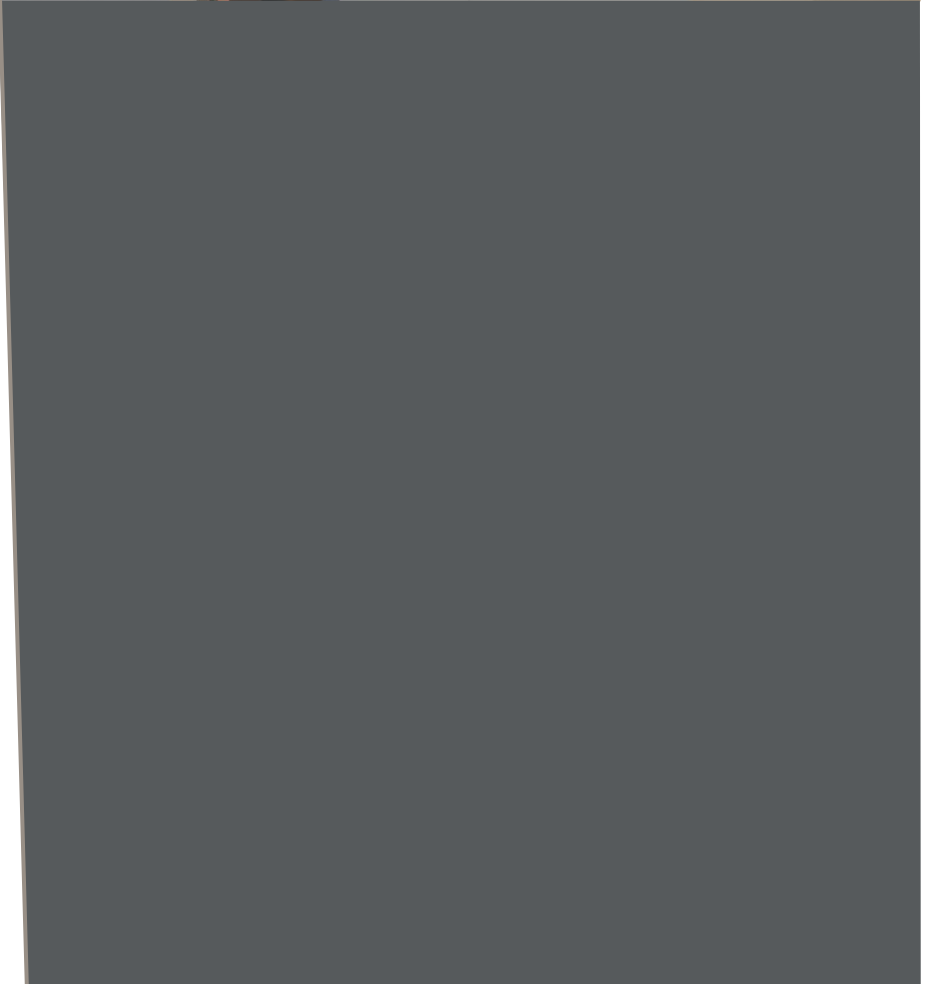


Marsden Park

APPENDIX

D

INFRASTRUCTURE
ENDORSEMENT



29 May 2012

Mr Sam Haddad
Director General
Department of Planning and Infrastructure
GPO Box 39
Sydney NSW 2001

Marsden Park Residential Precinct Drinking Water Services

Dear Mr Haddad

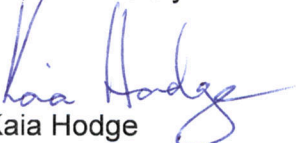
I refer to the Water Servicing Report for the Marsden Park precinct dated May 2012.

Sydney Water has worked with the Precinct Acceleration Protocol Proponent, Winten Property Group, in the preparation of the Report. We therefore endorse the Water Servicing Strategy and Implementation Plan proposed by Winten for Stage 1 of the Marsden Park Development.

Sydney Water will continue to work with Winten to further develop the Strategy and Implementation Plans for the future stages of the development.

If you have any questions regarding this matter, please contact Kate Wild on 8849 5842.

Yours sincerely



Kaia Hodge
General Manager, Liveable City Solutions

CC: Mr Bill Sarkis, Winten Property Group
Mr Stephen Barlow, Stocklands

20 August 2012

Mr Sam Haddad
Director General
Department of Planning and Infrastructure
GPO Box 39
Sydney NSW 2001

Marsden Park Residential Precinct Wastewater Services

Dear Mr Haddad

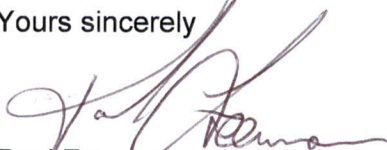
I refer to the Wastewater Servicing Report for Stage 1 of the Marsden Park precinct dated July 2012.

Sydney Water has worked with the Precinct Acceleration Protocol Proponent, Winten Property Group, in the preparation of the Report. We therefore endorse the Wastewater Servicing Strategy proposed by Winten for Stage 1 of the Marsden Park Development, subject to Sydney Water's approval of the detailed planning for the proposed wastewater pumping station.

Sydney Water will continue to work with Winten and their development partner Stockland, to complete detailed planning for Marsden Park Stage 1, and to determine the wastewater servicing for future stages of the Marsden Park Precinct.

If you have any questions regarding this matter, please contact Cassie Loughlin on 8849 5243.

Yours sincerely



Paul Freeman
General Manager, Liveable City Solutions

CC: Mr Bill Sarkis, Winten Property Group
Mr Michael Braithwaite, Stocklands

16 April 2012

Cardno
Level 9 The Forum
203 Pacific Highway
St Leonards NSW 2065

Attention: Cameron Vella, Senior Project Manager

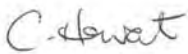
Dear Sir

ELECTRICITY SUPPLY IMPLEMENTATION MARSDEN PARK

Further to your request, it is confirmed that the information contained in your document titled "1.3.6 Electrical Supply Implementation Plan Structure_120412_v04" is a true representation of discussions held and agreements reached with Endeavour Energy.

Should you require any further information, please contact the undersigned.

Yours faithfully



Charles Howat
Strategic Network Planning Manager
Strategic Asset Management

In reply please quote file no.: ENL 1757

**Broadbanding
Australia**



Tuesday 3 April 2012

Winten (No 25) Pty Ltd and Woorong Park Pty Ltd
C/- Mr Cameron Vella
Cardno
PO Box 19
St Leonards NSW 1590

Dear Mr Vella,

You have contacted NBN Co in relation to the possible installation of fibre infrastructure at Marsden Park Precinct.

NBN Co has determined that your new development is within the NBN fibre footprint.

Once Winten (No 25) Pty Ltd and Woorong Park Pty Ltd has submitted a formal application and we have concluded an agreement on NBN Co's terms and conditions (including in relation to the construction of pit and pipe infrastructure at the development), then provided Winten (No 25) Pty Ltd and Woorong Park Pty Ltd comply with the terms and conditions of that agreement, NBN Co will agree to procure the installation of fibre infrastructure at the development.

Thank you and Regards,

NBN Co New Developments Team

9 May 2012

Cardno
Level 9, 203 Pacific Hwy
ST LEONARDS NSW 2065
Attn. C. Vella

Dear Cameron

RE: MARSDEN PARK DEVELOPMENT PRECINCT

Natural Gas is available adjacent to the above subdivision and could be extended to supply any proposed development at this site depending upon it's commercial viability.

Jemena acknowledges the Staged development of this precinct and current Natural Gas capacity is available to supply. As stated in previous reports, an extension of the existing High Pressure network in Richmond Rd to the proposed entry of Stage 1 and installation of pressure reduction station will be required. This initial phase could support approximately 4500 dwellings and a further extension of the High Pressure network along South St as well as another pressure reduction station within the developable precinct area will be required for future housing. Due to the absence of a dedicated precinct road plan, overall costing of infrastructure supply has not been produced.

Jemena encourages the use of a Shared Trench arrangement and the use of Natural Gas hot water, cooking and heating points in each dwelling. The Proponent will coordinate the delivery of Natural Gas infrastructure with Jemena to achieve this favourable outcome. The proponent acknowledges that Jemena does not reserve capacity for any individual project.

Caution should be exercised when carrying out any road works that may expose the Natural Gas mains existing in this location. Contact Dial B4 you Dig ph 1100 to confirm their location.

We appreciate the opportunity to be involved in the forward planning of this development and would like to pursue the potential for the connection to the natural gas network.

Thank you for your inquiry. If further information or assistance is required, please do not hesitate to contact me on 0402 060 151

Yours faithfully,

Neale Hilton

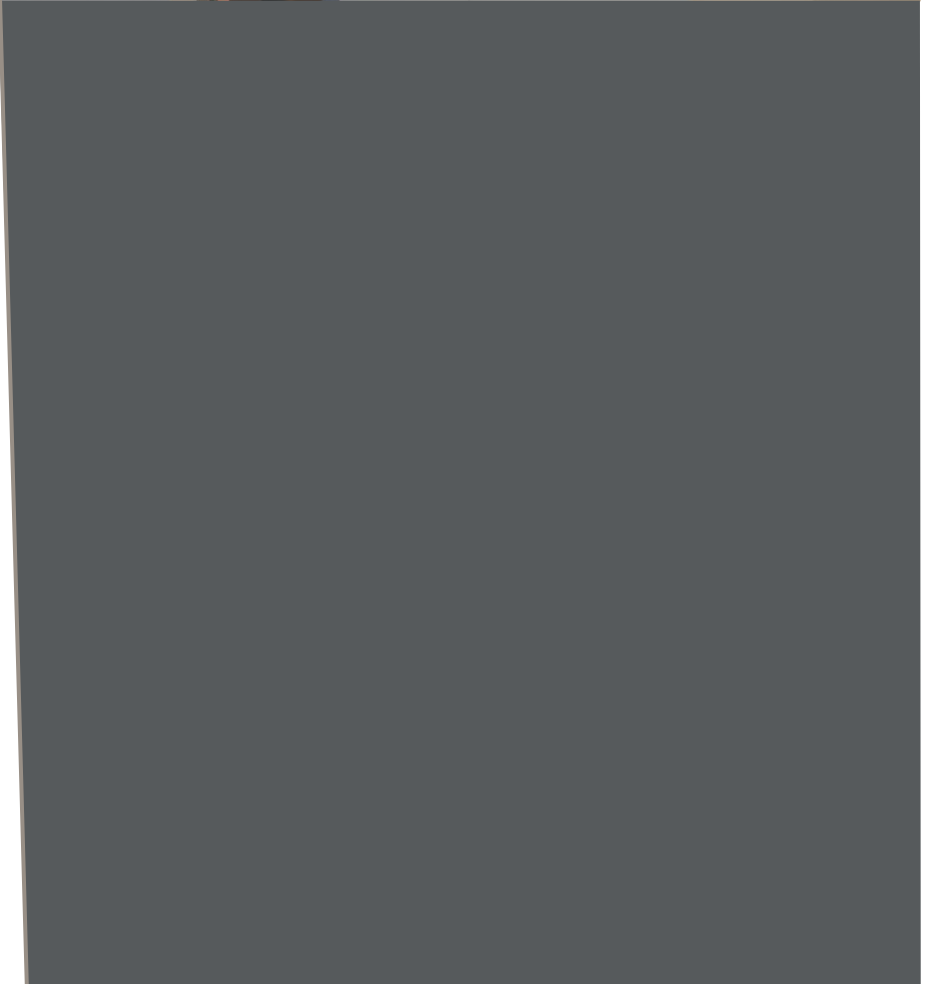
Neale Hilton
Network Development Manager

