ADW JOHNSON PTY LIMITED
ABN 62 129 445 398

Infrastructure Servicing Report

Prepared for
Northbank Enterprise Hub Pty Ltd

Property:
Lot 1001 DP 1127780
Business and Industrial Park
Tomago Road, Tomago

Date:
August 2012

working beyond expectations

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visualisation • economic analysis • social impact • urban planning

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Document Control

Issue No.	Amendment	Date	Prepared by	Checked by
A	Issue for Approval	13/12/10	Scott Day	Hugh Williams
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Northbank Enterprise Hub (Lot 1001 DP 1127780)

Tomago Road, Tomago

Infrastructure Servicing Report

Reference 37672 – Infrastructure Version C Aug 2012

Limitations Statement

This report has been prepared in accordance with the scope of services agreed between ADW Johnson Pty Ltd and the Client. The scope of services was defined by the requests of the Client and by time and budgetary constraints set by the Client.

All reasonable skill, diligence and care within the agreed scope of services with the Client and the resources provided to it by agreement with the client have been provided. Any responsibility to the client and others in respect of matters outside the scope of the above is disclaimed.

Unless otherwise specified in this report, information and advice received from external parties during the course of this project was not independently verified. However, to the best of our ability, checks were undertaken to determine relevancy and currency of information prior to use.

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Executive Summary

ADW Johnson has been engaged to assist Northbank Enterprise Hub Pty Ltd (previously known as WEPL Investments Pty Ltd) to obtain Project Approval to develop the remainder of its Tomago landholding identified as Lot 1001 DP 1127780 for the purpose of an industrial and business park subdivision. This current report addresses infrastructure servicing and refers to this land as Northbank (Lot 1001). The property is former pasture land, with an area of approximately 240 hectares.

On the adjacent Northbank Enterprise Hub Pty Ltd land to the north east of the site is a Part 3A Project Approval for the establishment of WesTrac Headquarters for NSW, an industrial subdivision and bulk earthworks (Project Approval 07_0086). This land is referred to as existing Part 3A approval 07_0086, or similar.

The current project, Northbank (Lot 1001), has been designed to integrate with the existing Part 3A approval 07_0086 to form a consolidated subdivision to be known as the Northbank Enterprise Hub.

The Infrastructure Servicing Report demonstrates that infrastructure Director General's Requirements (DGR's) have been met. Liaison is occurring with the relevant authorities of Hunter Water Corporation and Ausgrid where long lead in times exist or future planning for capacity in regional supply system is necessary. Water supply is available and a water servicing strategy is already approved for Northbank Enterprise Hub. Wastewater servicing is part of a larger transfer scheme upgrade to the area being driven by Hunter Water Corporation. A wastewater servicing strategy that includes the development of Northbank (Lot 1001) has been approved. The first stage of wastewater is completed. Tomago 2 WWPS is located at the southern end of Westrac Drive. Electrical zone substation works by Ausgrid across Tomago Road from Northbank (Lot 1001) have been completed which will adequately cater for several stages of Northbank (Lot 1001) depending on energy requirements of the anchor tenants. Telecommunications will be extended through the site. Opportunity exists for future gas connection through the development and provision is being made accordingly. A signalised intersection associated with Part 3A Approval 07_0086 has recently been completed. Two (2) further signalised intersections with Tomago Road are proposed to meet the traffic needs for the development. The proposed staging of site development is shown in **Figure 3**. Actual staging of the development will be market driven. Thus it is only possible at this time to give a broad outline of infrastructure staging/timing and maintenance requirements. A summary of infrastructure servicing elements is given in **Section 11.0**, together with an outline of staging/timing issues and maintenance aspects.

The Northbank (Lot 1001) site lies adjacent to development lands with an existing Part 3A Approval 07_0086 & EPBC Approval 2007/3343, and Stage 1 of this Approval on the adjoining lands has recently been developed for the WesTrac development. There are several large infrastructure servicing related matters associated with WesTrac and the future development of the existing Part 3A approval. Hence there is overlap to include Northbank (Lot 1001) future infrastructure servicing requirements in the same reporting and analysis.

DGR's for infrastructure servicing have been met and there is adequate provisioning being made for the development of Northbank (Lot 1001).

Concept engineering design has been completed over Northbank (Lot 1001) to ascertain fill quantities and preliminary development cost estimates. There will be a large import of fill required, approximately 3.7 million cubic metres.

1.0 Introduction

ADW Johnson has been engaged by Northbank Enterprise Hub Pty Limited to address infrastructure servicing of the proposed development of land known as Northbank (Lot 1001), being the property Lot 1001 DP 1127780 at Tomago Road, Tomago. The property is former pasture land, with an area of approximately 240 hectares. The existing surface levels of the site are generally at 3mAHD along the Tomago Road frontage, dropping to 0.5-0.8mAHD for the remainder of the site. Refer to **Figure 1**.

