

Eastern Creek Business Hub

Infrastructure Overview



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Western Sydney Parklands Trust

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**EASTERN CREEK BUSINESS HUB
INFRASTRUCTURE OVERVIEW**

- DOCUMENT CONTROL SHEET -

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**EASTERN CREEK BUSINESS HUB
INFRASTRUCTURE OVERVIEW**

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1 INTRODUCTION

Western Sydney Parklands Trust is proposing to facilitate the development of a Business Hub on its land located to the east of Rooty Hill Road South as shown on Figure 1, below.



Figure 1 Development Proposal

Details of the development proposal are contained in the application prepared by Architectus. This report has been prepared to provide an overview of the infrastructure issues that are associated with the proposal. Specifically, the following matters are addressed in this report and other reports and documents prepared by J Wyndham Prince that are referenced in this report.

1.1 Scope of this report

This document covers:

- Utility servicing
- Cable Place intersection
- Internal civil infrastructure

Other documents associated with the project are referenced in the section dealing with the Director General's Requirements in Section 2, below.

2 DIRECTOR GENERAL'S REQUIREMENTS

The Director General's Requirements were issued by the Department of Planning by letter dated 19 March 2012. J Wyndham Prince has dealt with the matters contained in the requirements as described in the Table below. Other members of the consultant team cover other matters.

Table 1 Responses to DGR's by J Wyndham Prince

DGR Key Issue	J Wyndham Prince response
Item 2 - Policies, Guidelines and Planning Agreements	
NSW Government Flood Prone Land Policy (1984)	See in report titled: Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design Techniques
Item 8 - Transport and Accessibility	
Detailed plans of any proposed road/intersection upgrades, including the proposed new traffic signal controlled intersection. Opportunities should be investigated to align the new road and intersection with Cable Street.	See separate plans by J Wyndham Prince
Detail the proposed access arrangements for Stage 1 subdivision and early works construction and measures to mitigate any associated traffic impacts.	See separate plans by J Wyndham Prince
Item 14 - Utilities	
In consultation with relevant agencies the EIS shall address the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure through the preparation of an Infrastructure Management Plan.	See Section of this report on Utility Servicing

DGR Key Issue	J Wyndham Prince response
Prepare an Integrated Water Management Plan detailing any proposed alternative water supply, proposed end users of potable and non-potable water, demonstration of water sensitive urban design and water conservation measures.	See report by J Wyndham Prince titled: Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design Techniques
Arrangements to protect or relocate easements should be identified.	See Section of this report on Utility Servicing
Item 17 Stage 1 Subdivision and Early Works - Drainage	
Indicate how the extent of cut and fill associated with the proposed development will be minimised.	See separate plans by J Wyndham Prince
Drainage associated with the proposal, including stormwater and drainage infrastructure improvements, shall be designed in consultation with Blacktown City Council and must avoid any adverse impacts on downstream properties.	See separate plans by J Wyndham Prince
The proposal shall address the impact of any flooding or stormwater flows on the site from other catchments, overland flow paths and include the preparation of a detailed hydrological and hydraulic assessment (including catchment modelling).	See separate plans by J Wyndham Prince and report by J Wyndham Prince titled: Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design Techniques
As assessment of earthworks and filling of land within the proposed development based on an understanding of cumulative flood impacts of any possible development in the catchment.	See separate plans by J Wyndham Prince
Details of the proposed detention basin are to be provided, including ownership and maintenance details.	See report by J Wyndham Prince titled: Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design Techniques
Plans and details of the proposed wetland areas and drainage channel/riparian corridor to be rehabilitated to be provided.	See separate plans by J Wyndham Prince and report by J Wyndham Prince titled: Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design

DGR Key Issue	J Wyndham Prince response
	Techniques
- Assess the potential impact of the proposed development on surface water and ground water and measures to mitigate and manage any potential impacts, where relevant. → <i>Relevant Policies and Guidelines:</i> <i>Water Management Act 2000</i> <i>Blacktown Development Control Plan 2006 Part R – WSUD – Integrated Water Cycle Management</i> <i>Submission of a MUSIC model and 80% non-potable rainwater reuse targets.</i>	See report by J Wyndham Prince titled: Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design Techniques Groundwater is covered by Environmental Contamination Remediation Strategy by CDM Smith
Item 18 Subdivision and Early Works - Sediment Erosion and Dust Controls	
Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles. → <i>Relevant Policies and Guidelines:</i> <i>Managing Urban Stormwater – Soils & Construction Volume 1 2004 (Landcom)</i> <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA)</i>	See separate plans by J Wyndham Prince and report by J Wyndham Prince titled: Construction Management Plan
Item 19 Waste	
Identify, quantify and classify the likely waste streams to be generated during Stage 1 subdivision and early works and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.	See report by J Wyndham Prince titled: Construction Management Plan
Plans and Documents	
	For Stormwater Concept Plan see report by J Wyndham Prince titled: Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design Techniques For Construction Management Plan see separate report of that title by J Wyndham Prince