Marsden Park

APPENDIX

E

SERVICES
INFRASTRUCTURE
STRATEGY
REPORT (SKM)



DRAFT SERVICES INFRASTRUCTURE STRATEGY



MARSDEN PARK PRECINCT

- November 2011



Draft Services Infrastructure Strategy

MARSDEN PARK PRECINCT

- November 2011

Sinclair Knight Merz
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1. Introduction

1.1. Purpose

This Report has been prepared as part of the Precinct Planning under the Marsden Park Precinct Acceleration Protocol (Marsden Park PAP). This report summarises the proposed servicing plan for the primary utilities required to supply the Marsden Park Precinct (Precinct) and is in accordance with the provisions of Clause 19 of the Planning Agreement.

The report proposes how the Precinct can be serviced in accordance with the requirements of the North West Growth Centre Structure Plan, the Department of Planning and Infrastructure requirements, and the proposed long term servicing strategies developed by the utilities providers.

1.2. Scope

To ensure an alignment with the long term servicing strategies of the key utility providers, the servicing strategy has been prepared in consultation with each of the key utility agencies, Blacktown City Council and the Department of Planning and Infrastructure. In accordance with the approved VPA, the Department of Planning and Infrastructure has requested that the following utilities be included in this report:

- Wastewater
- Water
- Recycled Water
- Electricity
- Telecommunications

In addition to the above utilities the servicing strategy for the supply of natural gas has also been included in this report. Key stakeholders and Agencies associated with the zoning of the Precinct are:

- | | |
|----------------------|--------------------------------|
| ■ Water | Sydney Water Corporation |
| ■ Wastewater | Sydney Water Corporation |
| ■ Recycled Water | Sydney Water Corporation |
| ■ Electricity | Endeavour Energy and Transgrid |
| ■ Telecommunications | NBN |
| ■ Natural Gas | Jemena |

1.3. Background

The Minister for Planning announced on 30 June 2008 the accelerated release of the Marsden Park Precinct. Following this announcement, servicing strategies for both the Marsden Park Industrial Precinct and Marsden Park Precinct were prepared by the PAP proponents in consultation with the respective utility providers. The proposed servicing strategy for the Marsden Park Precinct is presented in this report.

As part of the approved Precinct Acceleration; the developer is required to provide planning for the provision of service infrastructure for the whole precinct and must prepare a Service Infrastructure Strategy.

1.4. Site Description

The Marsden Park Precinct is located within the North West Growth Centre in the Blacktown Local Government Area. It is bounded by the Hawkesbury River to the North, Richmond Road to the East, the Marsden Park Industrial Precinct and St Marys Subdivision to the South and Stony Creek Road to the West (refer **Error! Reference source not found.**). The main land use in the Precinct is agriculture with a variety of mixed business located along the Richmond Road. The total area of the Precinct is approximately 1,800 hectares.

Winten Property Group Land Holdings Marsden Park Precinct





■ **Figure 1 - Location of Marsden Park**

1.5. VPA Requirements

Clause 19 of the Voluntary Planning Agreement (VPA) for the Marsden Park PAP outlines how planning for the provision of infrastructure services for the Precinct is to be undertaken. It specifies that the Developer must first prepare a Services Infrastructure Strategy, and then prepare a Services Infrastructure Implementation Plan. Generally the Services Infrastructure Strategy is a high level document that outlines the strategy to be adopted for the provision of services, and the Services Infrastructure Implementation Plan is a more detailed document outlining how the strategy is to be implemented.

The VPA sets out the requirements for the Services Infrastructure Strategy, with the following excerpt taken from Clause 19.2 (b) of the VPA:

- “(b) In preparing the draft Services Infrastructure Strategy, the Developer:
- (i) acknowledges that the development of the Services Infrastructure Strategy will be part of a consultative and cooperative process between the Developer and the Relevant Authorities;
 - (ii) must consult and discuss with the Relevant Authorities and pay all due regard to any reasonable comments or suggestions the Relevant Authorities make in respect of the draft Services Infrastructure Strategy;
 - (iii) must ensure that the draft Services Infrastructure Strategy:
 - A. identifies the strategy to provide the Services Infrastructure necessary for the orderly and efficient delivery of infrastructure services to service the whole Precinct (once developed), including without limitation:
 - 1) sewerage systems;
 - 2) potable water systems;
 - 3) recycled water systems to meet future urban development of the Precinct as required by clause 18 of the SEPP; and
 - 4) electricity;
 - B. identifies:
 - 1) the Services Infrastructure required to be constructed and transferred to the Relevant Authorities, including any Interim Sydney Water Services Infrastructure, Ultimate Sydney Water Services Infrastructure and Interim Integral Energy Services Infrastructure;



- 2) the targeted timetable for the delivery of the Services Infrastructure, including the sequence of the stages of the Services Infrastructure;
- 3) how the developer will:
 - a) provide the Services Infrastructure at no cost to the NSW Government; and
 - b) comply with the “*No Cost to Government Criteria*” contained in the Precinct Acceleration Protocol;
- 4) the requirements of the Relevant Authorities in relation to the operation of the Services Infrastructure; and
- 5) that the Relevant Authorities have endorsed the Services Infrastructure Strategy and contain evidence of that endorsement.”



2. Infrastructure Assessment

The Marsden Park Precinct presently has very limited infrastructure servicing capacity. There is currently low demand for services due to the rural nature of the land. As a result, no major utility currently has adequate capacity to supply the demands of the Precinct. This report will detail the proposed strategy to provide infrastructure for the following services:

- Water
- Wastewater
- Recycled Water
- Electricity
- Telecommunications
- Natural Gas

The water, wastewater and recycled servicing strategy for the Precinct are based upon the Marsden Park PAP application, prepared in June 2008. Since then, further consultation with Sydney Water has been undertaken to develop the servicing strategy presented in this report.

The electrical servicing strategy for the area has been developed in consultation with Integral Energy, now Endeavour Energy.

The natural gas' servicing strategy has been developed through communication with Jemena and is referenced in the PAP application.



3. Potable Water

3.1. Existing Infrastructure

Currently the only potable water supplies available for the Precinct are small reticulation mains located along the perimeter of Richmond Road and Stony Creek Road. These systems have been designed to supply the potable water needs for the rural residents along these roads and do not have the capacity to service the proposed development capacity of the Precinct.

The water mains along Richmond Road are serviced from the Rouse Hill Water System (formerly known as the Rogans Hill and Castle Hill Water System), and the water mains along Stony Creek Road are serviced from the Minchinbury Water System. Sydney Water owns and operates both of these water systems.

It is understood that initial stage of development of the Marsden Park Industrial Precinct will be serviced by the installation of new water mains that will connect into the existing Minchinbury Water System. These mains will only have sufficient capacity to service the initial stage of development of the Marsden Park Industrial Precinct.

3.2. Servicing Strategy

3.2.1. Ultimate Servicing Strategy

Sydney Water has developed an Ultimate Water Servicing Strategy (The Strategy) (SWC, July 2008) which describes the preferred Sydney Water servicing strategy and indicative infrastructure required for the provision of potable water, recycled water and wastewater services to the Marsden Park Precinct.

The Strategy outlines what infrastructure is required to provide potable water services to the ultimate development of both the Marsden Park Precinct and the Marsden Park Industrial Precinct. The Strategy outlines that the potable water demands of both Precincts would be supplied by extension of the Minchinbury system via a combined supply network.

The provision of potable water services according to The Strategy formed the basis of the VPA for the acceleration of the Marsden Park Precinct. As discussed below, the Strategy is currently under review.

Under The Strategy, the existing Mt Druitt surface reservoir will be re-commissioned to form part of the Minchinbury system. The Mt Druitt reservoir has not been operational for some time and requires some refurbishment to re-commission it. From the Mt Druitt reservoir site a DN600 transfer main will be laid approximately 3.8 kilometres to new surface and elevated reservoirs located in the Marsden Park Industrial Precinct. The new Marsden Park surface reservoir would



have a capacity of 20 ML and the new Marsden Park elevated reservoir would be 4 ML with a pump station to feed it. Reticulation mains will then be laid from the new reservoir site throughout the Marsden Park Precinct and the Marsden Park Industrial Precinct. **Figure 2** details the Sydney Water proposed ultimate water infrastructure.