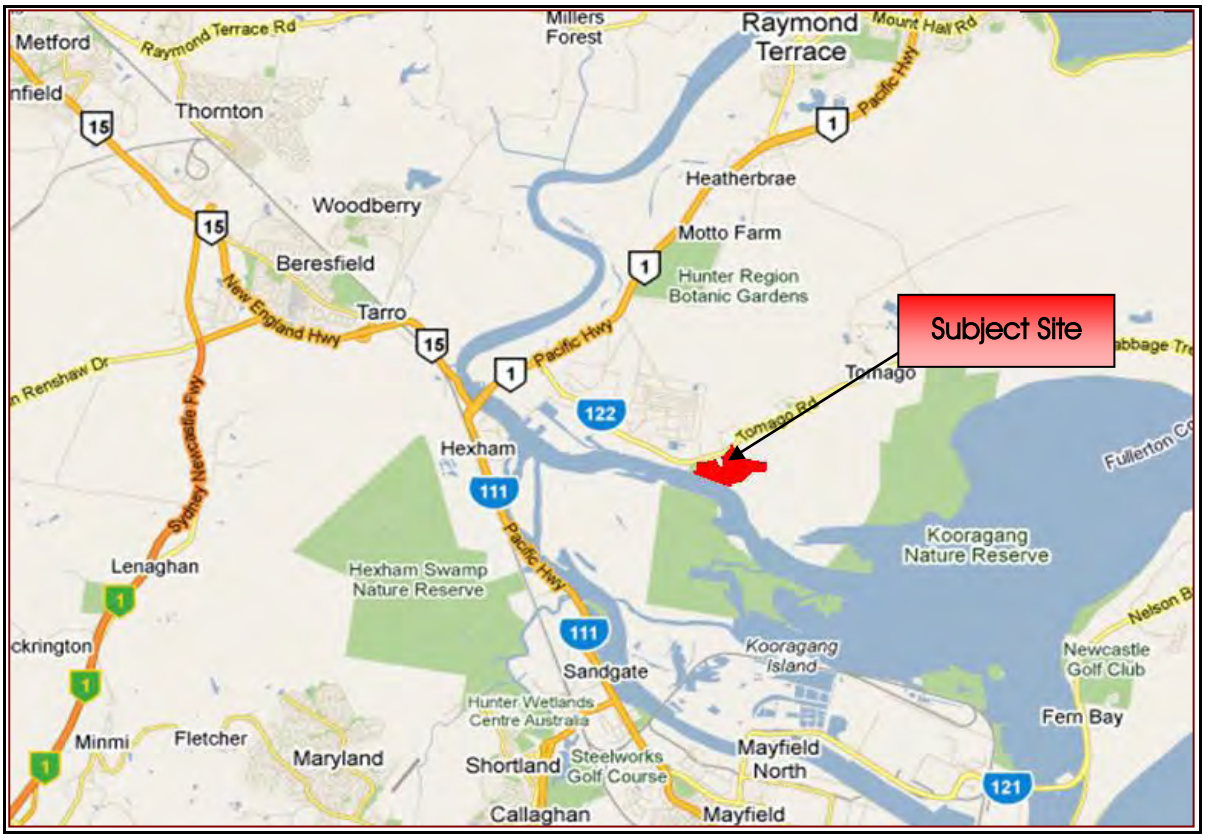

Figure 1 - Location Plan.

The Infrastructure Servicing Report demonstrates that infrastructure Director General's Requirements (DGR's) have been met. Liaison is occurring with the relevant authorities where long lead in times exist or future planning for capacity in regional supply system is necessary. The DGR's are described in **Section 2.0**.

The Northbank (Lot 1001) site lies adjacent to development lands with an existing Part 3A Approval 07_0086 & EPBC Approval 2007/3343. Stage 1 of the adjoining lands has been developed for the WesTrac development. There are several large infrastructure servicing related matters associated with WesTrac and the future development of the existing Part 3A approval. Hence there is overlap to include Northbank (Lot 1001) future infrastructure servicing requirements in the same reporting and analysis. Refer to **Figure 2**.

The proposed staging of site development for Northbank (Lot 1001) is shown in **Figure 3**.