3 INFRASTRUCTURE MANAGEMENT PLAN - UTILITIES

Earlier work by J Wyndham Prince was documented in the letter report dated 11 November 2011, which is in APPENDIX A.

Further work has been done since that letter and is covered in the relevant servicing concept plans developed for the site. Comments on these concept plans are below.

It is important to note that the servicing authorities have set processes for developments. This involves providing servicing information to which the authority is committed after granting of development consent. However, Sydney Water has recently altered its process to accommodate an application for a certificate under s73 of the Sydney Water Act 1994 prior to determination of a DA but after the said DA is lodged. The application to Sydney Water must carry the DA number issued by the consent authority.

Endeavour Energy (EE) requires an application be made for connection to its network. For large developments it is preferred that contact with EE be made at the earliest opportunity. This early contact was undertaken by J Wyndham Prince in 2009 which resulted in the letter advice at Appendix A.

3.1 Electricity

The energy supply authority for the site is Endeavour Energy. A formal application has not yet been made to EE, however, the electrical concept plan takes into account the status of the existing network and the connection point to the site.

Note that a zone substation is under construction at Eastern Road, Doonside that will enhance the capacity of the electrical network, and will enable servicing of the total site development by the installation of an 11kV feeder from the zone substation.



Figure 2 Zone Substation at 9 May 2012 (Source Nearmap)

The relationship of this Zone Substation to the site is shown on Figure 3, below.



Figure 3 Zone Substation and ECBH site (Source Nearmap)

On Figure 3 the site is shown with red outline and the zone substation is shown at the top of the image in a yellow ellipse.

Existing overhead high voltage is present in Rooty Hill Road South along the entire length of the site.

Previous advice from EE is contained at Appendix A.

Concept plans prepared by Alliance Power and Data (APD) for the provision of electricity are under separate cover within the drawings prepared by J Wyndham Prince for this application. In these plans a route for the 11kV feeder has been shown. The final route for this will be subject of a separate environmental study by EE as part of the overall design and assessment of the feeder installation.

3.2 Sewer

Existing sewerage infrastructure is located in Rooty Hill Road South. It drains the upstream catchments to a Sewage Pumping Station, SPS0395 located to the north of Eastern Creek Public School. A rising pressure main conveys the sewage from the SPS along the eastern side of Rooty Hill Road. The inlet manhole at the SPS is about 3m deep, which indicates that it is deep enough to drain at least part of the site.

Other sewerage infrastructure is located on the eastern side of the M7 Motorway. This line is a 750mm pipeline about 5m below the surface.

A plan showing Sydney Water assets is located at APPENDIX B.