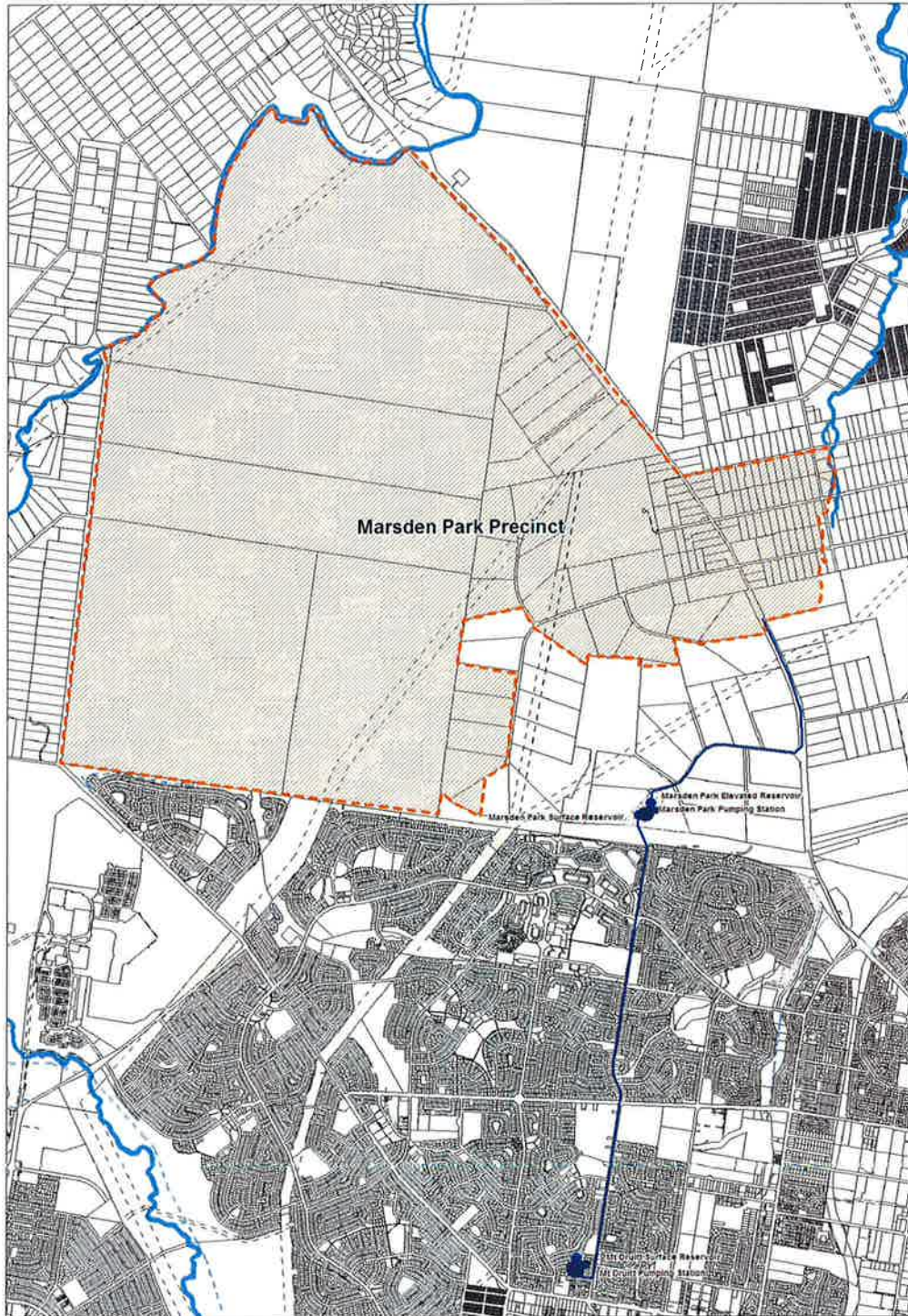
Sydney Water has acknowledged that the ultimate infrastructure would need to be provided in a staged manner. However, when Sydney Water produced The Strategy they did not consider how best to stage the infrastructure. Hence The Strategy only outlines the preferred ultimate servicing strategy and does not outline a preferred staging approach of how to implement it. Staging of infrastructure is being considered by the Developer in collaboration with Sydney Water (as discussed in **Section 3.2.2**).

It is understood that the ultimate potable water infrastructure identified in The Strategy was dependent on the provision of recycled water to both the Marsden Park Precinct and the Marsden Park Industrial Precinct (The Strategy outlined the ultimate potable water and recycled water infrastructure required). This is because the provision of recycled water services reduces the required capacity of the potable water services.

Since the development of The Strategy in 2008, two important changes have occurred that have the potential to impact on the provision of potable water services to the Precinct:

- In early 2011 Sydney Water announced that they no longer intended to provide recycled water services to the Marsden Park Precinct and the Marsden Park Industrial Precinct.
- In mid 2011 Sydney Water stated that they would be reviewing The Strategy.
- Sydney has requested that the Developer to assist Sydney Water by investigating serving options for the Marsden Park Precinct and the adjoining precincts.
- The Sydney Water review is underway and is being undertaken in collaboration with the Developer.

Hence, dependent on the outcome of the review, it is possible that Sydney Water's ultimate strategy for the provision of potable water will change in the near future. This may trigger an update of the Services Infrastructure Strategy, which is allowed for under Clause 19.3 of the VPA. Until the time that Sydney Water issues a revision of the ultimate potable water servicing strategy, the information provided in The Strategy would be adopted in this report.





■ **Figure 2 - Proposed Ultimate Potable Water Infrastructure**

(Source: Ultimate Water Servicing Strategy, SWC, July 2008)

3.2.2. Stage 1 Servicing Strategy

In conjunction with the review of the ultimate servicing strategy, an investigation is currently being undertaken, in collaboration with Sydney Water, on suitable options to service an initial stage of development at the Precinct (Stage 1). We consider this staged approach the appropriate action to take considering the issues with the review of ultimate servicing strategy and the timing constraints of the project.

Considering that the ultimate potable water servicing strategy may be revised by Sydney Water in the near future, the focus of the investigation is on staging options which are flexible, robust and would be compatible with different possible ultimate servicing strategies. The intention is that the infrastructure that is installed in Stage 1 would be retained to form part of the ultimate potable water servicing strategy, rather than be installed as temporary infrastructure.

The following servicing strategies for Stage 1 are currently being investigated with Sydney Water:

- Installation of new pipework to connect into the existing Minchinbury System, similar to the Sydney Water approved servicing strategy for the initial stage of development of the Marsden Park Industrial Precinct
- Installation of new pipework to connect into the existing Rouse Hill System
- Construction of some components of The Strategy, namely refurbishment of the Mt Druitt reservoir and construction of the DN600 main from the Mt Druitt reservoir
- Any other suitable option

It is possible that the number of residential lots that can be serviced in Stage 1 would be limited by the availability of potable water supply. Hence the different Stage 1 servicing strategies may result in different number of lots being serviced, which affects the timing of Stage 2.

The Services Infrastructure Implementation Plan will outline in further detail the strategy that is adopted for the provision of potable water services, including staging of infrastructure from Stage 1 to the ultimate. The staging will be determined in consultation with Sydney Water and relevant stakeholders.



3.3. Services Infrastructure

The infrastructure required to provide potable water services to the:

- Ultimate development of the Marsden Park Precinct (and the ultimate development of the Marsden Park Industrial Precinct) are outlined in The Strategy (**Section 3.2.1**). As noted, this is currently being reviewed by Sydney Water. Under The Strategy the required infrastructure includes refurbishment of existing reservoirs, new pipe mains, new reservoirs and new pump stations.
- Stage 1 development of the Marsden Park Precinct is currently being reviewed in collaboration with Sydney Water. The Stage 1 infrastructure could include components of the ultimate servicing strategy, or new pipework and connections to the existing water systems (e.g. Minchinbury Water System or Rouse Hill Water System).

3.4. Targeted Timetable

The proposed date of exhibition of the draft precinct planning documents and the draft Indicative Layout Plan (ILP) prepared by the Precinct Masterplanner is July 2012. The date of exhibition has been proposed by the Department of Planning and Infrastructure in their project schedule dated 30 August 2011.

The timing of the required potable water infrastructure is such that would enable Stage 1 to be serviced as soon as practicable following exhibition to coincide with the timely development of the first stage of the Marsden Park Precinct, with infrastructure to service later stages of development to be installed progressively to match the rate of development of the Precinct.

Based on the above, it is anticipated that construction will commence by the middle of 2013 with subdivision occurring in the first half of 2014. This will result in the creation of about 350 residential lots during 2013/14 with an on-going development program of about 350 lots per annum.

3.5. No Cost to Government

The provision of potable water services at ‘no cost to government’ would involve one of the following operating models:

- Sydney Water: Potable water infrastructure in the Marsden Park Precinct (including lead-in works) would be installed by the Developer and handed over to Sydney Water at no cost. Sydney Water would own and operate the potable water infrastructure and bill the customers in the Marsden Park Precinct. Sydney Water would pay the Developer any profits earned from operation of the potable water infrastructure, according to a calculation methodology developed by Sydney Water.

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- Private sector: In this option the potable water services in the Marsden Park Precinct would be provided by an appropriately licensed private sector entity. The private sector entity would be required to maintain the appropriate licenses under the Water Industry Competition Act. The private sector entity would own and operate the potable water infrastructure and would bill the customers in the Marsden Park Precinct. The private sector entity would also need an agreement with Sydney Water to purchase potable water from Sydney Water's existing water network to enable Sydney Water to recoup their costs for the supply of the potable water to the connection point with the private sector entity.
- A combination of the above. This could include an initial stage of development, or a certain area of the Precinct, operating under one operating model, and the remainder operating under another.
- Any other suitable option as agreed to by all relevant stakeholders.

3.6. Requirements of Relevant Authorities

To outline Sydney Water's requirements regarding development of the Marsden Park Precinct under a PAP, Sydney Water issued a letter to the Developer dated 8 September 2009. The letter included, as Appendix A, The Strategy, as well as Sydney Water's Strategic Planning Requirements Package, as Appendix B.

The Sydney Water Requirements Package refers to The Strategy in that it outlines certain tasks to be undertaken if The Strategy is adopted by the Developer, and an expanded list of tasks to be undertaken if the Developer wishes to provide an alternate servicing approach.

Hence the current review of The Strategy being undertaken may impact on Sydney Water's requirements. This is yet to be clarified by Sydney Water.

3.7. Endorsement by Relevant Authority

Sydney Water is yet to review this document.



4. Sewerage System

4.1. Existing Infrastructure

The Marsden Park Precinct currently does not have access to a centralised sewerage system. Existing dwellings in the Precinct currently dispose of their waste using decentralised methods.

There are existing Sydney Water owned and operated sewerage systems located to the South East of the Marsden Park Precinct at Quakers Hill, to the South West at St Marys, and to the North East at Riverstone. There is an existing sewerage system that is owned and operated by Hawkesbury City Council to the North West of the Marsden Park Precinct at South Windsor.

4.2. Servicing Strategy

4.2.1. Ultimate Servicing Strategy

The Strategy (SWC, July 2008) outlines the required infrastructure to provide wastewater services for the ultimate development of the Marsden Park Precinct.

The Strategy outlines what infrastructure is required to provide wastewater services to the ultimate development of both the Marsden Park Precinct and the Marsden Park Industrial Precinct. The strategy for wastewater services is to service both precincts via a common sewerage system with transfer of wastewater to Riverstone Wastewater Treatment Plant.