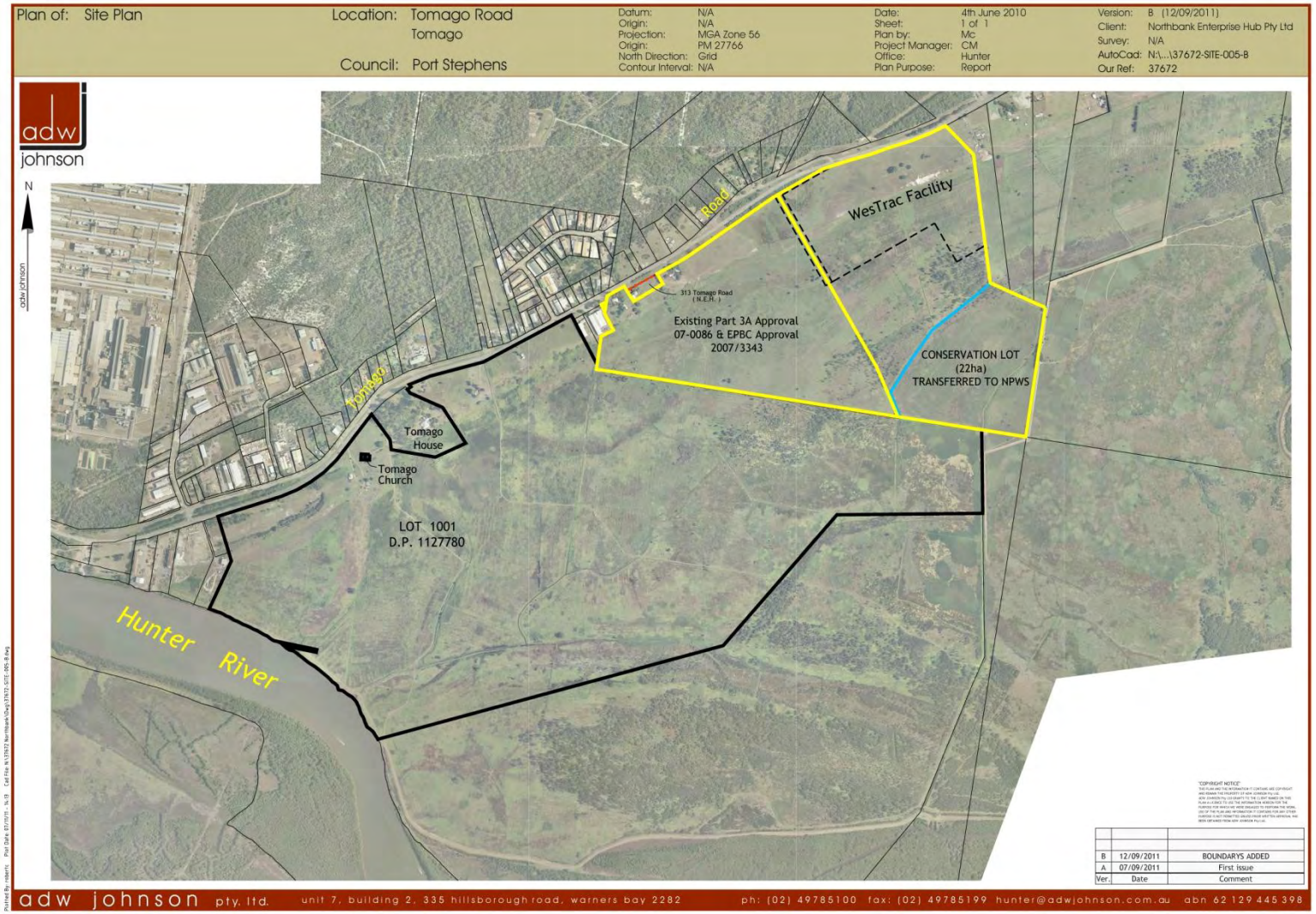

Figure 2 – Property Delineation (From Environmental Assessment Report)

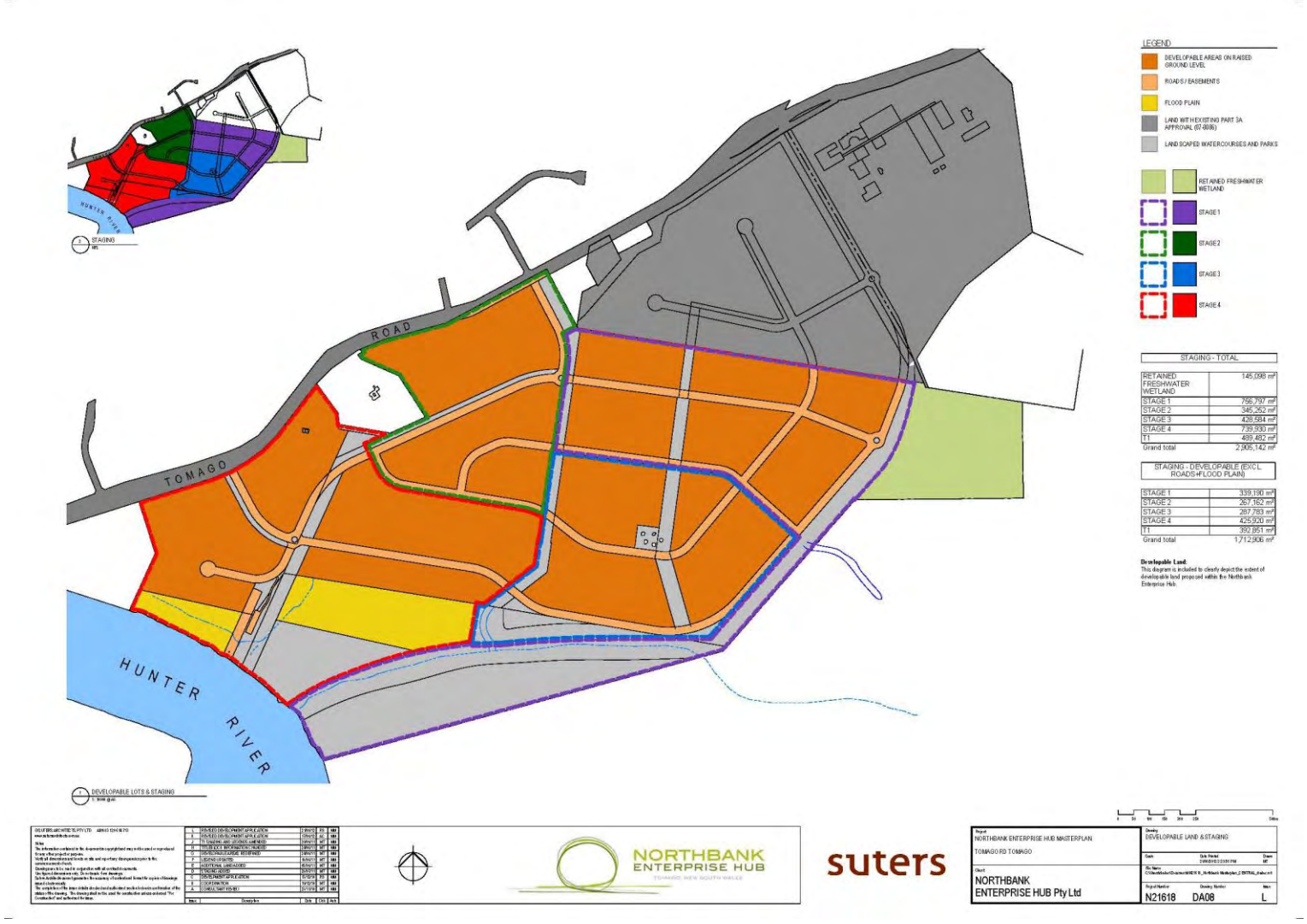

Figure 3 – Proposed Development Staging

2.0 Director-General's Requirements

The Director General's Requirements were issued for Application No. MP10_0185,

Project Application for development at Tomago Road, Tomago on 20 October 2010.