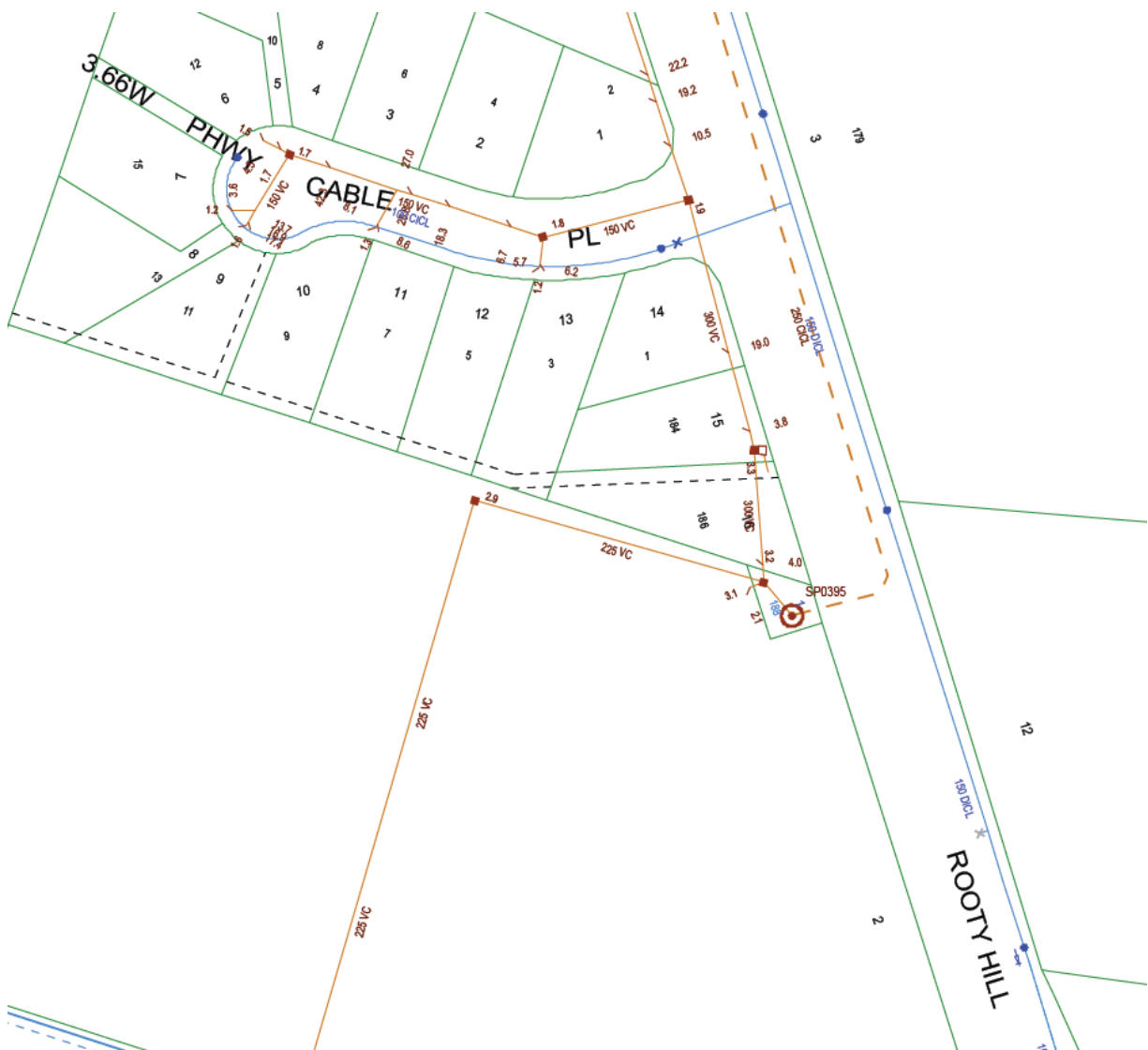


Figure 4, above shows the SPS adjacent to the site.

Concept plans for the provision of sewer are under separate cover within the drawings for this application prepared by J Wyndham Prince. Sydney Water accredited designers, Qalchek, have prepared the sewer and water concept. This sewer concept shows that the site will drain to the existing pumping station within Eastern Creek Public School. The complete requirements of Sydney Water will only be available when an application is lodged for a certificate under section 73 of the Sydney Water Act 1994.

3.3 Water

Water infrastructure is located in Rooty Hill Road South. A 150mm diameter pipeline runs along the entire length of the site on the eastern side of Rooty Hill Road South. 100mm diameter mains extend into Beggs Road and Church Street as shown on the plan at APPENDIX B. This water main can also be seen on Figure 4 above.

Concept plans for the provision of water are under separate cover within the drawings for this application prepared by J Wyndham Prince. Sydney Water accredited designers, Qalchek, have prepared the sewer and water concept. The water concept shows a new 150mm diameter water main to be installed along the proposed cul-de-sac road to service the development. The complete requirements of Sydney Water will only be available when an application is lodged for a certificate under section 73 of the Sydney Water Act 1994.

3.4 Gas

A high-pressure gas line operated by Jemena traverses the site. Jemena was consulted regarding this pipeline at a meeting held at Jemena on Monday 7th May 2012. At that meeting Jemena indicated that its issues would be addressed by conducting a Safety Management Study (SMS) pursuant to the requirements of Australian Standard AS 2885 - Pipelines - Gas and liquid petroleum, Part 3 Operations and maintenance.

