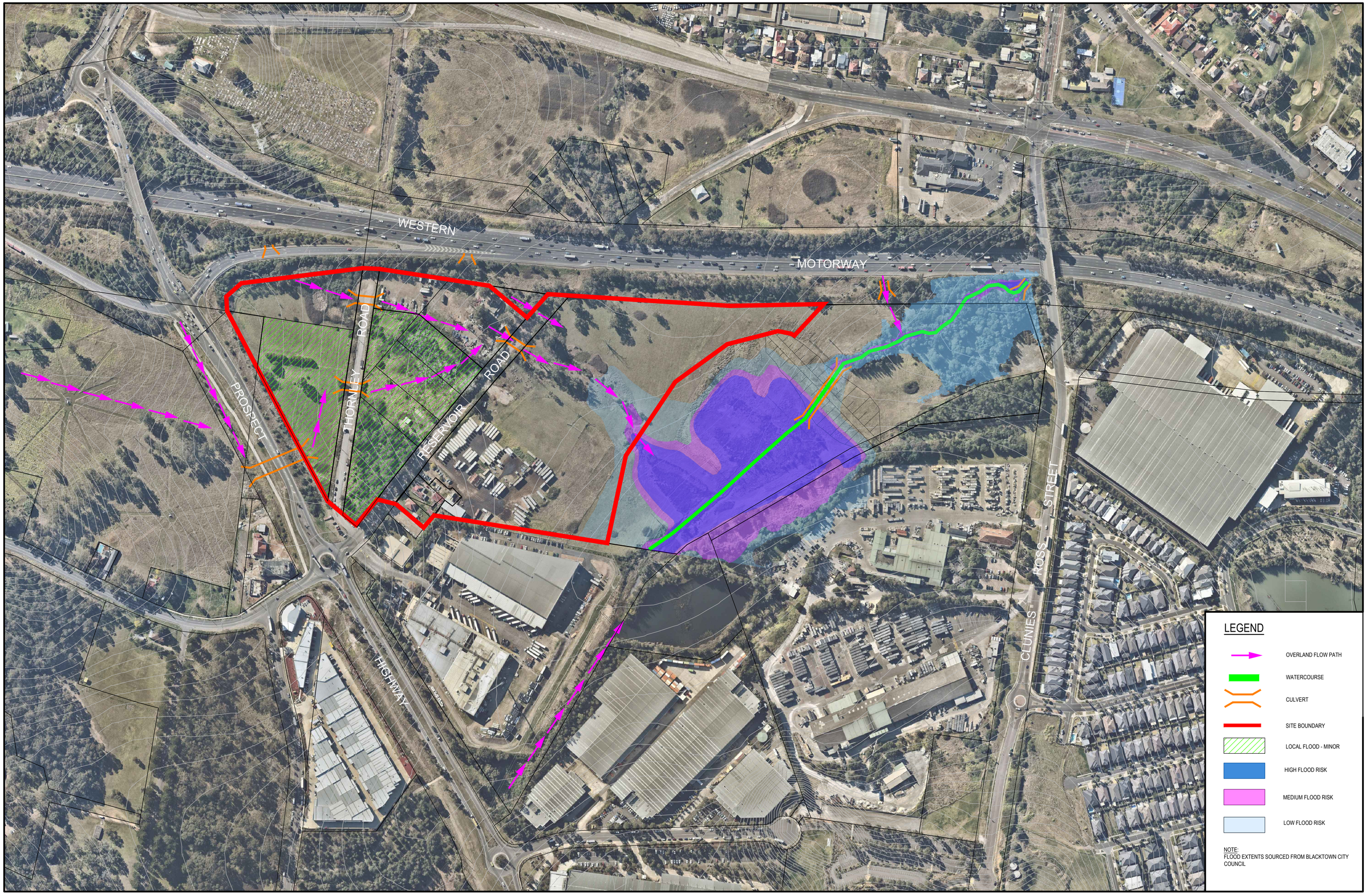
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:38AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC010-NS04002-NSX-00-CATCHMENT-PLAN.dwg



APPLICANT:

CONSULTANT:

ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: FLOOD EXTENT

DRAWING No: SKC-00-011

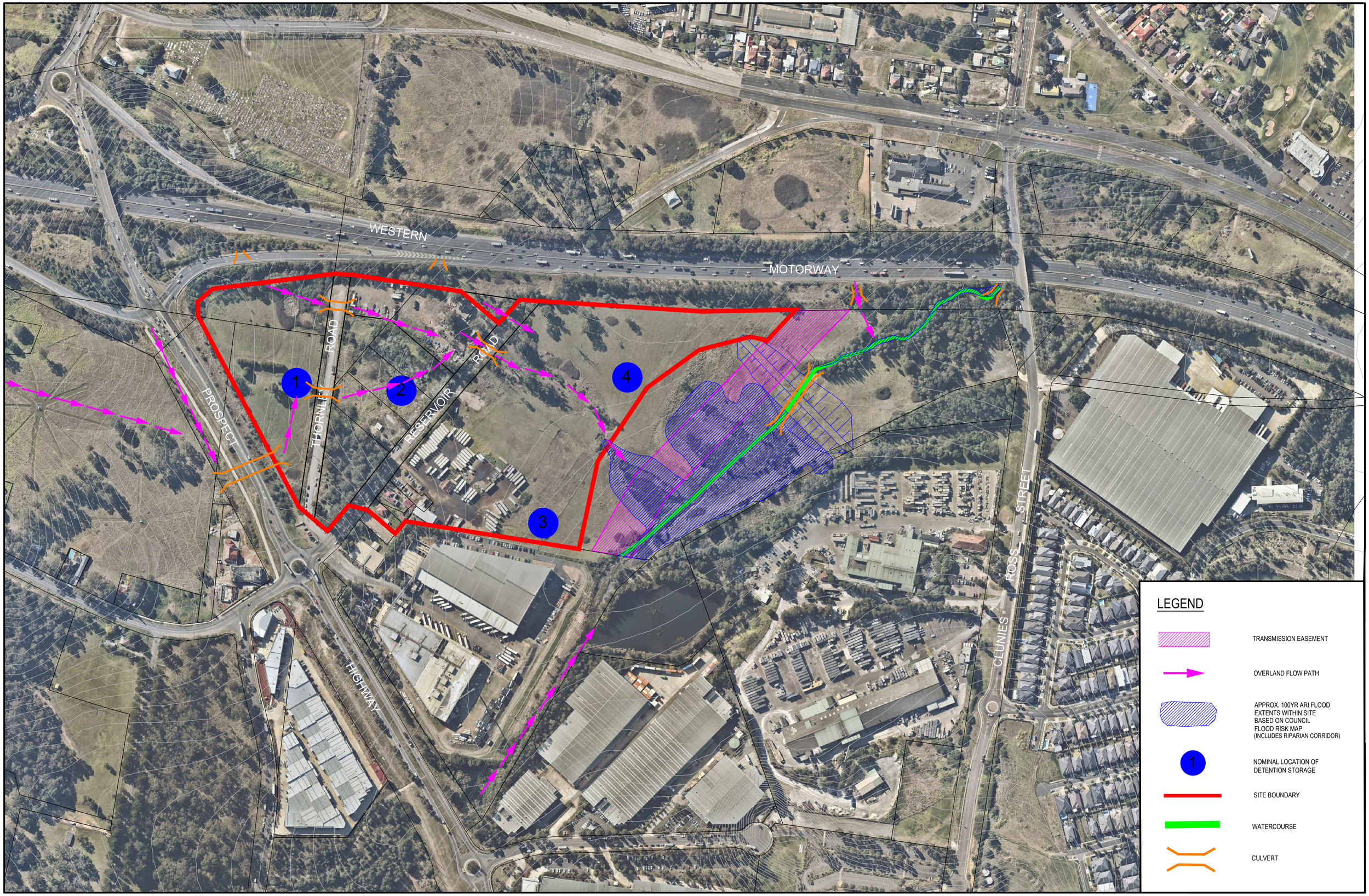
REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 10:40AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC011-NS04002-NSX-00-FLOOD-EXTENT.dwg



LEGEND

- TRANSMISSION EASEMENT
- OVERLAND FLOW PATH
- APPROX. 100YR ARI FLOOD EXTENTS WITHIN SITE BASED ON COUNCIL FLOOD RISK MAP (INCLUDES RIPARIAN CORRIDOR)
- 1 — NOMINAL LOCATION OF DETENTION STORAGE
- SITE BOUNDARY
- WATERCOURSE
- CULVERT

APPLICANT:

CONSULTANT:
ARCADIS Design & Consultancy for natural and built assets
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.arcadis.com

0 50 100 150 200m

1 : 2000

REVISION TABLE		
REV	DESCRIPTION	DATE
01	ISSUE FOR DISCUSSION	12/01/18
02	ISSUE FOR DISCUSSION	24/01/18

SCALE: 1:2000

DRAWN: S.YAMAMOTO DESIGNED:

STATUS: PLANNING PROPOSAL

CHECKED: R. LENFERNA APPROVED: D.SINGH

DRAWING NAME: DEVELOPMENT AREA

DRAWING No: SKC-00-012

REV: 02

DATE: 24/01/18

PROJECT:

PROSPECT SOUTH PRECINCT PLAN

Date Plotted: 24 Jan 2018 - 11:05AM File Name: \\HC-AUS-NS-FS-01\jobs\10009626\E-CAD\C-Civil\B-Sketches\SKC012-NS04002-NSX-00-DEVELOPMENT-AREA-PLAN.dwg

APPENDIX B

Photographs

Photograph B.001 -

Photograph B.002 -

Photograph B.003 -

Photograph B.004 -

Photograph B.005 -

Photograph B.006 -

Photograph B.007 -

Photograph B.008 -

Photograph B.009 -

Photograph B.010 -

Photograph B.011 -

Photograph B.012 -

Photograph B.013 -

Photograph B.014 -

Photograph B.015 -

Photograph B.016 -

Photograph B.017 -

Photograph B.018 -

APPENDIX C

Correspondence

Jemena
Correspondence [2 page(s)]

NBN Co
Correspondence [1 page(s)]

Telstra
Correspondence [2 page(s)]

Blacktown City Council
Correspondence [2 page(s)]

Jemena

From: Neale Hilton [mailto:Neale.Hilton@jemena.com.au]
Sent: Friday, 19 January 2018 3:17 PM
To: Singh, Dashpreet <Dashpreet.Singh@arcadis.com>
Subject: RE: Prospect South

Wet n Wild did not pursue Natural Gas. Jemena was not privy to their commercial decision.