The selected sections of the DGR's applicable to this report are as follows:

Water and soils*- including:*

- *details of the quantity of fill required for the site and the proposed source(s) of the fill*

Infrastructure*- including:*

  - *details of the servicing capacity, destination/origination sources, site allocation and costs to adequately service the area to the capacity required;*
  - *a detailed written and graphical description of the infrastructure to be made available; it's location, capacity, staging/timing and maintenance requirements;*
  - *identification of the infrastructure upgrades that are required off-site to facilitate the orderly and economic development of the project, and a description of the arrangements that would be put in place to ensure these upgrades are implemented in a timely manner and maintained;*
  - *a description of how the provision of infrastructure both on and off-site would be coordinated and funded to ensure the necessary infrastructure is in place prior to the detailed development of the site; and*
  - *identify any technologies that may reduce the demand or need for servicing or provide for the supply of sustainable services.*

The infrastructure servicing requirements addressed are potable water – **Section 3.0**, wastewater – **Section 4.0** and electrical – **Section 5.0**. Gas and telecommunications are described in **Section 6.0**. Filling of the land for development is also described in **Section 7.0**.

Also concept engineering design is discussed in **Section 8.0** with concept drawings presented in **Appendix C**. Intersections with Tomago Road are addressed in **Section 9.0** and management of acid sulfate soils is discussed in **Section 10.0.** The site development will be staged with the timing subject to market forces. **Section 11.0** gives a summary of infrastructure servicing elements together with staging/timing issues and maintenance aspects.

3.0 Potable Water

The area surrounding Northbank (Lot 1001) is currently serviced by the Tomago Water Pump Station (WPS) with back feed from the North Lambton Reservoir. Tomago WPS draws water from the Tomago Sand Beds nearby to the site and supplies 20 to 25% of drinking water to the Lower Hunter and hence has a significant degree of redundancy built into it. The likelihood of Tomago WPS failing is understood to be rare.

A number of water mains currently run along the frontage of the site within Tomago Road and HWC has advised that the proposed development will be able to connect into the existing DN 200CICL and DN 500CICL mains. HWC supplied residual pressures under Peak Day Demand (PDD) and PDD plus various fire flow allowances at the proposed connection points to the 200CICL and 500CICL mains, which were used as boundary conditions for the proposed water servicing system modelling.

ADW Johnson has been in regular contact with Hunter Water Corporation and has reached a milestone of approval of the water servicing strategy. This report covers both the Northbank (Lot 1001) project and MP07_0086 an existing project approval on the adjoining land. The WesTrac development is on the adjoining land. Refer to **Appendix B** for approval.

The proposed system incorporates a DN300 main running centrally throughout the proposed development, with a DN250 main running parallel within MP07_0086. These works (to meet WesTrac servicing requirements) have been completed for use and will be ready for future extension. Northbank (Lot 1001) may connect to these works in the future, dependent on staging to the client's needs. The remainder of the internal pipes will be minimum DN150, in accordance with the HWC Edition Version 1 December 2009 of the Water Supply Code of Australia (HWC WSCA). The design of the system has included multiple connections points to existing mains within Tomago Road as well as numerous cross connections internally within the proposed development. This has resulted in a very good level of redundancy within the system. Total option cost is estimated to be in the order of $10M, including works in MP07_0086 Project Approval area. HWC will employ standard maintenance regimes of watermains, contained within public roads. Refer to **Appendix A**.

At this stage the technology being used to assist sustainability and reduce servicing needs will be addressed within the individual development proposals.

4.0 Wastewater

The area surrounding Northbank (Lot 1001) is currently not serviced by Hunter Water Corporation's regional wastewater system, however HWC is developing the Williamtown to Raymond Terrace Wastewater Transfer Scheme. The Scheme has been developed on the basis of connecting a number of major developments such as Williamtown Department of Defence, Williamtown Aerospace Park by Hunter Land, Newcastle Airport Limited and Northbank Enterprise Hub represented in **Figure 4** as 'Tomago Industrial Site' MP07_0086 and Northbank (Lot 1001). HWC is contributing by completing Leg C along Masonite Road for connection to the Raymond Terrace Wastewater Treatment Works. Refer to **Figure 4**.