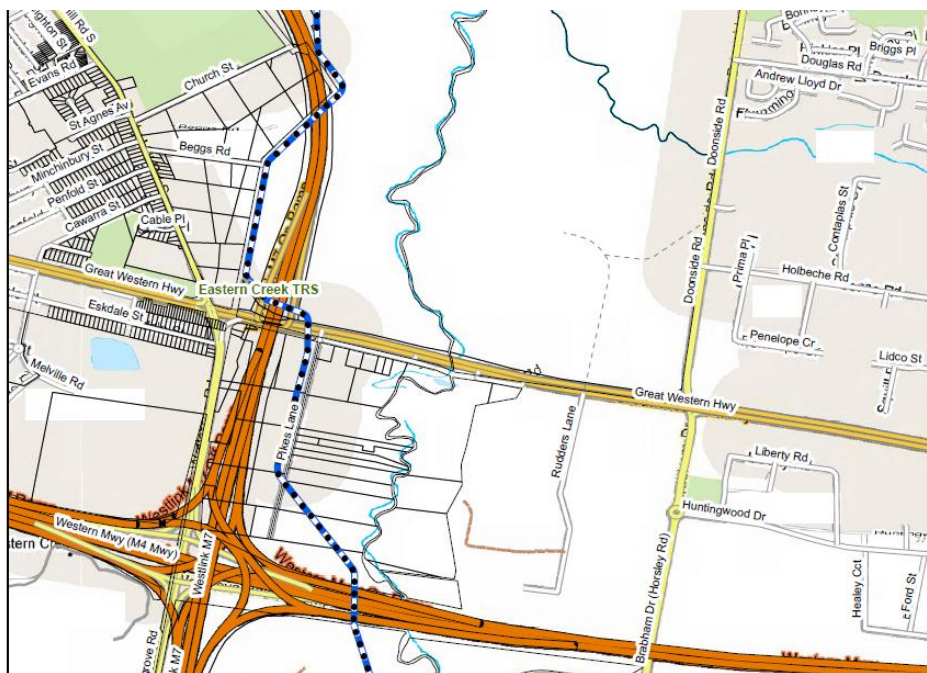


Figure 5 Jemena High Pressure Gas Line

It was indicated at that meeting that there would be no requirement prior to development approval to carry out this SMS. The operational safety issues need to be attended to prior to carrying out any work on the site in proximity to the gas line, so the SMS needs to be conducted prior to that activity.

Under standard provisioning for gas in subdivisions a joint trench arrangement will be adopted should Jemena agree to provide gas to this commercial development. Servicing of commercial and industrial development by Jemena with reticulated gas is only done by direct agreement with Jemena based on demand for the gas. It is not anticipated that the future developments to be erected on the site will be high gas users and therefore gas may not be made available to the site.

3.5 Telecommunications

There has been no change to the telecommunications provisioning advice from the letter of J Wyndham Prince in Appendix A.

The adjoining urban area is presently serviced with overhead telecommunication cable; the extension of this to any proposed development is a relatively simple matter. In this respect the proposed development can be adequately serviced with telecommunications. Installation of NBN broadband will be by negotiation at the time of service provisioning for the site.

4 CABLE PLACE INTERSECTION

The traffic consultant for this project Traffix has conceptually designed Cable Place intersection. The diagram for the intersection is at Figure 2 below.