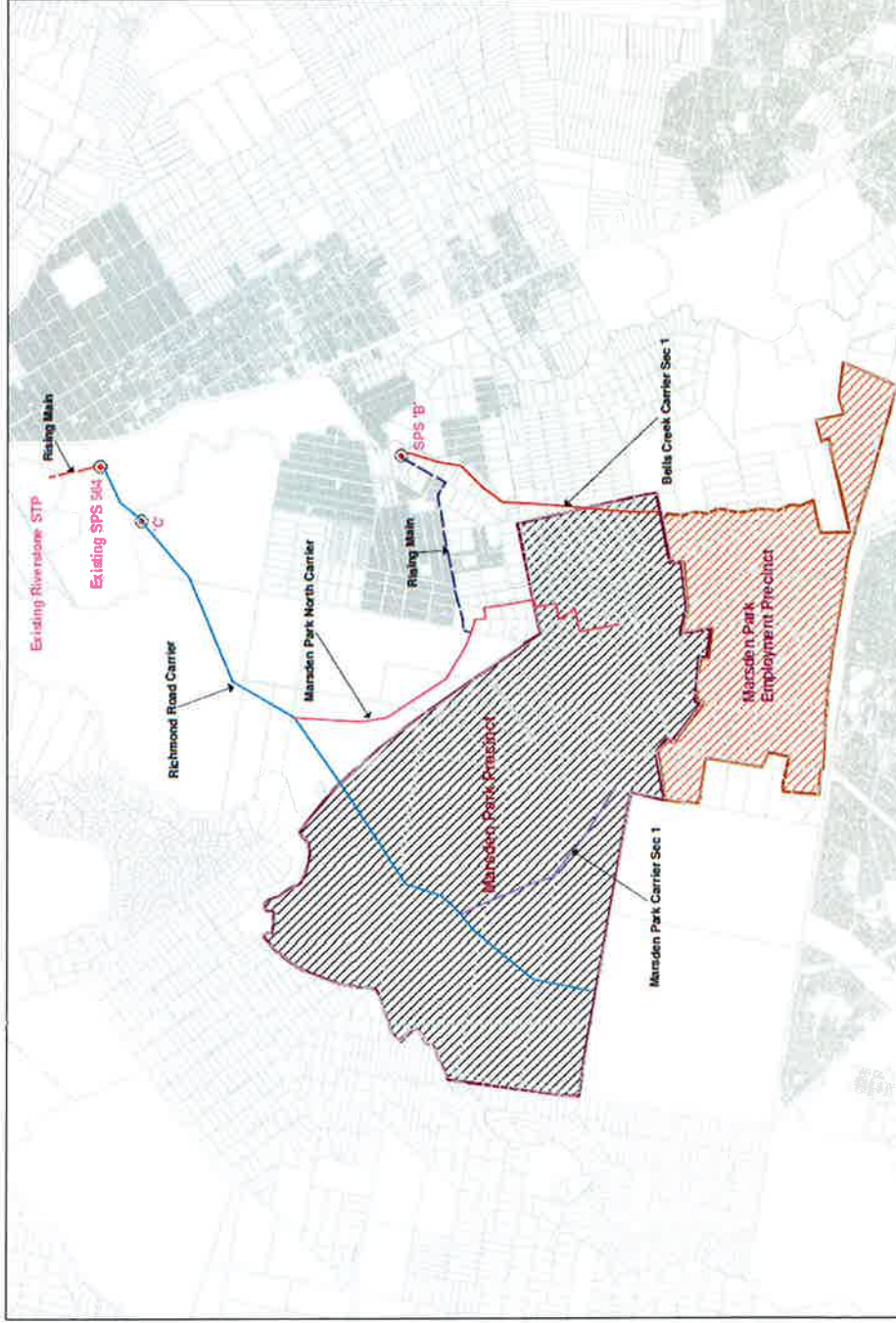
Under The Strategy, large gravity carrier mains will be constructed throughout the Marsden Park Precinct and neighbouring precincts, along with a number of pump stations and rising mains. These assets will transfer wastewater to the existing Riverstone Wastewater Treatment Plant (WWTP) which will be augmented to provide treatment of the additional wastewater flows. As shown in **Figure 3** the proposed wastewater carrier mains will include:

- Bells Creek Carrier
- Marsden Park North Carrier
- Marsden Park Carrier and a Sewerage Pumping Station
- Richmond Road Carrier

As for potable water, The Strategy only outlines the preferred ultimate wastewater servicing strategy and does not outline a preferred staging approach. Staging of the wastewater infrastructure is being considered by the Developer in collaboration with Sydney Water (as discussed in **Section 4.2.2**).



In addition, the review of The Strategy that is currently being undertaken by Sydney Water includes a review of the wastewater infrastructure. Hence Sydney Water's ultimate sewerage servicing strategy could change in the near future.



■ **Figure 3 - Proposed Ultimate Wastewater Infrastructure**

(Source: Ultimate Water Servicing Strategy, SWC, July 2008)

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4.2.2. Stage 1 Servicing Strategy

An investigation is currently being undertaken, in collaboration with Sydney Water, on options to service the Stage 1 development of the Marsden Park Precinct.

Considering that the ultimate wastewater servicing strategy may be revised by Sydney Water in the near future, the focus of the investigation is on staging options which are flexible, robust and compatible with different possible ultimate servicing strategies. The intention is that the infrastructure that is installed in Stage 1 would either be retained and form part of the ultimate wastewater servicing strategy, or may only be temporary in nature and would then be replaced by permanent infrastructure that forms part of the ultimate wastewater servicing strategy.

The Stage 1 wastewater servicing strategies currently being investigated in collaboration with Sydney Water include transfer of flows via a pump station and rising main to Riverstone WWTP, transfer via gravity main to Riverstone WWTP, on-site treatment of wastewater with recycling of effluent, and any other suitable options.

The Services Infrastructure Implementation Plan will outline in further detail the strategy that is adopted for the provision of wastewater services, including staging of infrastructure from Stage 1 to the ultimate. The staging will be determined in consultation with Sydney Water and relevant stakeholders.

4.3. Services Infrastructure

The infrastructure required to provide wastewater services to the:

- Ultimate development of the Marsden Park Precinct (and the ultimate development of the Marsden Park Industrial Precinct) are outlined in The Strategy (**Section 4.2.1**). As noted, this is currently being reviewed by Sydney Water. Under The Strategy the required infrastructure includes large scale gravity mains, sewage pump stations and rising mains, and amplification of the existing Riverstone WWTP.
- Stage 1 development of the Marsden Park Precinct is currently being reviewed in collaboration with Sydney Water. The Stage 1 infrastructure could include components of the ultimate servicing strategy, or an alternate servicing approach such as on-site treatment and recycling.

4.4. Targeted Timetable

The proposed date of exhibition of the draft precinct planning documents and the draft Indicative Layout Plan (ILP) prepared by the Precinct Masterplanner is July 2012. The date of exhibition has been proposed by the Department of Planning and Infrastructure in their project schedule dated 30 August 2011.



The timing of the required wastewater infrastructure is such that would enable Stage 1 to be serviced as soon as practicable following exhibition to coincide with the timely development of the first stage of the Marsden Park Precinct, with infrastructure to service later stages of development to be installed progressively to match the rate of development of the Precinct.

Based on the above, it is anticipated that construction will commence by the middle of 2013 with subdivision occurring in the first half of 2014. This will result in the creation of about 350 residential lots during 2013/14 with an on-going development program of about 350 lots per annum.

4.5. No Cost to Government

The provision of wastewater services at 'no cost to government' would involve one of the following operating models:

- **Sydney Water:** Wastewater infrastructure for the Marsden Park Precinct (which could include the construction of infrastructure located outside of the Precinct) would be installed by the Developer and handed over to Sydney Water at no cost. Sydney Water would own and operate the wastewater infrastructure and bill the customers in the Marsden Park Precinct. Sydney Water would pay the Developer any profits earned from operation of the wastewater infrastructure, according to a calculation methodology developed by Sydney Water.
- **Private sector:** In this option wastewater services in the Marsden Park Precinct would be provided by an appropriately licensed private sector entity. The private sector entity would be required to maintain the appropriate licenses under the Water Industry Competition Act. The private sector entity would own and operate the wastewater infrastructure and would bill the customers in the Marsden Park Precinct.
- **A combination of the above.** This could include an initial stage of development, or a certain area of the Precinct, operating under one operating model, and the remainder operating under another.
- **Any other suitable option** as agreed to by all relevant stakeholders.

4.6. Requirements of Relevant Authorities

To outline Sydney Water's requirements regarding development of the Marsden Park Precinct under a PAP, Sydney Water issued a letter to the Developer dated 8 September 2009. The letter included, as Appendix A, The Strategy, as well as Sydney Water's Strategic Planning Requirements Package, as Appendix B.

The Sydney Water Requirements Package refers to The Strategy in that it outlines certain tasks to be undertaken if The Strategy is adopted by the Developer, and an expanded list of tasks to be undertaken if the Developer wishes to provide an alternate servicing approach.

SINCLAIR KNIGHT MERZ



Hence the current review of The Strategy being undertaken by Sydney Water may impact on Sydney Water's requirements. This is yet to be clarified by Sydney Water.

4.7. Endorsement by Relevant Authority

Sydney Water is yet to review this document.



5. Recycled Water

5.1. Existing Infrastructure

There is currently no infrastructure for recycled water in the Marsden Park Precinct.

5.2. Servicing Strategy

5.2.1. Ultimate Servicing Strategy

Sydney Water's Ultimate Water Servicing Strategy (SWC, July 2008) included the provision of recycled water to the Marsden Park Precinct via new recycled water mains, pump stations and reservoirs. The recycled water infrastructure would service the ultimate development of both the Marsden Park Precinct and the Marsden Park Industrial Precinct.

A media release from Sydney Water dated 13 January 2011 (see **Attachment A**) outlines that Sydney Water will not build any new recycled water infrastructure in precincts in the North West Growth Centre that have not yet been released. This includes the Marsden Park Precinct.

The media release states that Sydney Water would continue to investigate the viability of recycled water in new residential areas on a case-by-case basis.

5.2.2. Stage 1 Servicing Strategy

It is noted that the investigation of the servicing options for the Stage 1 development of the Marsden Park Precinct may identify a preference for recycled water infrastructure for servicing of Stage 1.