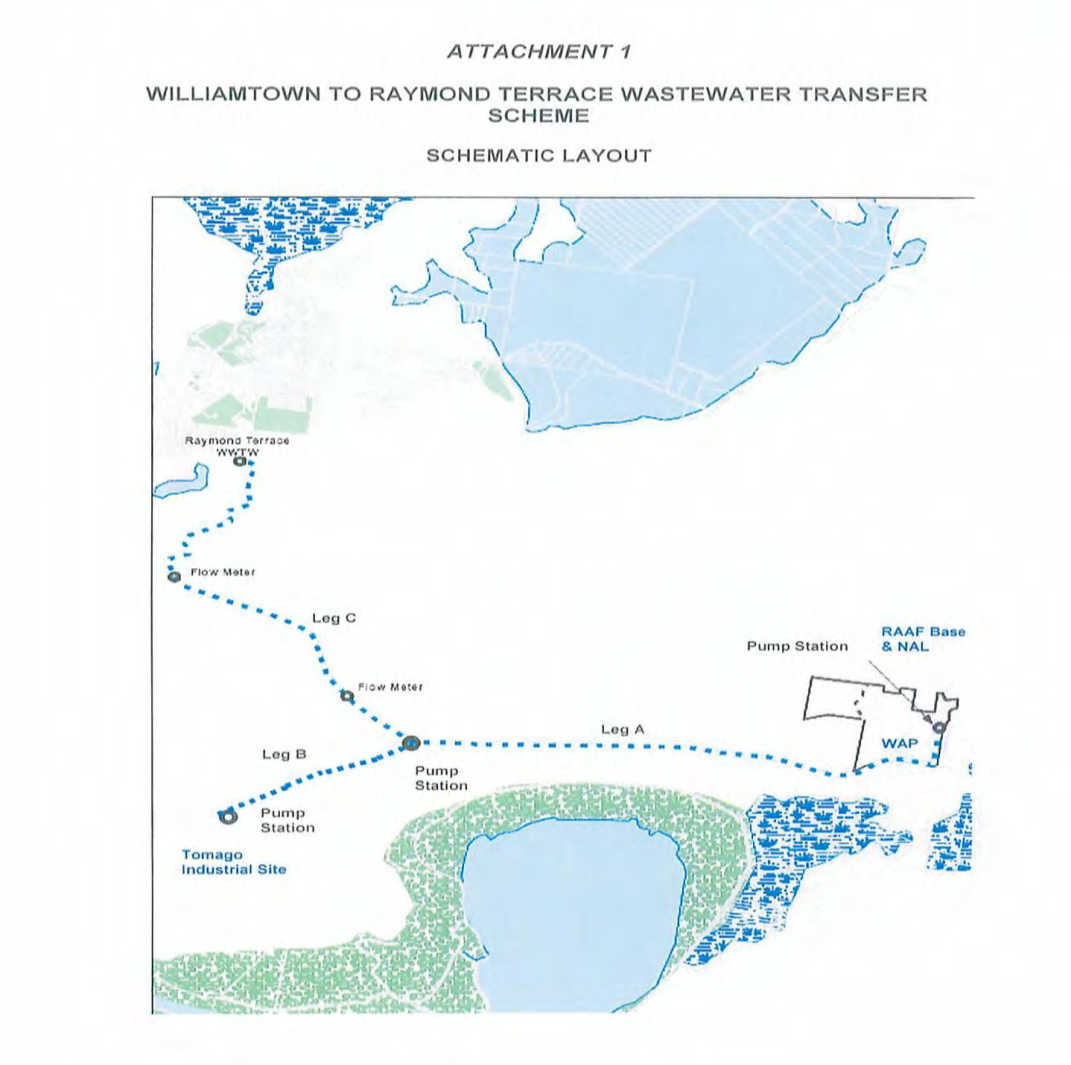

Figure 4 – HWC Schematic of Regional System Upgrade

The proponent is under Deed of agreement with HWC to fund and build connection Leg B of the system. In return HWC are bound to accept the Leg B wastewater flows and complete Leg C works at this time. HWC will be responsible for maintenance of the system that will be an extension to their regional network.

The Wastewater Servicing Strategy which includes Northbank (Lot 1001) has been approved. Whilst this service provisioning is primarily driven for servicing the WesTrac development that is already under construction in the MP07_0086 lands, the Northbank (Lot 1001) development is included in all layouts and calculations. Refer to Appendix A.

Construction of Leg B works have been completed for the Wastewater Pump Station 'Tomago 2' and sewer rising main connection back to the HWC regional system. This will then be utilised for future extension into Northbank (Lot 1001).

In accordance with the approved wastewater servicing strategy, Lot 1001 Northbank site will be serviced by a low pressure sewer system (LPSS), consisting of a private pumping unit at each lot which will pump into pressure reticulation mains. These mains will discharge into a gravity main which will drain to the Tomago 2 WWPS. The LPSS, the gravity system and Tomago 2 WWPS have been designed and constructed in accordance with Hunter Water requirements.

Hunter Water have stringent emergency storage requirements to ensure that they do not breach their operating licence due to overflows from their wastewater system. Hunter Water require that wastewater systems are designed to allow sufficient time to respond to failures, minimising the risk of overflows occurring within their system.

The following requirements apply to the wastewater system at Northbank:

- Each private pumping unit within the LPSS will have an emergency storage volume which equates to at least 24 hours storage under average dry weather flow conditions.
- Tomago 2 WWPS has an emergency storage volume (volume within the WWPS wet well and upstream gravity system between Flood Alarm Level and Overflow Level) which equates to at least 8 hours storage under average dry weather flow conditions. Note that HWC's minimum requirement is 4 hours emergency storage under average dry weather conditions, however they have increased this requirement to 8 hours emergency storage for proposed WWPS due to its environmentally sensitive location.

In addition to the above, the proposed WWPS has telemetry installed such that it's operation will be able to be monitored as part of Hunter Water's Supervisory Control and Data Acquisition (SCADA) system. Hunter Water will be alerted via SCADA in the event of a failure at the WWPS, and will be able to respond and bring the WWPS back online within the 8 hour period, or failing that, organise tankers to allow the WWPS to remain offline for a longer period.

The private pumping units within the LPSS will not be connected to SCADA. They will be privately owned and monitored by the landholders. These units will have an audible and visual alarm which will be activated in the event of a fault. The resident being serviced by the private pumping unit will need to notify Hunter Water of any failure of the pumping unit and Hunter Water will be responsible for rectifying any faults.

Total discharge volumes will be dependent on the actual staging of the development. As noted in the Deed of Agreement between HWC and Northbank Enterprise Hub if at any time the Leg B works become insufficient to deal with the predetermined discharges Northbank Enterprise Hub and HWC will negotiate upgrading of Leg B and ensuring adequate capacity beyond Leg B.