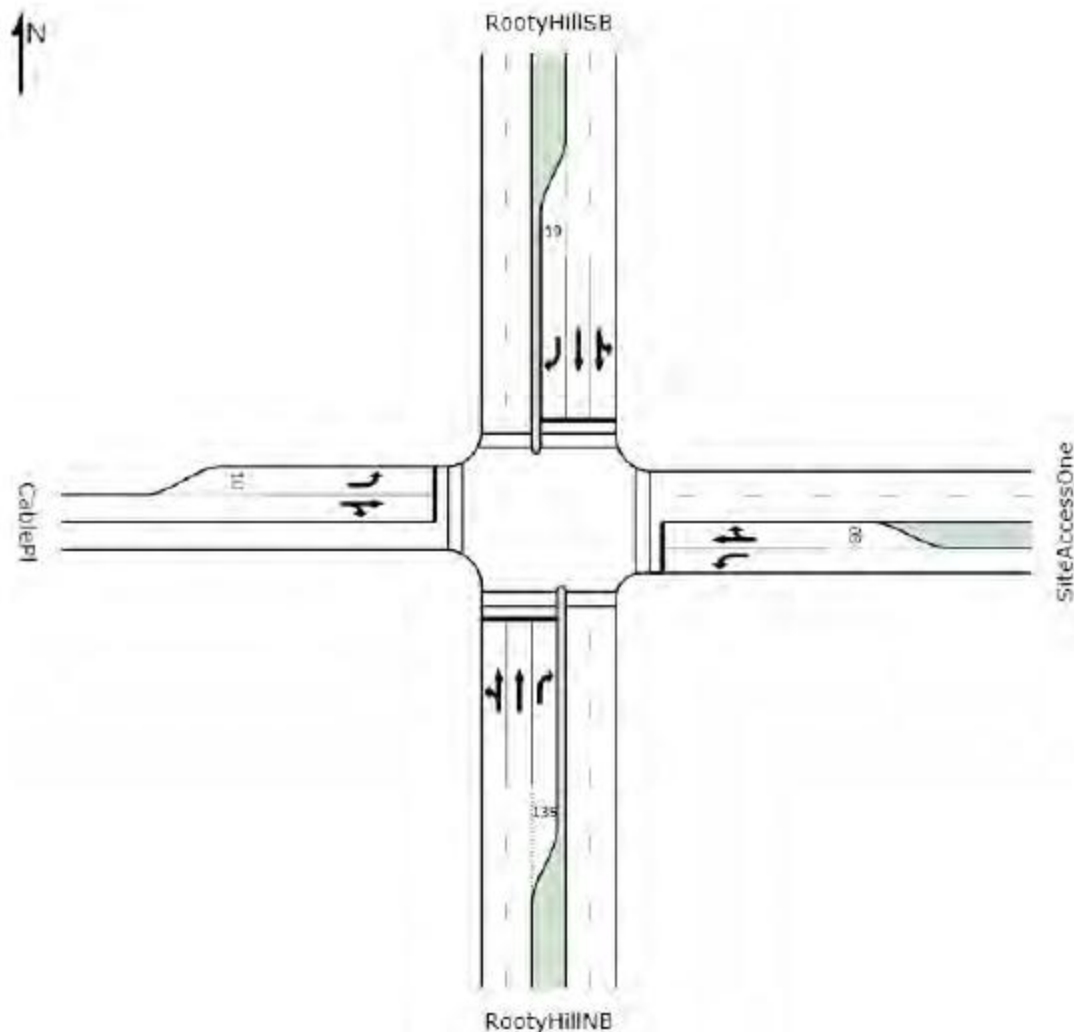


Figure 6 Cable Place Intersection

(Source: Traffix report August 2012 ref 12.108r01v3)

J Wyndham Prince has further developed the proposed intersection into engineering concept plans which are separate to this report.

The engineering concept has been designed with reference to the Austroads Guide to Road Design:

- Part 3 Geometric Design (2010 edition)
- Part 4 Intersections and Crossings - General (2009 edition)
- Part 4A Unsignalised and Signalised Intersections (2010 edition)

Upon approval of the development proposal, it will be necessary to further develop the intersection design and obtain approval from the Roads and Maritime Services (RMS) and for the proponent to enter into a Works Authorisation Deed (WAD) with the RMS in order to carry out the works.

5 STORMWATER MASTERPLAN

See separate report by J Wyndham Prince titled:

“Water Cycle Management Strategy Report Incorporating Water Sensitive Urban Design Techniques”

6 INTERNAL CIVIL INFRASTRUCTURE

The internal civil infrastructure has been documented on drawings by J Wyndham Prince under separate cover. These drawings have been developed to adhere as closely as possible to the design requirements of Blacktown City Council as expressed in the Council's Engineering Guide for Development 2005.

Prior to commencing civil works on the site, a specific geotechnical investigation for construction purposes will be undertaken. This investigation will be to ascertain:

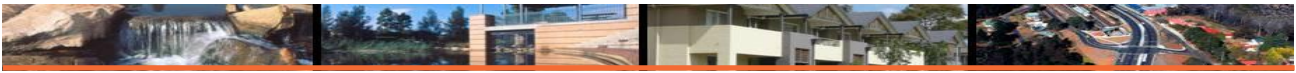
- Subsoil conditions for pavement design
- Soil characteristics for retaining wall construction should these become essential to the site development
- Salinity parameters
- Groundwater affectation on the civil works

Should this investigation reveal the presence of saline soils or other geotechnical issues that may affect the works, then the requirements of the geotechnical investigation will be implemented by the civil engineering contractor.