Jemena prefers not to have their assets on private lands where possible.

Neale Hilton

Network Development Manager

Jemena

Level 14, 99 Walker Street, North Sydney, NSW 2060
M 0402 060 151

neale.hilton@jemena.com.au | www.jemena.com.au

From: Singh, Dashpreet
Sent: Friday, 19 January 2018 2:56 PM
To: 'Neale Hilton' <Neale.Hilton@jemena.com.au>
Subject: RE: Prospect South

Hi Neale,

Thanks for the information.

From our discussion earlier this week, I understand that the Wet'n'Wild site west of Prospect Highway is not serviced by Jemena's gas network due to the high investment cost to build a new lead-in. Please confirm.

Furthermore, can you also please confirm that constructing a lead-in supply from the high pressure main in Clunies Ross Street to the subject site through what is currently Council owned vacant land is not an option Jemena wish to pursue.

Regards,

Dashpreet Singh

Senior Civil Engineer

Arcadis (Urban Development)

M: 0437 067 759

From: Neale Hilton [mailto:Neale.Hilton@jemena.com.au]
Sent: Monday, 15 January 2018 6:29 PM
To: Singh, Dashpreet <Dashpreet.Singh@arcadis.com>
Subject: RE: Prospect South

Dash

No gas available to this site. The only High Pressure network, based on worst case scenario as no gas demand being provided, is located in Clunies Ross Rd. It would seem your site is land locked from this network. Other available network is located in Eastern Creek.

Neale Hilton

Network Development Manager

Jemena

Level 14, 99 Walker Street, North Sydney, NSW 2060
M 0402 060 151

neale.hilton@jemena.com.au | www.jemena.com.au

From: Singh, Dashpreet [mailto:Dashpreet.Singh@arcadis.com]
Sent: Monday, 15 January 2018 3:05 PM
To: Neale Hilton <Neale.Hilton@jemena.com.au>
Subject: Prospect South

Hi Neale,

Happy new year! I hope you've been well…

We need confirmation from Jemena that there is adequate capacity in Jemena's gas network to serve a 12.2Ha light industrial development that is proposed in Prospect South – a locality plan is attached for reference.

Would appreciate your prompt reply.

Regards,

Dashpreet Singh | Senior Civil Engineer | BE (Civil) CPEng MIEAust NER | dashpreet.singh@arcadis.com

Arcadis | Level 16, 580 George Street, Sydney | NSW 2000 | Australia | M. + 61 437 067 759

www.arcadis.com

NBN Co

From: David Da Silva [mailto:daviddasilva@nbnco.com.au]
Sent: Monday, 15 January 2018 4:18 PM
To: Singh, Dashpreet <Dashpreet.Singh@arcadis.com>
Subject: RE: Prospect South

Hi Dash,

Without a full review from our planning team I can only advise that the development site lies within a proposed **nbn** area. This means **nbn** is available to new developments upon application.

For development of super lots only there is no “per lot charge” however registering super lots would require a developer to enter into an agreement with **nbn** co, design and building the pit and pipe to **nbn** co standards as well as pay a backhaul contribution should it be required. The site is close to existing **nbn** network however I need to await feedback from our planning team to confirm if there is any backhaul fee associated with a development at this location. This confirmation will take around one week.

The future development of those super lots will be subject to nbn co’s standard per lot pricing of $400 per multi dwelling unit or $600 per single dwelling unit (inc GST). The developers of the super lots need to be made aware of this requirement.

Regards,

David Da Silva

Account manager NSW/ACT | Build partnerships

M +61 428 026 167 | **E** daviddasilva@nbnco.com.au

From: Singh, Dashpreet [mailto:Dashpreet.Singh@arcadis.com]
Sent: Monday, 15 January 2018 3:01 PM
To: David Da Silva
Subject: Prospect South

Hi David,

Happy new year! I hope you’ve been well…

If you recall, we met before while discussing the Willowdale Retirement Living project.

I tried calling you earlier because we need confirmation there is adequate capacity in the NBN Co. network to serve a 12.2Ha light industrial development that is proposed in Prospect South – a locality plan is attached for reference.

Would appreciate your prompt reply.

Regards,

Dashpreet Singh | Senior Civil Engineer | BE (Civil) CPEng MIEAust NER | dashpreet.singh@arcadis.com

Arcadis | Level 16, 580 George Street, Sydney | NSW 2000 | Australia | M. + 61 437 067 759

www.arcadis.com

Telstra Plan Services

Level 18, 275 George Street
Brisbane, QLD 4001

Postal Address:
Locked Bag 3820
Brisbane, QLD 4001

Email: F0501488@team.telstra.com

Date: **10/04/2017**

Your Ref: **56-848-3**
Our Ref: **SF193348-1**

Ron Radd
ron.radd@blacktown.nsw.gov.au

Dear Ron,

Re: Proposed Permanent Road Closure - Thornley Road – Prospect

Thank you for your communication dated **27/03/2017** in relation to the location specified above.