Under the Deed of Agreement HWC will ensure that at all times adequate facilities are in place to process discharge from the full Northbank landholding including Northbank (Lot 1001).

A preliminary estimate of the infrastructure costs for wastewater servicing of the full developable area of Northbank (Lot 1001) are in the order of $20M.

5.0 Electrical

There are two (2) electrical considerations at Northbank (Lot 1001). The first component is that there is an existing sub transmission 132kv overhead power line transecting the site. The second component is the electrical servicing of the developed site. ADW Johnson has been in regular contact with Ausgrid in regard to both components.

The 132kv power line has been relocated on MP07_0086 to the front boundary with Tomago Road. The existing line crosses this property on an unusual angle that constrained development, hence the intention to relocate it. The relocation of 132kv power line have been completed. Refer to **Appendix A**.

Continuing in the same manner, the 132kv power line is proposed to be relocated to the Tomago Road frontage of Northbank (Lot 1001). Preliminary investigations into this route have been made with Ausgrid who have advised that this option is feasible for further investigation. This work is to be developer funded, however no servicing of the development will come from the 132kv sub-transmission line. Refer to **Appendix A**.

Preliminary electrical servicing investigations have been made with Ausgrid for Northbank (Lot 1001). Ausgrid have completed a Zone Substation opposite Tomago House. This Zone Substation is necessary to service Northbank (Lot 1001) for any sizeable stage proposed with the development. Ausgrid has indicated that depending on the energy demands of future development in the Tomago area and the proposed businesses within Northbank (Lot 1001), an upgrade to this Zone Substation may be required some 15-25 years in the future. Refer to **Appendix A**.

There are standard requirements with Ausgrid for determining delineation of who funds the electrical works. Standard provisioning is being made in the typical road cross sections of the development. Standard easement arrangements for Ausgrid's maintenance of electrical reticulation system and sub transmission line will apply.

ADW Johnson is continuing to keep Ausgrid updated with milestones of the development so as to ensure that there is sufficient planning allocation made for capacity in the system.

6.0 Gas and Telecommunications

Dial Before You Dig searches indicate that gas and telecommunications do exist in Tomago Road adjacent to Northbank (Lot 1001).

Jemena's position on gas is that for industrial development generally, the cost of reticulation is borne solely by the developer. If anchor tenants are known along with their gas demands, Jemena will consider, on merits, funding the infrastructure but where standard subdivision is proposed, the proponent would need to determine cost/benefit basis and fully fund. There is capacity in the system since they have primary and secondary mains in the vicinity. Provision is made in the typical road cross sections servicing the site. Refer to Appendix A.

ADW Johnson has made contact with Telstra on telecommunications into the WesTrac site under MP07_0086. Their involvement is usually later in the development process. We are aware that there is both existing Optical Fibre and local servicing telecommunication reticulation in Tomago Road available for extension into the proposed development.

7.0 Earthworks

The elevation of the site indicates that significant quantities of fill are required for the development to have freeboard above the 1:100 year ARI flood level of the Hunter River. Concept civil design indicates that 3.7 approximately million cubic metres of fill will be required for development of the full site.

For the four stages of development shown in **Figure 3**, the fill volumes are approximately:

- Stage 1 – 1,577,000 cubic metres (42.3%).
- Stage 2 – 595,000 cubic metres (16.0%).
- Stage 3 – 815,000 cubic metres (21.83%).
- Stage 4 – 742,000 cubic metres (19.9%).

There are several sources of fill in the area that can be utilised as development stages proceed. Sources used to date include Macka's Sand at Saltash. There are several other local fill sources available noting that the development will proceed in market driven stages. Refer to **Appendix C** for concept engineering plan set and **Section 8.0**.

It is proposed only to use Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) for the purpose of filling in order to ensure a high quality of fill material that will not result in any potential leaching of contaminants to wetlands adjacent. The proposed excavated natural material to be used as fill on site shall comply with "Protection of the Environment Operations (Waste) Regulation 2005 – General Exemption Under Part 6, Clause 51 and 51A, The excavated natural material exemption 2008". The excavated natural material will be sourced from a compliant processor and shall be applied to the land in a reasonable period of time with relevant records held for three years. Fill specification by geotechnical engineers and volumes associated with staging will be reviewed for compliance prior to undertaking any earthworks import. The need for Resource Recovery Exemptions and/or further approvals will be determined at this time. An example fill source supplier used on Stage 1 of the MP07_0086 site adjacent to Lot 1001 was sand from Macka's Sand at nearby Saltash.

An overflow wetland rehabilitation area is proposed to be formed within Lot 1001 closer to the river. The wetland has no water quality function. Excavation of approximately 300mm depth for the base of the wetland will be completed to remove existing grass seed bank. Douglas Partners has completed an Acid Sulphate Soils Management Plan to be a part of the construction Environmental Management Plan (CEMP) covering this work. The overflow area will be inundated during times of high tide and/or high river levels. Details of the proposed berm necessary to contain this overflow are minor in terms of scale and so not represented on the concept bulk earthworks plan. Refer to BMT WBM report for details. Although the majority of services, stormwater channels and works will be in fill, excavations of some trunk drainage channels are likely to trigger acid sulphate soils management, refer to **Section 10.0.**

8.0 Concept Engineering

Concept road design grades are generally 0.3%-1% to minimise fill. The exception to this is the perimeter road which is flat. Surface water drainage of this road is reliant on 3% crossfall to road edge, tipping into a swale.