The civil works have been designed to limit the impact on the existing Cumberland Plain Woodland and to take advantage of existing drainage patterns. Runoff from the site is maintained to similar flow regimes that are now present due the detention basins proposed and shown in the civil drawings and described in the stormwater management report. Water quality is also addressed and is further described in the stormwater management report associated with this application as prepared by J Wyndham Prince.

Further, the civil designs have been constrained by the very flat grades of the site and the relatively high invert levels of the culverts under the M7 motorway.

7 APPENDIX A – UTILITY SERVICING LETTER 11 NOVEMBER 2011



Our Ref: 8801 WSP 111108 ServRep

SAG:sd

8 November 2011

Western Sydney Parkland Trust
Level 4
10 Valentine Street
PARRAMATTA, NSW 2150

Attn: Mr Eric Brodie

Subject: Eastern Creek Business Hub – Services Feasibility.
Staged Development Application

Dear Sir,

As requested J Wyndham Prince has undertaken a preliminary review of the services and stormwater infrastructure associated with the site of the proposed Eastern Creek Business Hub. The site is shown at Figure 1 at the end of this report. The following summarises the results of this preliminary review.

High pressure Gas Main.

The site presently is traversed by a significant high pressure gas main, which runs approximately north / south through the site, along the alignment of the unformed Belmore Rd. This affects the east side of the site closer to the M7. This area is not proposed for development, and as such the proposed development will not require the main to be relocated or affected in any way. The existence of the main imposes a design constraint on the location of the sewer, as discussed below, and on the location of drainage structures. The gas main appears to be located within an earth embankment. Crossing the gas main for any utility requires careful planning and execution, a high degree of consultation with and approval from Jemena.

Sewer

There is significant sewer infrastructure adjoining the site. The existing residential development to the west of Rooty Hill Road South drains to an existing Sewage Pumping Station (SPS 0395). This pumping station then drains via a rising main along Rooty Hill Road South into a 300mm gravity main to the north of the proposed development. At present the capacity of this system to absorb development in the site has not been confirmed by Sydney Water, but should be assumed to be unlikely.

There is a 900mm sewer to the east of the M7 motorway, which is understood to have been constructed to accommodate the development within the site. Access to the new main will however require underboring both the M7 and the major High Pressure gas main running along the alignment of Belmore Road.

The location of the new carrier to the east has been searched and a number of potential connection points have been identified. The selection of the appropriate connection point requires

that the invert level achieved by that point is sufficiently deep to allow the sewer to be below the gas main, and run through the site at a grade sufficient to provide an effective sewerage system.

One alternative will be to connect at a point north of Church Street (approx 450m north east), where the sewer has been constructed on the western side of the gas main, and therefore crossing the gas main would not be necessary. The proposal will need to balance the cost of an extended sewer main, and the design constraints that may be imposed against the cost of further underboring and encasing a sewer under the gas main.

A formal application will need to be made to Sydney Water to confirm these design options. There are some potential benefits to Sydney Water in the construction of the new main under the M7, as this may allow the existing SPS to be decommissioned (and connect the residential area west of Rooty Hill Road South directly to the new sewer through the site).

An alternative solution with short term capacity to service a first stage development is the installation of a low pressure system draining to the existing pump station. A low pressure system can be devised to pump out during off peak times. Confirmation of the alternative will need to be given by Sydney Water.

Water

There are a number of potable water mains adjacent to the site. A formal application to Sydney Water will confirm the capacity of these mains to service the proposed development. The most likely and effective connection will be to an existing 300mm main located to the south of the site. Sydney Water will estimate the total water demand from the development only when a specific development proposal is presented. However, the existing 300mm mains and alternatives present adjoining the site should provide adequate capacity.

Electricity

At present the site has access to low voltage residential power on the Rooty Hill Road South frontage that also provides service to the existing residences. High voltage lines exist overhead on the west side of the road. Advice from Integral Energy is that the reticulation system is constrained through this area with limited scope for expansion. The magnitude of development proposed for the site will require the installation of a new HV (11kV) feeder line from a zone substation. This will need to be connected from the proposed new Bungarribee zone substation proposed for Doonside located near Eastern Road. The sub station site is to the north east of the proposed development site. The Bungarribee zone substation is planned to be commissioned by December 2011.