According to the information we received from you Telstra's plant records indicate that there are **Telstra assets within the area** of the proposal. We note that our plant records merely indicate the approximate location of the Telstra assets and should not be relied upon as depicting a true and accurate reflection of the exact location of the assets. Accordingly, if you have not already done so please contact Dial Before You Dig for a detailed site plan and a list of Telstra Accredited Plant Locators (APL) to establish the exact location of Telstra assets (phone 1100 or visit www.1100.com.au).

Telstra wishes to retain rights over all of its assets at the above mentioned address. At this stage, Telstra has determined that the existing **Telstra Infrastructure in the existing road reserve will have to be relocated to the new road reserve.** The relocation of Telstra assets would be carried out at your cost, however it would ensure that the land/s and its projected use would not be hindered or restricted by easements.

Please contact **Telstra's Asset Relocation** team to obtain a quote to relocate the assets from the address/es in question, on 1800 810 443 or email F1102490@team.telstra.com.

As these assets comprise an essential component of the Telstra network, we take this opportunity to highlight Telstra's rights and requirements to ensure that they are understood. The following is stated for your information:

(1) Telstra's existing facilities are grandfathered under the 1997 Telecommunications Act. This enables such facilities to legally occupy land in perpetuity for the duration of that facilities use.

(2) Part 1 of Schedule 3 of the *Telecommunications Act 1997* (Cth) authorises a carrier to enter land and exercise any of the following powers:

- inspect the land
- install a facility
- maintain a facility

In the case of installation and planned maintenance a notification will be afforded and such work will generally proceed during business hours. However, from time to time, certain activities need to be carried out without delay in order to protect the integrity of the network. Such activities may require vehicular access without notice and at any time of the day or night.

(3) If at any time in the future it becomes necessary, in the opinion of the carrier because of a subdivision of any land to remove, or alter the position of a facility, the carrier may enter the land and do anything necessary or desirable for that purpose. Under clause 53 of Schedule 3 to the Telecommunications Act, the person who proposes to subdivide the land is liable to pay the carrier the reasonable cost of anything reasonably done by the carrier in this regard.

(4) There is a requirement that all access to Telstra's network is facilitated by Telstra, via the normal channels available to all customers Australia wide. Tampering with, or interfering with telecommunications infrastructure or a facility owned or operated by a carrier (being Telstra) is an offence under the *Criminal Code Act 1995* (Cth). Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred, by Telstra as a result of any such interference may be claimed against you. This means that you are not permitted to interfere with, repair or relocate Telstra's infrastructure, either personally or through a contractor without approval and authorisation from Telstra.

(5) All individuals have a legal "Duty of Care" that must be observed when working in the vicinity of Telstra's communication plant. It is the constructor's/land owner's responsibility to anticipate and request the nominal location of Telstra plant via **Dial Before You Dig "1100" number** in advance of any construction activities in the vicinity of Telstra's assets. **On receipt of plans, notwithstanding the recorded location of Telstra's plant, the constructor/land owner is responsible for obtaining a Telstra accredited Asset Plant Locator to perform a cable location, potholing and physical exposure to confirm the actual location of the plant prior to the commencement of site civil work.** Telstra reserves all rights to recover compensation for loss or damage caused by interference to its cable network or other property.

Telstra would also appreciate due confirmation in the event that the applicant contemplates divesting its interest or control of this land, that the information contained here is passed on to the prospective owners.

If you have any difficulties in meeting the above conditions, or if you have questions relating to them, please do not hesitate to contact us at F0501488@team.telstra.com.

Yours sincerely,

Megan Smith
Telstra Telstra Plan Services

for
Manager – Adrian Wellington
Plan Services
F0501488@team.telstra.com

56-848-3 RaddR

Endeavour Energy

Thursday, 15 June 2017

Ron Radd
Blacktown City Council
PO Box 63
BLACKTOWN NSW 2148

Our ref: RC4008
Your ref: 56-848-3

Dear Mr Radd

RE: PROPOSED ROAD CLOSURE THORNLEY ROAD, PROSPECT.

I refer to your email dated 27 March 2017.

Endeavour Energy's electronic mapping system indicates that there are overhead power lines and underground cables located within the section of the road. Therefore, we have a **formal objection** to the closure.

Endeavour Energy will require the below easements (terms are attached);
9 metre width easement for overhead power lines
3 metre width easement for underground cables

The applicant will be required to create the above easements prior to gazetted closing of the road. Our terms of easement for overhead power lines are registered as Memorandum No. AK104602 our terms of easement for underground cables are registered as memorandum No. AK104616 at Land & Property Information NSW as attached.

Our **objection** will be withdrawn after we have approved the plan and instrument prior to their registration.

Alternatively the applicant may wish to investigate relocation of the equipment if possible. Please refer to the attached information sheet.

Yours faithfully

Natasha Issac
Network Property Support Officer
Property & Fleet
Ph: 131 081
Email: natasha.issac@endeavourenergy.com.au

RECEIVED
21 JUN 2017
BLACKTOWN CITY COUNCIL

Sydney WATER

28 March 2017

Blacktown City Council
Attn: Ron Radd

Dear Ron,

Subject: **Proposed Road Closure at Thornley Road, Prospect**
Your reference: **56-848-3**

Sydney Water has a number of assets, including a DN750, DN500 and DN100 watermains within the proposed road closure shown above. Therefore, we have a formal objection to the closure.