Road carriageway widths are typically represented as being 15 metres wide to accommodate future traffic uses. Turning manoeuvres for B-Doubles are accommodated in the layout. Verges have been widened to accommodate:

- security of supply for water and power reticulation;
- potential gas reticulation; and
- sewer rising main installation.

BMT WBM has analysed flooding, drainage and drainage corridor widths on the basis of these preliminary finished surface levels. This provided sub-catchment delineation. Culvert crossings, where roads cross over drainage corridors have been sized by BMT WBM in a preliminary manner and these will be subject to detailed design.

A preliminary wastewater layout has been completed to suit the subdivision layout with WWPS layout accordingly.

A preliminary water servicing layout has also been provided.

Pedestrian and cyclists are catered for, refer to landscape plans.

Refer to **Appendix C** for the concept engineering plan set.

9.0 Intersections

The Traffic Assessment Report (Ed 2) prepared by TPK and Associates contains details of the projected traffic generation and assessment of the existing street network resulting from the development of Northbank (Lot 1001). The Traffic Assessment Report also contains details on the three new signalised intersections with Tomago Road. The Eastern intersection and the new Westrac Drive, have been completed servicing the existing Part 3A approval 07_0086.

As shown in Figure 3 of this report Northbank (Lot 1001) will be developed in a number of stages. The projected traffic generation, including construction traffic, will be reviewed prior to each stage being developed to assess existing intersection capacity and proposed intersection requirements for adequate access to Tomago Road.

If these traffic flow calculations indicate that the eastern most, Westrac Drive intersection will not have capacity for Stage 1 development, then the central site access intersection connection with Tomago Road will be included as part of the Stage 1 works.

10.0 Management of Acid Sulfates

The site comprises an area of approximately 240 hectares as illustrated in Figure 2 of this report. Natural surface levels on the site range from approximately RL 0.5m to RL4.5m AHD. The site consists primarily of alluvial clays and sands with the lower lying areas poorly drained and waterlogged.

As depicted in the concept engineering plans the majority of the proposed bulk earthworks will consist of filling of the site to levels up to approx RL 6.5m AHD. As a result the majority of the services and piped stormwater will be installed within the fill zone and not need to be excavated into the natural soils. Whilst existing drainage channels are being utilised where possible, a number of open drainage channels will also need to be constructed resulting in a small percentage of the site requiring excavation into the natural soils. So as to minimize the requirement for excavation of the natural soils the channel design will include a narrow central channel that grades to the outlet set into a wider shallower channel that more closely follows natural surface levels.

Coffey Geotechnics undertook soil sampling and testing on the adjoining WesTrac Development in 2007. Their "Preliminary Acid Sulfate Soils Assessment, Proposed WesTrac Industrial Development, dated June 2007" found the following:

- Reference to the Beresfield/Williamtown Acid Sulfate Soils Risk Map prepared by the Department of Infrastructure, Planning and Natural Resources indicates that there is a low probability of acid sulfate soils (ASS) at depths greater than 3m below the surface and an area of high probability of ASS between 1m and 3m of the ground surface.
- Ground water was encountered at depths between RL -0.9AHD and RL 1.35m AHD.
- Analysis of the test results indicate Potential ASS (PASS) in the majority of alluvial soils within the site below approximately RL 1.5m AHD.
- Excavation below the groundwater table within the PASS is likely to generate acidic conditions.

Douglas Partners have recently undertaken an extensive review of Northbank Lot 1001 ground conditions. The findings are detailed in the Douglas Partners "Report on Stage 2 Contamination Assessment dated October 2011". In summary acid sulfate screening tests were undertaken on 129 samples collected from 27 bore holes. The results of the screening tests suggest the absence of actual acid sulfate soils however suggested that the soils are potential acid sulfate soils. The detailed laboratory analysis on 30 of the samples indicated that potential acid sulfate soils are present.

As a result of these findings an Acid Sulfate Soil Management Plan (ASSMP) has been prepared for the site by Douglas Partners as part of the EA submission.

11.0 Infrastructure Summary with Staging/Timing Issues & Maintenance Aspects

Actual staging of the site development will be market driven. Thus it is only possible at this time to give a broad outline of infrastructure staging/timing issues and maintenance aspects. These are addressed in **Table 1** below which summarises infrastructure servicing elements.

Table 1 – Infrastructure Summary Plus Staging/Timing Issues

Element	Available Capacity and Strategy	Funding Issues	Staging/Timing Issues	Maintenance
Potable Water	Water servicing strategy approved by HWC for combined sites (Northbank (Lot 1001) & MP07-0086 Project Approval Area). Network system design provides very good redundancy.	$ 10 million total for both sites – paid by proponent.	Able to connect to existing mains. Lead in mains into approved MP07_0086 site. Northbank (Lot 1001) connection depends on market demands.	Standard maintenance regimes by HWC for watermains in roads.
Wastewater	Northbank (Lot 1001) not currently serviced by HWC regional wastewater system. HWC developing Williamtown-Raymond Terrace wastewater transfer scheme. This caters for Northbank (Lot 1001) and MP07-0086 Project Approval Area. Leg B construction completed	By HWC, proponent to fund & build Leg B (Fig 4) connection to system which is now completed. $20 million cost for proponent.	HWC to accept wastewater flows on completion of Leg B. Caters for full development of Northbank (Lot 1001) and MP07-0086 Project Approval Area. Pump Stns (Fig 4) build sequencing depends on market demands. Adjustments possible subject to anchor tenant needs. Provision made in Leg B for extension into Northbank (Lot 1001).	Standard HWC practices – new system will be extension of HWC regional network.
Electrical	Ausgrid has built Zone Substation opposite Tomago House which	132kv relocation funded by	Ausgrid estimate further upgrade in 15-25 years, depends on rate of	Standard public road access and easements for