For example, one possible outcome of the current investigations is that Marsden Park Stage 1 would be serviced by a local wastewater treatment plant that would provide recycled water to the residences. Such a community scale recycled water system could either be owned and operated by Sydney Water, or by the private sector. Future stages could be serviced by duplicating (or expanding) the system constructed in Stage 1, or could be serviced by a different approach.

5.3. Services Infrastructure

The infrastructure required to provide recycled water services are unknown at this time and depend on the review of The Strategy, as well as the investigation of options for the servicing of Stage 1 of Marsden Park.



5.4. Targeted Timetable

The proposed date of exhibition of the draft precinct planning documents and the draft Indicative Layout Plan (ILP) prepared by the Precinct Masterplanner is July 2012. The date of exhibition has been proposed by the Department of Planning and Infrastructure in their project schedule dated 30 August 2011.

The timing of any recycled water infrastructure would be such that would enable Stage 1 to be serviced as soon as practicable following exhibition to coincide with the timely development of the first stage of the Marsden Park Precinct, with infrastructure to service later stages of development to be installed progressively to match the rate of development of the Precinct.

Based on the above, it is anticipated that construction will commence by the middle of 2013 with subdivision occurring in the first half of 2014. This will result in the creation of about 350 residential lots during 2013/14 with an on-going development program of about 350 lots per annum.

5.5. No Cost to Government

The provision of recycled water services at 'no cost to government' would involve one of the following operating models:

- Sydney Water: Recycled water infrastructure in the Marsden Park Precinct would be installed by the Developer and handed over to Sydney Water at no cost. Sydney Water would own and operate the recycled water infrastructure and bill the customers in the Marsden Park Precinct. Sydney Water would pay the Developer any profits earned from operation of the recycled water infrastructure, according to a calculation methodology developed by Sydney Water.
- Private sector: In this option the recycled water services in the Marsden Park Precinct would be provided by an appropriately licensed private sector entity. The private sector entity would be required to maintain the appropriate licenses under the Water Industry Competition Act. The private sector entity would own and operate the recycled water infrastructure and would bill the customers in the Marsden Park Precinct. The private sector entity may need an agreement with Sydney Water to purchase potable water from Sydney Water's existing water network to enable top up of the recycled water system, if required.
- A combination of the above. This could include an initial stage of development, or a certain area of the Precinct, operating under one operating model, and the remainder operating under another.
- Any other option as agreed to by all relevant stakeholders.



5.6. Requirements of Relevant Authorities

To outline Sydney Water's requirements regarding development of the Marsden Park Precinct under a PAP, Sydney Water issued a letter to the Developer dated 8 September 2009. The letter included, as Appendix A, The Strategy, as well as Sydney Water's Strategic Planning Requirements Package, as Appendix B.

The Sydney Water Requirements Package refers to The Strategy in that it outlines certain tasks to be undertaken if The Strategy is adopted by the Developer, and an expanded list of tasks to be undertaken if the Developer wishes to provide an alternate servicing approach.

Hence the current review of The Strategy being undertaken by Sydney Water may impact on Sydney Water's requirements. This is yet to be clarified by Sydney Water.

5.7. Endorsement by Relevant Authority

Sydney Water is yet to review this document.



6. Electricity

6.1. Existing Infrastructure

The Marsden Park Precinct is currently serviced by above ground 11kV lines along Stony Creek and Richmond Roads which are supplied from the Rooty Hill and Riverstone zone substations. The proposed Schofield zone substation has been allocated to service other areas in the North West growth Centre and will not be able to be included as a possible source of future electricity supply.

6.2. Servicing Strategy

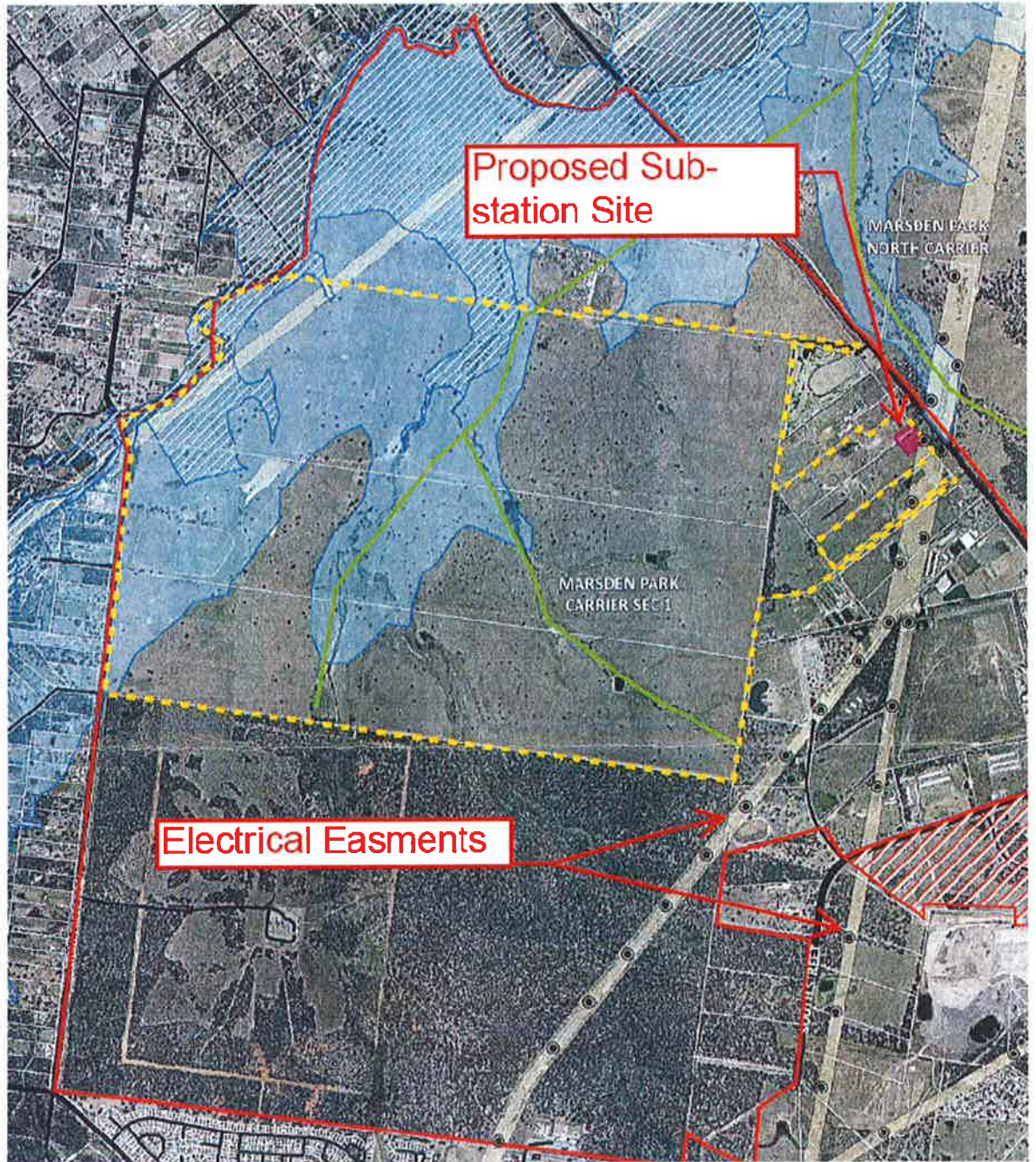
There are currently 330kV and 132kV steel tower transmission lines transversing the south eastern corner of the Precinct in dedicated easements (see **Figure 4**). These assets are currently owned by Transgrid. The Preliminary ILP proposes to maintain the easements and alignments of these utility corridors.

In order to supply the Precinct with its initial energy requirement, it is proposed to connect into the proposed grid supplying Marsden Park Industrial Precinct. Discussions with the developers of MPIP have confirmed that this should be able to supply the initial demands of the early stages of the Marsden Park Precinct.

Once this supply is no longer able to meet the combined Precincts demands, it is proposed to construct a new sub-station at the intersection of Richmond Road and the 330kV line. This new substation will supply the collective ultimate energy requirements of the Precinct.

In April 2010, Integral Energy, now Endeavour Energy confirmed that the Marsden Park Precinct has no electrical infrastructure capable of supplying the Precinct. Integral Energy has developed a strategic plan for electricity supply in the North West Growth Centre that involves establishing a 132kV sub-transmission network and associated zone substations. The plan dictates that servicing the electrical demand in the Marsden Park Precinct will require Integral Energy to establish a new zone substation within the Precinct. A one hectare parcel of land is to be dedicated by the proponent to Integral for a nominal amount and in accordance with Integral's normal special conditions for the contract for the sale of land (refer to **Attachment B**).

To ensure the supply of energy to the Precinct, the electrical network will be installed along the Precinct's proposed road verges in accordance with the Road Clear Ways Act 1991.



■ **Figure 4 - Existing Electrical Easement Alignment and Proposed Sub-Station Site**



7. Telecommunications

7.1. Existing Infrastructure

The Marsden Park Precinct is currently serviced along Stony Creek Road and Richmond Roads with above ground telecommunication lines. These existing assets currently do not have the capacity to handle the additional load which would be imposed by the capacity proposed in the Preliminary ILP. The existing assets would not be capable of high speed data transfers that would be expected in a new residential development.

7.2. Servicing Strategy

The telecommunication supply for the Precinct will be provided by NBN as per their policy regarding the provision of services (**Attachment C**). The infrastructure will be aligned along the Precinct's proposed road verges in the alignment allocated for telecommunications under the Road Clear Ways Act 1991. Construction will be undertaken using the utilities providers' standard design and construction techniques.

This arrangement will be determined by the service providers and the proponent during the development of the Servicing Infrastructure Implementation Plan.



8. Natural Gas

8.1. Existing Infrastructure

There is currently no existing infrastructure for low-pressure residential gas connection inside the Precinct. A large 1050 kPa secondary natural gas main is currently located along the eastern side of Richmond Road. A connection can be provided to this gas main to allow an extension into the Precinct.

8.2. Servicing Strategy

The gas supply for the precinct is proposed to be provided from an off-take being connected to the existing Richmond Road high-pressure main. This will be aligned along the Precinct's proposed road verges in the alignment allocated for gas under the Road Clear Ways Act 1991. Construction will be undertaken using the utilities providers' standard design and construction techniques (**Attachment D**).

The asset is proposed to be designed, owned and maintained by the utility providers, Jemena. Under this arrangement Jemena will provide the gas infrastructure under their standard conditions and agreements to meet the demand of the Precincts residents. Negotiations for supply will be between Jemena and the Developer.