Please advise the applicant:

- To engage an authorised Water Servicing Coordinator (Coordinator) to lodge and manage an application so Sydney Water can assess and issue the requirements; and
- that the application would be *either* for a "Section 73 Development" (if a Subdivision Certificate is required) *or* a "Road Closure" (if a Subdivision Certificate is NOT required).

For a list of Coordinators, the applicant can either visit www.sydneywater.com.au ➢ Plumbing, building & developing ➢ Providers ➢ Lists or call 13 20 92. Coordinators will give a quote or information about costs for services/ works including Sydney Water costs.

Yours sincerely,

Craig Simmons
Development Services Officer
Development Partnerships

APPENDIX D

Endeavour Energy – Technical Inquiry

1 February 2018

Endeavour Energy Ref: ENL2972 – 2014/02306/001

DBL Property Pty Ltd
Suite 2, Upper Floor, 437 Kent Street
SYDNEY NSW 2000

Attention: Brendan Seage

Dear Sir/Madam

ENL2972 – TECHNICAL REVIEW REQUEST – LOT 3 DP1192514, LOTS 10-11 DP801209, LOTS 10-12, 15 DP 448744, LOT 18 DP 802753, LOTS 24-26 DP 801210, LOTS A, C, D DP374323 AND LOT 10 DP374325 - RESERVOIR ROAD, PROSPECT

Thank you for your Technical Review Request. This enquiry has been registered under our reference number – ENL2972. Please quote this number for all future correspondence.

Endeavour Energy acknowledges the proposed 12.25ha redevelopment of land off Reservoir Rd Prospect will yield approx. 6.7ha area for industrial development and the remaining 5.55ha expected to become dedicates roads, parks, etc.

The development is expected to occur over 4 stages commencing in 2022 and completing in 5 years after that. The initial stage is expected to require 1MVA, with the remaining load added evenly over the remaining 5 years.

The total load is estimated at approx. 3.0MVA based on 40VA/m^2.

Zone substation:
Current and forecasted load for Quarries and Prospect zone substations are as follows:

Zone substation	Firm Rating (MVA)	2022-2027 forecasted load (MVA)	2022 - 2027 forecasted available capacity (MVA)
Quarries	35	30.8	4.2
Prospect	30	29.0	1.0

11kV feeders:
Currently there are five 11kV feeders in the vicinity of the development. Three of those feeders (35002, 35003 and 35012) are dedicated to existing large load customers, leaving only two feeders B207 and 35011 available for the proposed development. To date, there are no plans or applications to increase the load on feeders B207 and 35011. Their current ratings are as follows:

Feeder	Feeder rating (MVA)	Current load (MVA)	Available capacity (MVA)
B207 (Prospect)	4.5	1.71	2.79*
35011 (Quarries)	4.5	1.70	2.80

* Restricted to available capacity of 1.0MVA in Prospect ZS.

Transmission:
There are no planned works on the three 33kV feeders in Reservoir Rd. The feeders are expected to remain in service in the roadway for the foreseeable future.

Supply upgrade and funding (if required):
Available capacity (in the 11kV feeders and zone substations) will be subject to the state of the network at the time a formal application is submitted. Under the current funding arrangement/capital contribution policy, if at the time of application, there is a need to upgrade the supply the funding/responsibility is as follows;

- Zone substation: Endeavour Energy will be responsible for the upgrade and make capacity and connection points available within the zone substation.
- 11kV feeders and distribution substations: The developer will be responsible for the extension of existing 11kV and/or installation of additional 11kV feeders from the zone substation, to the development site. Endeavour Energy will provide a capital contribution towards the cost of the distribution substations (excluding the earthing component).

Please note, our funding arrangement/capital contribution policy are subject to change from time to time. The funding arrangement/capital contribution policy current at the time of design certification must apply.

The existing overhead network within and along the development boundary are expected to be undergrounded and/or removed when made redundant as part of the redevelopment works.

Application:
To initiate the formal application process, the developer is required to complete and submit an Application for Provision of an Electricity Network in a Subdivision and/or Application for the connection of load. The nominated Level 3 ASP is then to prepare and provide a preliminary electrical design to Endeavour Energy in the form of a Proposed Method of Supply (PMOS), which will lead to detailed design and construction of the network extension to the development. This activity is customer funded contestable works and the developer will need to pay for it.

An application must be submitted and subsequent designs certified or approvals granted before Endeavour Energy reserves capacity on the network or spare ducts for the development.

Please refer to the Google Maps HV overlay plan attached for the location of the zone substations relative to the development site.

More information regarding Network Connections processes can be found on our website.