The assumed power load required for the development of the site will create a demand equivalent to 2.5 to 5.0MVA. This is effectively the capacity of a single 11kV feeder.

In the short term, for the first stages of the development, it may be possible to upgrade one or some of the local distribution transformers without the need for a new 11kV feeder from a zone substation.

Gas

Gas is available to the site via an existing 50mm main located in Rooty Hill Road South. This has the capacity to service the proposed uses according to Jemena, the relevant supplier. Further upgrades of the existing supply may need to be considered, depending upon the specific development proposals, if high energy users are proposed.

Telecommunications

Under Section 9 of the Telecommunications (Consumer Protection and Service Standards) Act 1999 (Cth), Telstra has an obligation (Universal Services Obligation) to ensure that the standard telephone service, payphones, prescribed carriage services and digital data services are reasonably accessible to all Australians on an equitable basis, wherever they reside or carry on business. Therefore it is the responsibility of Telstra to provide phone services to the proposed development area.

The adjoining urban area is presently serviced with overhead telecommunication cable; the extension of this to any proposed development is a relatively simple matter. In this respect the proposed development can be adequately serviced with a simple phone service.

It is assumed that the proposed development will require services to be located underground and Telstra will provide the cables, conduits and access chambers while the excavation of the service trenches (along permanent access roads) into which the cable will be placed and subsequent backfilling will be the responsibility of the developer. This service trench would form part of the shared services trenching with Jemena, Integral Energy and Telstra. Reticulation costs would not be incurred by the developer if suitable service trenches are provided. Furthermore, if as a result of the proposed development, any relocation of existing Telstra network infrastructure is required, it will be borne by the developer.

While a basic phone service will be provided by Telstra, broadband services may be provided through the extension of the existing overhead network by Telstra with the service dependent on exchange based infrastructure. This will be dependent on commercial arrangements between end users and service suppliers. It is also possible that additional conduits can be provided at the construction stage to ensure that a number of broadband providers can service the area. Subject to timing of the development, and the rollout of the National Broadband Network, the provision of optic fibre facilities through the precinct will need further investigation.

Storm Water

The existing storm water system across the site is not well developed.

The site drains to the east via two box culverts under the M7. The northern culvert drains the northern part of the site. The catchment draining to this culvert includes an area of Rooty Hill further to the north and west. There is no infrastructure to facilitate drainage and water flows overland to the culvert. As a result there is a large expanse of water sitting in the vicinity of the culvert that does not appear to flow. It was also evident on site that algal blooms form within the standing water.

It also appears that the northern drainage system suffers from a lack of fall across the M7, with the downstream side no lower than the upstream. Water is being held against the M7 embankment to allow sufficient hydraulic grade to build in order to drain. This circumstance will eventually modify the vegetation type surrounding the culvert, as the ground conditions will be permanently wet. The development proposal and vegetation management plan may need to consider construction of a more formal water feature that will allow water to be held in a manner that will improve water quality rather than encourage algal blooms, and random establishment of vegetation types.

The southern M7 culvert is intended to drain the south portion of the site, with the catchment including a portion of the residential area to the west of Rooty Hill Road South. The residential area drains under Rooty Hill Road South via a culvert which is then intended to be connected to the culvert under M7 by a formed channel. The southern channel does not drain across the high pressure gas main. The channel is in poor condition and largely overgrown in sections, the

upstream culvert is submerged and water does not appear to flow at all from this point. The inlet pits on Rooty Hill Road South and Cable Place are all in poor condition with large amounts of accumulated silt and rubbish blocking any view of the pipe network. The surrounding roadways are flat, to the extent that water will stand within the gutter after rain, and does not drain.

In this area, Rooty Hill Road South is flat and appears to experience drainage difficulties.

It is evident that the existing channel to the southern culvert will need significant work to be made effective. Any new channel would be best located to utilise the existing culverts under Rooty Hill Rd South and the M7. The critical issue to be addressed is the ability of the site to drain naturally to either of the two existing culverts under the M7. The masterplan and subdivision layout will need to accommodate a drainage channel, and allow for adequate drainage across the southern portion of the site. It may be appropriate to incorporate a water body to assist in providing for effective drainage of the southern portion of the site to the northern section of the site, to avoid crossing the high pressure gas main.

Conclusions

The site can be serviced with all utilities necessary to support the proposed development.

The development will require the construction of a new sewer under the M7, and connecting to an existing sewer located east of the M7. This presents the possibility of improving sewer services to adjacent land by the connection of a new gravity sewer.