9. Conclusions

The Services Infrastructure Strategy Report has been prepared as part of the Precinct Planning for the Marsden Park PAP. The Report summarises the servicing strategies for the primary services required to service the Precinct. The Report has been completed in consultation with relevant stakeholders.

The Precinct has limited infrastructure servicing capacity due to current low demand and the rural nature of the land. The following services were included in the assessment:

- Water
- Wastewater
- Recycled Water
- Electricity
- Telecommunications
- Natural Gas

Sydney Water has developed an Ultimate Water Servicing Strategy which describes the preferred Sydney Water servicing strategy and the indicative infrastructure required for the provision of potable water, recycled water and wastewater services to the Marsden Park Precinct. However, Sydney Water, with assistance from the Developer, is currently reviewing the Ultimate Water Servicing Strategy. In addition, the Developer, in collaboration with Sydney Water, is currently investigating options for the servicing of the Stage 1 development of the Marsden Park Precinct. Given the uncertainty regarding the ultimate servicing strategy, the focus of the investigation is on staging options which are flexible, robust and would be compatible with different possible ultimate servicing strategies.

Endeavour Energy propose to install a new zone substation within the Precinct. A one hectare parcel of land is to be dedicated by the proponent to Integral for the installation of a new 132kV/11kV zone substation.

Telecommunication supply for the Precinct will be provided by NBN.

Natural gas can be supplied to the Precinct by Jemena with a connection into an existing high pressure gas main located in Richmond Road.

The staging of the delivery of the infrastructure will be determined in association with the Precinct Planning program and in consultation with the relevant Infrastructure Agencies.



Attachment A – Notification from Sydney Water



Attachment B – Notification from Endeavour Energy



Attachment C – NBN Policy Update for Fibre in New Developments



Attachment D – Jemena Requirements for Developer Provided Trench

Recycled water in growth centres

Information for Developers

13 January 2011

Q What is happening with water recycling in the South West and North West growth areas?

A The detailed planning for the six first release precincts in these centres has identified that reticulated recycled water is not the most cost effective option to meet BASIX for these areas. Requirements can be met with other more affordable options.

Based on this information, the following changes will come into effect from 1 February 2011.

Sydney Water will continue to provide reticulated recycled water where developer contributions have been paid and reticulation pipes are already laid or under construction, including:

- North West - Area 20, North Kellyville and some parts of Colebee.
- South West - Edmondson Park and some parts of Oran Park and Tumer Road.

Sydney Water will **not build** any new recycled water infrastructure in:

- Alex Avenue, Riverstone and parts of Colebee in the North West where construction of recycled water reticulation has not started.
- Parts of Oran Park and Tumer Road in the South West where construction of recycled water reticulation has not started.
- Other precincts in the South West and North West growth centres that have not yet been released.

Q Will the current BASIX requirements change?

A Yes. The changed requirements for dual reticulation systems in these areas will be effective from 1 February 2011. Sydney Water is working with the NSW Department of Planning to effect the changes to the BASIX tool as soon as possible.

Q How have you decided which areas will be serviced with reticulated recycled water and those that won't?

A Water recycling with dual pipe reticulation will go ahead where developer contributions have been paid and reticulation pipes are either already built or under construction. Sydney Water will work with developers and their water servicing coordinators to precisely define the boundary for Colebee, Oran Park and Turner Rd.

Q What does the decision mean for developers?

A By removing the requirement for a dual reticulation system from BASIX in these areas, developers can install other cost effective options such as rainwater tanks to meet water efficiency requirements. This will help keep development costs down.

Q What happens to the existing Notice of Requirement (NOR)? Do they go ahead as planned where there is recycled water?

A Developments that have already been issued with a NOR requiring recycled water infrastructure will receive recycled water.

Q Will developers who've already paid levies and contribution costs be refunded?

A No. Sydney Water will still provide recycled water in areas where developers have paid levies and contribution costs.

Q Will developers who've already commenced construction of reticulated recycled water pipes be refunded?

A No. Sydney Water will still provide recycled water in areas where developers are currently installing recycled water pipes.

Q Will water meters need to be resized as a result of the change?

A No.

Q Will there be any limitations for recycled water use in areas that will get the reticulated recycled water systems?

A No. Recycled water can be used for outdoor use, washing machines and toilet flushing

Q Would Sydney Water consider reticulation recycled water systems for other developments?

A Sydney Water will continue to investigate the viability of reticulated recycled water in new residential areas on a case-by-case basis.

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PROPERTY GROUP

Bill Sarkis
Winten Property Group
Level 10, 61 Lavender St
Milsons Point NSW 2061

21 April 2010

Dear Bill

RE: Power Supply to Marsden Park Precinct

The purpose of this letter is to confirm the requirements which will need to be met before Integral Energy is able to make power available to the Marsden Park Precinct.

The area in question currently has no electrical infrastructure capable of supplying the precinct. Integral Energy has developed a strategic plan for electricity supply in the North West sector that involves establishing a 132kV sub-transmission network and associated zone substations throughout the sector. The plan dictates that servicing the electrical demand in the Marsden Park Precinct will require Integral Energy to establish a zone substation within the precinct.

Integral Energy requires the dedication of a suitable parcel of land to Integral for the establishment of the zone substation. This land is subject to the following criteria:

- Nominally 1Ha in area;
- No significant constraints in regards to flooding, vegetation, land capability etc;
- Access to road frontage suitable for large vehicles;
- Serviced with potable water at a sufficient pressure for fire fighting;
- Sewerage service available;
- Generally regular in shape and essentially level;
- Located at or close to the centre of the load.

The agreed parcel of land is to be dedicated to Integral for a nominal amount and in accordance with Integral's normal special conditions for the contract for the sale of land.

Integral Energy will fund the establishment of the zone substation and the 132kV sub-transmission feeders to the substation. The developer will be required to fund the design, supply and installation of all distribution assets (conduits, streetlights, high and low voltage

and streetlight cables and distribution substations). These distribution assets will be dedicated to Integral Energy on commissioning.

I trust that this satisfactorily addresses your questions regarding the power supply arrangements to the Marsden Park Precinct. Please do not hesitate to contact me if you have any further queries.

Yours faithfully

A handwritten signature in black ink, appearing to read 'M Webb', written in a cursive style.

Matt Webb
Manager Strategic Asset Manager
Network Development



Australian Government

**Department of Broadband,
Communications and the Digital Economy**

Fibre in new developments: policy update

22 June 2011

When the Australian Government announced its National Broadband Network (NBN) policy in April 2009, it recognised that it was essential to ensure new developments across Australia were given ready access to fibre technology as they were being built. While the NBN is being constructed, an estimated 1.9 million new premises will be built. Connecting these premises to fibre will provide occupants with ready access to next generation broadband and reduce rollout costs by avoiding costly retrofitting.

Following extensive consultation with stakeholders and consideration of the NBN Implementation Study, the government announced on 20 June 2010 that from 1 January 2011:

- NBN Co Limited would be the wholesale provider of last resort in new developments¹ within or adjacent to its long term fibre footprint and meet the cost of doing so
- developers—and on their properties, property owners—would be responsible for trenching and ducting
- Telstra would not have infrastructure responsibilities but would be retail provider of last resort
- developers could use any fibre provider they want, providing they met NBN specifications and open access requirements.

¹ For the sake of clarity, references in this statement to new developments should be understood to refer to all types of developments and constructions, regardless of the number of lots, premises or units involved; whether they are broadacre greenfield or brownfield infill; and regardless of whether they are residential, commercial, industrial, government or of some other type. References to lots, units and premises should generally be taken to have the same meaning and be interchangeable.

These are very significant changes to the way telecommunications infrastructure and services are provided in new developments. But, as the government has demonstrated, it is prepared to tackle the challenges in telecommunications to deliver better long-term outcomes for Australia.

On 9 December 2010 details of operational arrangements to implement this policy were announced. Those arrangements have now been refined in the light of experience since then. These refined arrangements are intended to provide stakeholders with additional certainty in relation to all developments.

In all instances, this policy relates to who is responsible for the provision of infrastructure and services in new developments as a provider of last resort. Nothing prevents a developer from requesting any provider (whether it be NBN Co, Telstra or some other provider) to supply infrastructure in, or to service, their estate. Any such provider is free to comply with such a request, but is not required to do so, other than NBN Co and Telstra as providers of last resort as described below.

The government will make regulatory changes to give effect to the arrangements described below, including in relation to clarifying responsibilities under the existing universal service regime. The Australian Government will also continue to work with state and territory governments to ensure a nationally-consistent approach is adopted in all planning regimes.

The role of NBN Co in new developments

From 1 January 2011, NBN Co is responsible for the installation of fibre at the development stage for all premises in NBN Co's fibre footprint² in:

- new developments of 100 or more premises³, whether broadacre or infill, which receive Stage 5 (civil works) planning approval after 1 January 2011
- developments, irrespective of size or type, in areas where NBN Co has already rolled out fibre and the fibre is ready and capable of connection
- developments in areas where NBN Co has publicly identified the area as a rollout region—this is on the basis rollout regions will be announced 12 months prior to the ready-for-service date.

NBN Co may also provide infrastructure in smaller developments where it is practical for it to do so.

NBN Co requires developers to provide it with three month's notice that the developer requires infrastructure for their development.

In developments for which it is responsible, NBN Co will install the fibre infrastructure in the development including backhaul to a point of interconnect. Other costs to be met by developers are discussed below.

² All new developments will be assumed to be in NBN Co's long-term fibre footprint. However, NBN Co will promptly notify the government, developers and Telstra (as Universal Service Obligation provider outside the footprint) of new developments that are outside of the long-term fibre footprint.

³ Developments of 100 or more premises are those approved for 100 or more premises over a three-year period at the time of development approval.

NBN Co may use whatever operational arrangements it chooses to service new developments. NBN Co will use such arrangements to make infrastructure available in a time frame which will enable occupiers of lots to access fibre-based voice telephony and other services.

Role of Telstra

For developments of less than 100 premises, whether broadacre or infill, Telstra will be responsible for delivering infrastructure and services, pending NBN Co being ready to provide a fibre service in that area that is capable of connection to the premises.

Telstra will be responsible for delivering infrastructure and services in developments which received planning approval before 1 January 2011 other than developments which are 'landbanked'—that is, developments that have been approved but which have not proceeded.