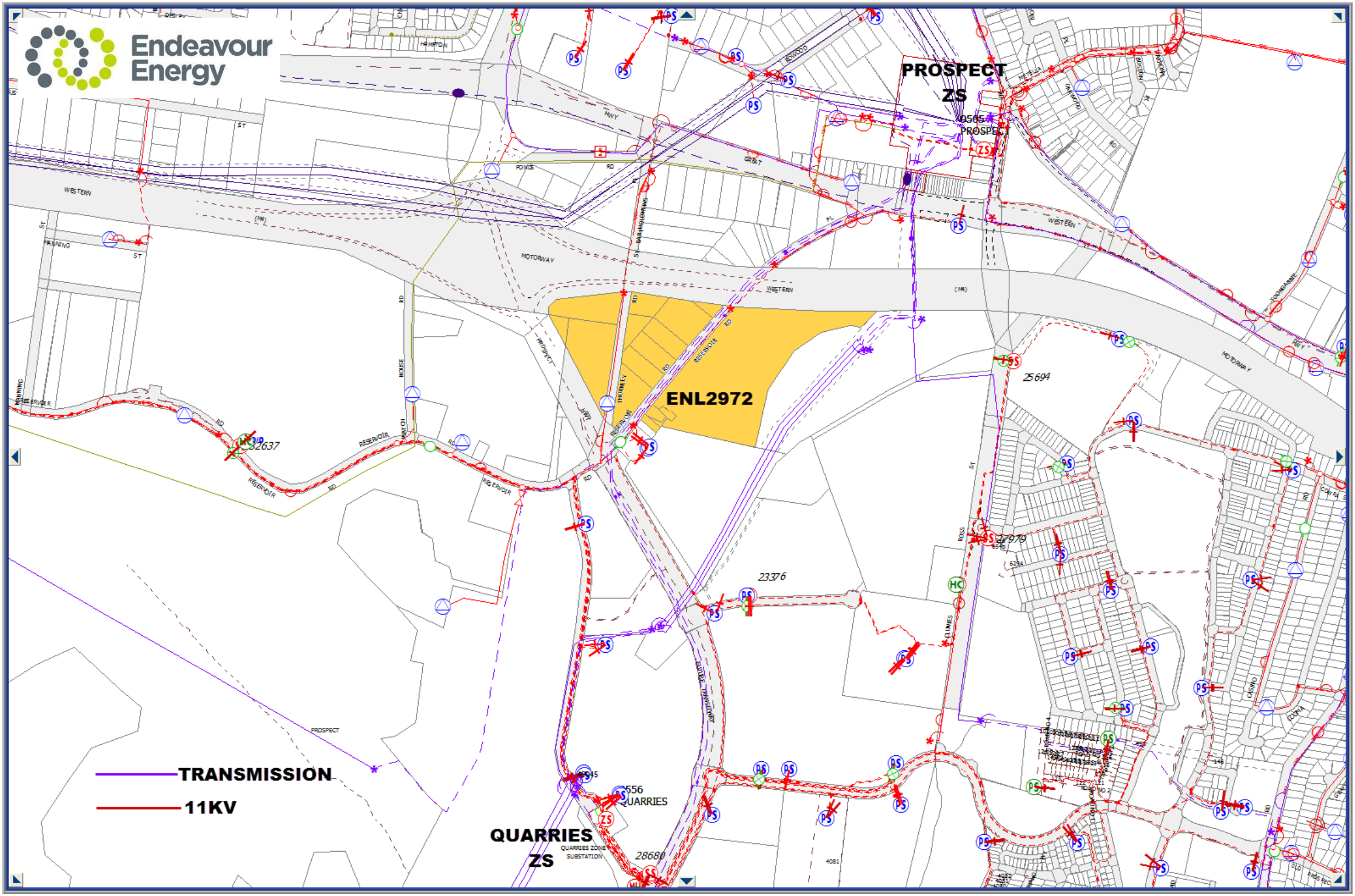
I hope this assists for the meantime and this advice provided is in response to a Technical Review Request only and does not constitute a formal method of supply.

Should you have any enquiries regarding your application please do not hesitate to contact the undersigned.

Yours faithfully

SBarkho

Simon Barkho
Contestable Project Manager
Ph: 9853 7965
Email: simon.barkho@endeavourenergy.com.au


Endeavour Energy
PROSPECT
ZS
9565
PROSPECT
ENL2972
25694
32637
27979
23376
556
QUARRIES
QUARRIES
ZS
28680
TRANSMISSION
11KV

APPENDIX E

Sydney Water – Feasibility Section 73

Case Number: 167808

9 January 2018

NSW DEPARTMENT OF PLANNING & ENVIRONMENT
c/- MGP BUILDING & INFRASTRUCTURE SERVICE PL

FEASIBILITY LETTER

Developer:	**NSW DEPARTMENT OF PLANNING & ENVIRONMENT**
Your reference:	**2017-0608**
Development:	**Lot 12 DP448744 567 RESERVOIR RD, Prospect**
Development Description:	**Proposed Industrial Development & Subdivision**
Your application date:	**2 November 2017**

Dear Applicant

This Feasibility Letter (Letter) is a guide only. It provides general information about what Sydney Water's requirements could be if you applied to us for a Section 73 Certificate (Certificate) for your proposed development. **The information is accurate at today's date only.**

If you obtain development consent for that development from your consent authority (this is usually your local Council) they will require you to apply to us for a Section 73 Certificate. You will need to submit a new application (and pay another application fee) to us for that Certificate by using your current or another Water Servicing Coordinator (Coordinator).