The development will require the upgrade of high voltage electrical infrastructure, which is largely being planned for the area through the construction of a new zone substation to service Doonside.

Storm water will need to be adequately managed and a comprehensive and integrated stormwater and vegetation management plan will be required to ensure standing water on the site is improved in quality both from a water quality improvement perspective and from an aesthetic perspective.

Yours faithfully

J. WYNDHAM PRINCE



STUART GREEN

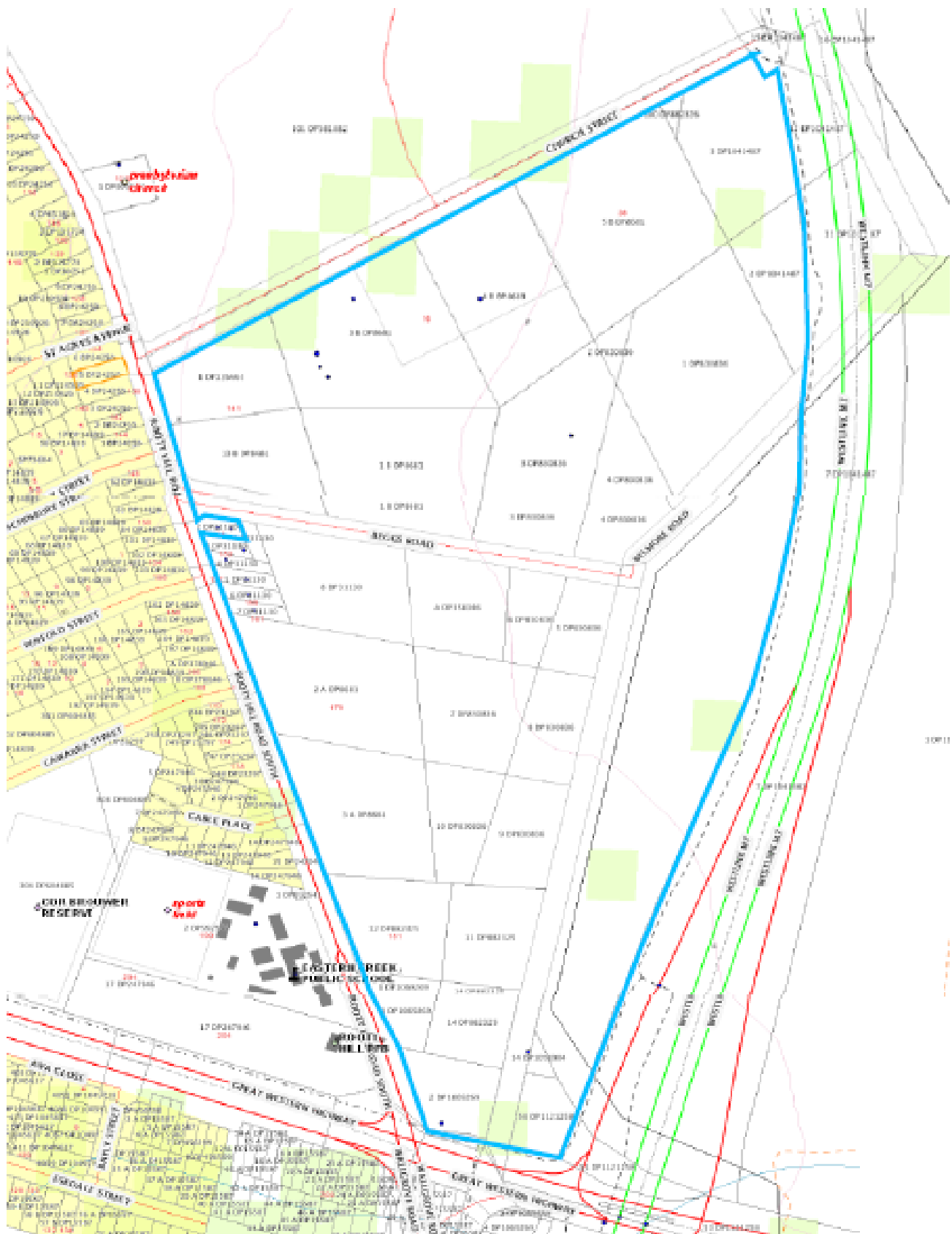


Figure 1 Eastern Creek Business Hub site