Telstra has agreed that it will generally provide copper infrastructure. However, Telstra can choose to provide fibre and in some limited circumstances—for example, because of the short time frame between construction and the rollout of fibre—Telstra may provide high quality wireless services as an interim solution. Telstra will work to determine which interim solutions will be appropriate in specific circumstances. It will take into account considerations including the time frame for which the interim solution is required, the infrastructure solution that delivers the best service quality, the customer's location and requirements for voice or broadband.

Like other fibre providers, Telstra will also be able to enter into commercial arrangements with NBN Co relating to fibre solutions.

Consistent with the 20 June 2010 announcement, Telstra will be required to provide standard telephone services to end users in all new developments in which retail services are not offered by another service provider (retail provider of last resort).

Landbanked developments will be provided with infrastructure in accordance with the rules described above and developers will need to relodge their requests with NBN Co or Telstra as appropriate.

Telstra will advise developers if their developments are being treated as landbanked and need to be resubmitted.

The arrangements outlined in this statement do not in any way override existing contractual arrangements developers may have in place.

Expectations on developers

From 1 January 2011, in all types of new developments, developers will ensure that pit and pipe—including trenching and ducting, design and third-party certification for development approval purposes—are installed and are fibre-ready.

In new developments of 100 premises or more, developers will meet the cost of installing fibre-ready pit and pipe infrastructure and transfer ownership of such infrastructure to NBN Co in exchange for the provision of fibre within that pit and pipe.

In new developments of less than 100 premises, developers will meet the cost of installing pit and pipe infrastructure and transfer ownership of such infrastructure to Telstra in exchange for Telstra's provision of fixed-line infrastructure within that pit and pipe.

In the event that Telstra is paid by a developer to install the pit and pipe infrastructure into a new development where NBN Co has an agreement with the developer to provide fibre, Telstra will transfer the pit and pipe to NBN Co before NBN Co installs the fibre as the first infrastructure.

Any other provider whom a developer approaches to provide infrastructure will need to decide what arrangements it requires in relation to pit and pipe infrastructure.

Consistent with past discussions with the development industry, the government has introduced legislation, the Fibre Deployment Bill, to have developers install fibre-ready pit and pipe.

Pit and pipe specifications

These arrangements require clarity on the nature of the pit and pipe that is appropriate. NBN Co has provided specifications for use where a developer wishes to use NBN Co. These specifications have also been provided to the Communications Alliance with a view to having them negotiated as appropriate for general use by industry and then endorsed as soon as possible. This is a matter for established industry and Australian Communications and Media Authority (ACMA) processes.

Pit and pipe can be provided by third party providers for use by NBN Co and Telstra but must be to NBN Co specifications until fibre-ready specifications are otherwise agreed by industry through a Communications Alliance process or determined by the ACMA. Any pit and pipe infrastructure that has been, or is, installed in accordance with NBN Co's guidelines will be taken to be fibre-ready.

NBN Co and Telstra will use such pit and pipe where it is to specification and ownership is validly transferred to them respectively.

Telstra will interconnect pit and pipe built by third parties with its pit and pipe network where the new pit and pipe meets relevant specifications. The interconnection is to be done either by Telstra on behalf of third parties or by a third party (including a contractor) who has entered into a Duct Access Agreement with Telstra. The third party must meet the cost of the interconnection work.

NBN Co and Telstra will support the establishment of efficient, low-cost processes to meet the reasonable certification and approval needs of councils and/or planning authorities in relation to pit and pipe and fixed-line infrastructure work. Other providers and stakeholders are welcome to participate in this process.

Role of competing fibre providers

It has been a consistent feature of the government's policy in new developments that there should be room for competing providers. This continues to be the case.

Developers can source fibre from competing fibre providers if they wish. Providers can compete to provide infrastructure in new developments—for example, by offering more tailored solutions to developers or more expeditious delivery.

Where the installed infrastructure meets NBN Co specifications, NBN Co may seek to acquire the infrastructure, but this is a commercial decision for NBN Co.

Those providers should, however, build to the specifications for the NBN and offer a Layer 2 service on an open-access basis. Provisions in the NBN Access Act recently passed by Parliament require this. This is intended to ensure consumers in such developments have access to the same service outcomes as are available in new developments serviced by NBN Co. Providers who fail to do this will otherwise risk being overbuilt when NBN Co rolls out the network in their area.

There is strong stakeholder support for NBN Co operating as the wholesale provider of last resort in new developments and meeting the cost of providing fibre. The government's policy reflects this. This approach will also support a consistent national approach into the future. If alternative providers want to compete with NBN Co they are welcome to do so, but it is on the understanding that they have the resources and ability to do so.



Jemena

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



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NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



1. Purpose

The purpose of this document is to provide assistance to the Developer / Trench Provider and Jemena on the specifications and technical requirements in the reticulation of Natural Gas in a Developer Provided Trench (A single service trench to accommodate two or more Authority Assets).

2. Scope

Ensure that the principles of Developer Provided Trench and the responsibilities of all Authorities technical specifications are met. While this document is primarily designed for new residential developments, it may also be applied in other similar situations.

3. Related Documents

The application of the **Developer Provided Trench** is to be carried out in conjunction with the following documents and references:

Streets Opening Conference (SOC) – Guide to Codes & Practices for Streets Opening 2007

AUS-SPEC # 2 SPECIFICATION 303- Service Conduits

3.1 Definitions

Jemena	Natural Gas Authority
Authorities	Any Service Authority and or other Government / Regulatory Body
Backfill	A specified material used to fill the “Developer Provided Trench” and or excavation
Bedding	A specified material used to pad, to ensure the protection of all plant and equipment.
Developer	The person, party or corporation / agents requiring the provision of services (ie) Natural Gas to be reticulated throughout a subdivision and or development.
Trench Provider	Any person or corporation engaged by the developer to excavate a “Developer Provided Trench”.
Exclusive Trenching	A Trench and or excavation that accommodates only one authorities plant or equipment.
Protective Measures	May include but not limited to combined warning tapes, conduits, PE (polyethylene) strips and kerb marking for road crossings.

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



4. Responsibilities

This section outlines the responsibilities of all parties involved in the servicing of Land via the use of a Developer Provided Trench.

4.1 *Responsibilities of the Developer/Consultant:*

- Contact Jemena for Natural Gas availability and supply a layout of the proposed subdivision in DWG format.
- Provide Jemena with a final electrical layout in electronic format for the subdivision.
- Co-ordinate joint Authority requirements.
- Arrange Trench Civil works.
- Advise Jemena of the Civil Contractor and or Trench Provider's Name and details to arrange scheduling of the programmed works.
- Request Certificates of Operational Acceptance, after Jemena have completed works.

4.2 *Responsibilities of the Civil Works Contractor /Trench Provider:*

- Organise a pre-construction site meeting with a Jemena Representative.
- Supply & install road-crossing conduits as required.
- Program & Co-ordinate the Developer Provided Trench & the Utilities.
- Provide 48 hours notice prior to trench being ready for Jemena's contractor.
- Supply and install all Protective Measures (ie) Warning tape relevant to the plant in the Developer Provided Trench.
- Excavate/backfill and compact to suit Developer Provided Trench specifications.
- Ensure manageable portions of the trench are provided. (ie) A minimum length of 200mtrs of open trench is required before contacting Jemena to lay mains.
- Co-ordinate and manage the Developer Provided Trench "Accept and Release" process, as required.
- Supply and place all specified bedding and backfill materials to meet Jemena's specifications.
- Ensure that The Developer Provided Trench is within the correct alignment and accordance with the Streets Opening Conference (SOC) – Guide to Codes & Practices for Street Opening.
- Monitor quality and the timing of the Developer Provided Trench.

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



- Co-ordinate with the Jemena, to resolve any design changes that may be required on site during construction.

4.3 *Responsibilities of Jemena:*

- Provide Design input at the planning stage to optimise Developer Provided Trench Opportunities and enable correct set out of plant.
- Issue relevant Developer Provided Trench plan prior to construction.
- Attend a pre Construction site meeting as required.
- Commit adequate resources to carry out work within an agreed time frame.
- Carry out, in progress Audits and Post Audits as required.
- Supply and deliver pipe and fittings to Site
- Manage the installation and commissioning of Natural Gas asset.

5. **Natural Gas Plant**

The following is typical of a Plant, which is used in reticulation of Natural Gas within Land developments. Varying quantities and combinations of such Plant is to be accommodated by the Developer.

- **High Pressure Gas Main:** Steel gas main not exceeding 1,050 kPa used for bulk Supply to development sites.
- **High Pressure Gas Service.** Steel service pipe not exceeding 1,050 kPa for provision of supply to customer premises.
- **Medium Pressure Gas Main:** Polyethylene and/or nylon main not exceeding 400 kPa used for bulk supply and reticulation of development sites.
- **Medium Pressure Gas Service:** Polyethylene and/or nylon service pipe not Exceeding 400 kPa for provision of supply to customer premises.
- **Trace Wire:** Main and service location wire, copper wire for purpose of detecting Polyethylene / Nylon Gas Mains and Services.
- **Combined Warning Tapes:** A durable plastic tape, placed above Service Authorities Plant to indicate their presence in a Developer Provided Trench.
- **Warning Tape:** A durable plastic tape, yellow in colour placed above gas plant to Indicate their presence. (Exclusive trench only)
- **Marker Plate:** Concrete / cast iron square plate, with directional arrows to indicate Location and direction of gas plant below ground.