Sydney Water will then send you either a:

- Notice of Requirements (Notice) and Developer Works Deed (Deed) or
- Certificate.

These documents will be the definitive statement of Sydney Water's requirements.

There may be changes in Sydney Water's requirements between the issue dates of this Letter and the Notice or Certificate. The changes may be:

- if you change your proposed development eg the development description or the plan/ site layout, after today, the requirements in this Letter could change when you submit your new application; and

- if you decide to do your development in stages then you must submit a new application

(and pay another application fee) for each stage.

You have made an application for specific information. Sydney Water's possible requirements are:

No warranties or assurances can be given about the suitability of this document or any of its provisions for any specific transaction. It does not constitute an approval from Sydney Water and to the extent that it is able, Sydney Water limits its liability to the reissue of this Letter or the return of your application fee. You should rely on your own independent professional advice.

What You Must Do To Get A Section 73 Certificate In The Future.

To get a Section 73 Certificate you must do the following things. You can also find out about this process by visiting www.sydneywater.com.au > Plumbing, building & developing > Developing > Land development.

1. **Obtain Development Consent from the consent authority for your development proposal.**

2. **Engage a Water Servicing Coordinator (Coordinator).**

   You must engage your current or another authorised Coordinator to manage the design and construction of works that you must provide, at your cost, to service your development. If you wish to engage another Coordinator (at any point in this process) you must write and tell Sydney Water.

   For a list of authorised Coordinators, either visit www.sydneywater.com.au > Plumbing, building & developing > Developing > Providers > Lists or call **13 20 92.**

   The Coordinator will be your point of contact with Sydney Water. They can answer most questions that you might have about the process and developer charges and can give you a quote or information about costs for services/works (including Sydney Water costs).

3. **Developer Works Deed**

   After the Coordinator has submitted your new application, they will receive the Sydney Water Notice and Developer Works Deed. You and your accredited Developer Infrastructure Providers (Providers) will need to sign and lodge both copies of the Deed with your nominated Coordinator. After Sydney Water has signed the documents, one copy will be returned to the Coordinator.

   The Deed sets out for this project:

   - your responsibilities;
   - Sydney Water's responsibilities; and
   - the Provider's responsibilities.

   You must do all the things that we ask you to do in that Deed. This is because your development does not have water and sewer services and you must construct and pay for the following works extensions under this Deed to provide these services.

   Note: The Coordinator must be fully authorised by us for the whole time of the agreement.

4. **Water and Sewer Works**

   4.1 **Water**

   Your development must have a frontage to a water main that is the right size and can be used for connection.

Sydney Water has assessed your application and found that:

- The industrial subdivision will be serviced via extensions from the existing 300mm watermain in Reservoir Road. The 500mm and 750mm mains in Thornley Road are not available for connection.

- To assist in determination of Sydney Waters requirements as part of the Section 73 application phase, a Service Brief covering concept options should be prepared and submitted as part of the application.

- These concept options will need to include development layout plans, demand forecasting, staging, timing, proposed asset extensions. The options should take into consideration the needs of the total catchment.

- Depending on the complexity of options due to local conditions, your Water Service Coordinator may advise that it is necessary to engage a range of service providers to complete the concept options documentation.

- This advice is not a formal approval of our servicing requirements. Formal requirements for servicing the development will be determined as part of the Section 73 application. More information about the Section 73 application process is available on our web page in the Land Development Manual.

4.2 **Sewer**

Your development must have a sewer main that is the right size and can be used for connection. That sewer must also have a connection point within your development's boundaries.

Sydney Water has assessed your application and found that:

- A wastewater extension will be required to service the proposed subdivision from the 225mm main located within Reconciliation Road, which will provide a point of connection at least 1m inside all the property boundaries.

- To assist in determination of Sydney Waters requirements as part of the Section 73 application phase, a Service Brief covering concept options should be prepared and submitted as part of the application.

- These concept options will need to include development layout plans, demand forecasting, staging, timing, proposed asset extensions. The options should take into consideration the needs of the total catchment.

- Depending on the complexity of options due to local conditions, your Water Service

Coordinator may advise that it is necessary to engage a range of service providers to complete the concept options documentation.

- This advice is not a formal approval of our servicing requirements. Formal requirements for servicing the development will be determined as part of the Section 73 application. More information about the Section 73 application process is available on our web page in the Land Development Manual.

5. Ancillary Matters

5.1 Asset adjustments

After Sydney Water issues this Notice (and more detailed designs are available), Sydney Water may require that the water main/sewer main/stormwater located in the footway/your property needs to be adjusted/deviated. If this happens, you will need to do this work as well as the extension we have detailed above at your cost. The work must meet the conditions of this Notice and you will need to complete it **before we can issue the Certificate**. Sydney Water will need to see the completed designs for the work and we will require you to lodge a

security. The security will be refunded once the work is completed.

5.2 Entry onto neighbouring property

If you need to enter a neighbouring property, you must have the written permission of the relevant property owners and tenants. You must use Sydney Water's **Permission to Enter** form(s) for this. You can get copies of these forms from your Coordinator or the Sydney Water website. Your Coordinator can also negotiate on your behalf. Please make sure that you address all the items on the form(s) including payment of compensation and whether there are other ways of designing and constructing that could avoid or reduce their impacts. You will be responsible for all costs of mediation involved in resolving any disputes. Please allow enough time for entry issues to be resolved.

5.3 Costs

Construction of these **future** works will require you to pay project management, survey, design and construction costs **directly to your suppliers**. Additional costs payable to Sydney Water may include:

- water main shutdown and disinfection;
- connection of new water mains to Sydney Water system(s);
- design and construction audit fees;
- contract administration, Operations Area Charge & Customer Redress prior to project finalisation;
- creation or alteration of easements etc; and
- water usage charges where water has been supplied for building activity purposes prior to disinfection of a newly constructed water main.

Note: Payment for any Goods and Services (including Customer Redress) provided by Sydney Water will be required prior to the issue of the Section 73 Certificate or release of the Bank Guarantee or Cash Bond.

Your Coordinator can tell you about these costs.

6. Special Requirements

OTHER THINGS YOU MAY NEED TO DO

Shown below are other things you need to do that are NOT a requirement for the Certificate. They may well be a requirement of Sydney Water in the future because of the impact of your development on our assets. You must read them before you go any further.

Approval of your building plans

Please note that the building plans must be approved when each lot is developed. This can be done at Sydney Water Tap in™. Visit www.sydneywater.com.au > Plumbing, building & developing > Building > Sydney Water Tap in™.

This is not a requirement for the Certificate but the approval is needed because the construction/building works may affect Sydney Water's assets (e.g. water, sewer and stormwater mains).

Where a Sydney Water stormwater channel, pipe or culvert is located within ten (10) metres of your development site it must be referred to Sydney Water for further assessment.

Your Coordinator can tell you about the approval process including:

- Possible requirements;
- Costs; and
- Timeframes.

Note: You must obtain our written approval before you do any work on Sydney Water's systems. Sydney Water will take action to have work stopped on the site if you do not have that approval. We will apply Section 44 of the *Sydney Water Act 1994.*

Disused Sewerage Service Sealing

Please do not forget that you must pay to disconnect all disused private sewerage services and seal them at the point of connection to a Sydney Water sewer main. This work must meet Sydney Water's standards in the Plumbing Code of Australia (the Code) and be done by a licensed drainer. The licensed drainer must arrange for an inspection of the work by a NSW Fair Trading Plumbing Inspection Assurance Services (PIAS) officer. After that officer has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Soffit Requirements

Please be aware that floor levels must be able to meet Sydney Water's soffit requirements for property connection and drainage.

Fire Fighting

Definition of fire fighting systems is the responsibility of the developer and is not part of the Section 73 process. It is recommended that a consultant should advise the developer regarding the fire fighting flow of the development and the ability of Sydney Water's system to provide that flow in an emergency. Sydney Water's Operating Licence directs that Sydney Water's mains are only required to provide domestic supply at a minimum pressure of 15 m head.

A report supplying modelled pressures called the Statement of Available pressure can be purchased through Sydney Water Tap in™ and may be of some assistance when defining the fire fighting system. The Statement of Available pressure, may advise flow limits that relate to system capacity or diameter of the main and pressure limits according to pressure management initiatives. If mains are required for fire fighting purposes, the mains shall be arranged through the water main extension process and not the Section 73 process.

Large Water Service Connection

A water main will be available, once you have completed your drinking water main construction to provide your development with a domestic supply. The size of your development means that you will need a connection larger than the standard domestic 20 mm size.

To get approval for your connection, you will need to lodge an application with Sydney Water Tap in™. You, or your hydraulic consultant, may need to supply the following:

- A plan of the hydraulic layout;
- A list of all the fixtures/fittings within the property;
- A copy of the fireflow pressure inquiry issued by Sydney Water;
- A pump application form (if a pump is required);
- All pump details (if a pump is required).

You will have to pay an application fee.

Sydney Water does not consider whether a water main is adequate for fire fighting purposes for your development. We cannot guarantee that this water supply will meet your Council's fire fighting requirements. The Council and your hydraulic consultant can help.

Disused Water Service Sealing

You must pay to disconnect all disused private water services and seal them at the point of connection to a Sydney Water water main. This work must meet Sydney Water's standards in the Plumbing Code of Australia (the Code) and be done by a licensed plumber. The licensed plumber must arrange for an inspection of the work by a NSW Fair Trading Plumbing Inspection Assurance Services (PIAS) officer. After that officer has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Other fees and requirements
The requirements in this Notice relate to your Certificate application only. Sydney Water may be involved with other aspects of your development and there may be other fees or requirements. These include:

- plumbing and drainage inspection costs;
- the installation of backflow prevention devices;
- trade waste requirements;
- large water connections and
- council fire fighting requirements. (It will help you to know what the fire fighting requirements are for your development as soon as possible. Your hydraulic consultant can help you here.)

No warranties or assurances can be given about the suitability of this document or any of its provisions for any specific transaction. It does not constitute an approval from Sydney Water and to the extent that it is able, Sydney Water limits its liability to the reissue of this Letter or the return of your application fee. You should rely on your own

independent professional advice.

END


ARCADIS
Design & Consultancy
for natural and
built assets