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



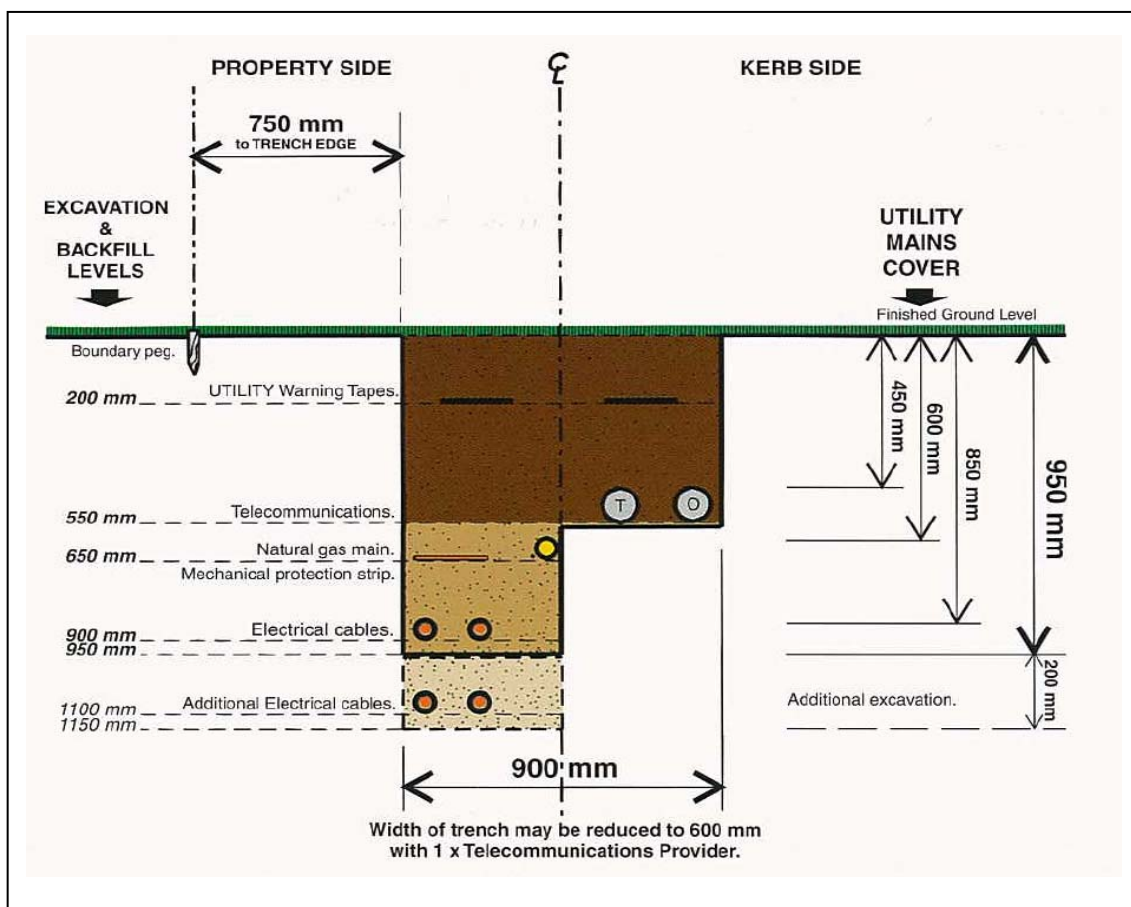
- **Isolation Valve:** An in-line control valve for the purpose of isolating specific Natural Gas Mains and Services.
- **Cathodic Upstands:** A galvanized steel pipe with internal testing equipment for the monitoring of induced current levels on steel Gas Mains.
- **District Regulator:** A pressure regulator set for the control of Natural Gas distribution pressures.
- **Paddock Markers:** An above ground Natural Gas location marker.

6. Trench Specifications

The diagram below (Figure 1.0) outlines the requirements for the provision of a Developer Provided Trench specifications and constructions requirements.

Any party wishing to vary the layout of the Services within the Developer Provided Trench will require approval from all *Authorities* involved in the Developer Provided Trench prior to construction.

(Figure 1.0)



NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



7. Alignment of Trenches

The alignment of the Developer Provided Trench shall be determined only after completion of detailed site investigations and design analysis, to ensure that due consideration is given to the following:

- Proximity and impact of the *Developer Provided Trench* to all other existing and proposed underground services.
- Proximity and impact of the *Developer Provided Trench* to all other existing and proposed structures.
- Proximity and impact of the *Developer Provided Trench* on existing sensitive features such as heritage and cultural features.
- Proximity and impact of the *Developer Provided Trench* on existing flora (ie) -special consideration must be given to the protection of existing trees.
- Proximity and impact of the *Shared Trench*, in order not to degrade the environment (ie) soil erosion, water pollution etc.

7.1 Preferred Alignment of 3 Way Trenches

Incorporating Electricity, Natural Gas, & Telecommunication Providers
(750mm off property Line)

7.2 Preferred Alignment of 2 Way Trenches

Incorporating either Electricity, Natural Gas, or Telecommunication Providers
(750mm off property Line)

7.3 Alignment of Exclusive Trenches

Where one Service Authority requires trench provision for their sole use, the alignment of this trench will be as above, or whatever is mutually agreed.

7.4 Positioning of Services Structures

This section outlines the requirements for the provision of the Developer Provided Trench, its Specifications and construction requirements, in conjunction with the standard Drawing in Figure 1.0

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



8. Minimum Separations between Services and Natural Gas Mains

(Table 1.0)

Nylon or Polyethylene Gas Mains	Telecommunication cables and/or conduits	Protected (2) Low Voltage electricity cables	Protected (2) High Voltage electricity cables
Gas Mains up to 75mm diameter	150mm	150mm	300mm
Gas Mains of 110mm diameter or larger	300mm	300mm	300mm

The above Table 1.0 refers to the minimum separation requirements between services as per **AUS-SPEC #2 Specification 303 – Service Conduits.**

Note:

- Separations relate to distances between conduits/cables peripheries.
- “**Protected**” refers to mechanical protection over the cables, which usually takes the form of either polymeric strips (at least 3mm thick) or clay brick.
- The above tables are considered to provide desirable minimum separations. Consideration should also be given for the need to access for future maintenance of Services when determining the required separations.

9. Trench Dimensions

This section outlines the requirements for the provision of the *Developer Provided Trench*, its Specifications and construction requirements, in conjunction with the standard drawing in Figure 1.0

10. Width of Trench

- The width of trench shall be determined by the plant to be installed, and Their relevant dimensions, including horizontal separation between Services.
- Provision is to be made for the placement where required of suitable Bedding/Backfill materials as specified by the relevant Service Authorities.
- Provision is to be made for the inclusion of Protective Measures and Associated equipment.
- Provision is to be made for the installation of Service Authorities associated Structures as required, (ie) pit, pillars, valves etc.
- In the case of abnormal site conditions existing, i.e.; substantial amounts of rock, confined verge corridors etc, a site specific Shared Trench arrangement may be utilized upon approval by all Authorities.

11. Depth of Trench

- Jemena specified "depth of cover" is only relative to finished surface level. Developer Provided Trench and Services plant depth is to be determined from final verged property surface profiles.

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



- The depth of the *Developer Provided Trench* is to be determined by the plant to be installed, their relevant dimensions and clearances, including vertical separations between *Services*.
- Provision is to be made for the placement where required of suitable Bedding/Backfill materials as specified by Jemena.
- Provision is to be made for the inclusion of *Protective Measures* and associated equipment.
- Provision is to be made for the installation of all Jemena associated structures as required, i.e. pits, marker plates and valves etc.
- In the case of abnormal site conditions existing, i.e. substantial amounts of rock, confined verge corridors etc, a site specific *Developer Provided Trench* arrangement may be utilized upon approval by all Authorities.

12. Trench Bedding, Backfill & Landscaping

This section outlines the requirements for the provision of the *Developer Provided Trench*, its specifications and construction requirements, in conjunction with the standard drawing 1.0.

13. Bedding & Backfill Material

Where *Services* are to be protected via the use of Bedding materials, the material is to be as specified by the relevant *Service Authorities* and/or the Authorities responsible for management of that land, and is to be laid in accordance with their specifications.

The Backfill material used within the *Developer Provided Trench* is to meet the requirements of each (*Service Authority*), incorporated in the *Developer Provided Trench*.

All Backfill materials are to comply to requirements of Authorities responsible for the road reservation.

14. Staging of Backfill

All Bedding and Backfill is to be carried out in stages so as to ensure the requirements of the respective *Service Authorities* plan are met.

Staging of Backfill is to facilitate all plant and associated equipment including *Services*, structures and *Protective Measures*.

15. Subsequent work in trenches

The subsequent maintenance renewal or re-arrangement of the plant of any *Service Authority* shall be the responsibility of the *Service Authority* owning it.

No *Service Authority* shall alter the position of its plant in the *Shared Trench*, nor add to it without consultation with the other *Service Authorities*.

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



The *Service Authority* that re-opens a *Developer Provided Trench* shall take precautions to avoid damage to or interference with the plant of the other *Service Authorities*. The costs of repair to plant of any party damaged/disturbed during such subsequent work shall be the responsibility of the *Service Authority* causing the damage.

The *Service Authority* that subsequently works in a *Shared Trench* shall be responsible for the restoration of the Developer Provided Trench.

The Civil Contractor / Trench Provider subsequent to the initial installation of the Shared Trench, must ensure that all alignments are correct.

In the event that the service authorities Asset has been laid outside of the correct alignment, the cost of relocation to the correct alignment will be borne by the Civil Contractor / Trench Provider.

16. Conduit and Padding Specifications

16.1 Natural Gas Conduits

- Under the terms and conditions outlined in the “Underground Services in a Shared Trench” agreements, the Developer’s Contractor shall supply and install Jemena specified conduits for gas mains. They are to be installed at specified locations and depths, and sealed with end caps or other Utility approved seals.

Specification for Jemena Conduits is as follows:

Pipe Sizes (OD mm)	Conduit Diameter (OD mm)	Depth of Cover (mm)	Type (for all sizes)
Nylon Pipe 32, 50 & 75 Polyethylene Pipe (PE) 40 & 63	100	750	Rigid PVC Pipe Smooth or Ribbed Exterior, Smooth bore Blue/Grey in colour
110 Nylon 110 Polyethylene Pipe (PE)	150	750	
160 Polyethylene Pipe (PE)	225	750	

(Table 1.1)

- Prior to installing conduits, the Developer’s Contractor shall notify Jemena and arrange a Pre-Construction site meeting to confirm all conduit requirements.
- All roads under construction are to have a natural gas conduit installed beneath. Access through all bridge structures, bebo arches, flood-ways, and culverts, etc, is also via specified conduits during construction.
- The Developer’s Civil Contractor shall install conduits on an alignment to suit an exclusive trench or a Developer Provided Trench with the correct horizontal and vertical separations as detailed.

NATURAL GAS REQUIREMENTS FOR DEVELOPER PROVIDED TRENCH



- All conduits shall extend 1000 mm beyond kerb, roadway edge or any other obstruction with marker tape installed above.
- The Developers Contractor shall be responsible for clearly and accurately identifying the location of road crossings by marking the kerb face with the letters “G” where relevant.

17. Padding for Nylon and Polyethylene Pipe

17.1 *Padding material for nylon pipe*

Spoil from the excavation may be used for bedding nylon pipe in unsealed surfaces as long as it fulfils the following requirements:

- the material shall be fine and loose
- trencher soil, recycled spoil or sand may be used
- particles are to be ≤ 25 mm
- material to be compactable by hand

17.2 *Padding material for Polyethylene pipe*

- padding for polyethylene pipe shall be sand