Element	Available Capacity and Strategy	Funding Issues	Staging/Timing Issues	Maintenance
	services substantial development area of Northbank (Lot 1001). ADW Johnson regularly appraise Ausgrid on development milestones to ensure sufficient allocation of capacity in system is made.	proponent. Ausgrid servicing into development is funded by the proponent.	development of Northbank (Lot 1001) and other Tomago areas – market driven. Proponent to make standard provisioning in site roads. 132kv line through site to be relocated to Tomago Rd frontage – will not service site. Zone substation currently ready.	Ausgrid maintenance of reticulation and sub-transmission lines respectively.
Gas	Adequate capacity with primary and secondary mains in area.	Reticulation cost borne by proponent. Jemena may fund where anchor tenants & gas demand is cost effective.	Proponent to make standard provisioning in site roads for extension into site.	No specific issues. Installation into public roads for standard access by Jemena.
Telecoms	Optical fibre and local servicing reticulation exist in Tomago Road. No capacity issues expected for Northbank (Lot 1001), and standard negotiation with Telstra to be held later in development process. Telstra extended into MP07-0086 Project Approval Area site.	Design and costs yet to be assessed.	No specific issues.	No specific issues. Installation into public roads for standard access by Telstra or its representatives.

Element	Available Capacity and Strategy	Funding Issues	Staging/Timing Issues	Maintenance
Fill	Several sources of fill in area to satisfy 3.7 million m^3 requirement. For MP07-0086 Project Approval Area Macka's Sand at Saltash used.	Preliminary design and costing have been completed.	Several sources available to satisfy site filling, noting that development to proceed market driven stages. Refer concept engineering drawings in Appendix C.	No specific issues. Standard erosion and sediment control issues.
Intersections	3 proposed signalised intersections for access to Tomago Road from Northbank (Lot 1001). One intersection currently constructed under approval MP07_0086.	Intersection works funded by the proponent. Opportunity for RTA contribution.	Eastern most signalised intersection capacity to be assessed for Stage 1. Central signalised intersection may be required for access to Tomago Road depending on traffic generation rates of future development.	Standard arrangements of Defects Liability period before handover to RTA or Council.

Appendix A

INFRASTUCTURE SERVICING PLAN

Plan of:	Infrastructure Servicing Northbank Enterprise Hub	Location:	Tomago Road Tomago	Date:	14th December 2010	Version:	C (21/08/2012)
				Sheet:	1 of 1	Client:	Northbank Enterprise Hub Pty. Ltd.
				Plan By:	MC	Survey:	N/A
		Council:	Port Stephens	Project Manager:	SD	AutoCAD:	Dwg\37672-INFRA-001-C
				Office:	Hunter	Our Ref:	37672
				Plan Purpose:	Site Infrastructure		

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0 20 40 60 80 100 200 300 400 600

Bar Scale 1: 5000 (A1), 1:10000 (A3)

N

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CONNECTIONS MADE TO 500mmΪ MAIN TO SERVICE WESTRAC IN 2011

WESTRAC FACILITY

250mmΪ WATER MAIN

300mmΪ WATER MAIN

TOMAGO 2 NORTHBANK WWPS TO LINK TO THIS WWPS FOR PUMP TO HWC SYSTEM WWPS CONSTRUCTION COMMENCING 2011

FUTURE DEVELOPMENT STAGE

FUTURE DEVELOPMENT STAGE

132KV RELOCATION WORKS - AUSGRID PROJECT NUMBER NO. XCW059029 COMPLETED 2011

WATERMAIN CROSS CONNECTION

EXISTING PART 3A APPROVAL 07-0086 & EPBC APPROVAL 2007/3343

AUSGRID ZONE SUBSTATION UNDER CONSTRUCTION TO BE COMPLETED BY END OF 2011

POWER INTO SITE VIA EXISTING 33KV/11KV ZONE SUBSTATION

132KV RELOCATION WORKS - PROPOSED

TOMAGO HOUSE

CHURCH

CONNECTIONS TO 200mmΪ & 500mmΪ MAIN AS NECESSARY

ALLOCATION MADE FOR POTENTIAL GAS EXTENSION INTO NORTHBANK

ROAD

TOMAGO

CHANNEL

DRAINAGE

TRUNK

SEWER & WATER MAINS TO BE EXTENDED THROUGHOUT DEVELOPMENT. REFER TO CONCEPT CIVIL PLANS.

EXISTING 132KV POWER TO BE RELOCATED TO FRONTAGE

POWER INTO SITE VIA EXISTING 33KV/11KV ZONE SUBSTATION

HUNTER RIVER (NORTH ARM)

- PROPOSED WWPS
- PROPOSED SEWER RISING MAIN
- PROPOSED 132KV POWER LINE
- PROPOSED WATER SERVICING (TRUNK)
- EXTENT OF 07-0086 APPROVAL AREA
- EXISTING 132KV POWER LINE
- EXISTING 33KV/11KV POWER LINES
- EXISTING WATER MAINS (200mmΪ, 500mmΪ & 900mmΪ)
- EXISTING GAS MAINS
- EXISTING OPTIC FIBRE

LEGEND

- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4

Ver.	Date	Comment
C	21/08/2012	UPDATED ROADS
B	11/10/2011	STAGE INFORMATION ADDED
A	14/12/2010	PRELIMINARY ISSUE

adw johnson pty. ltd. unit 7, building 2, 335 hillsborough road, warners bay 2282 ph: (02) 49785100 fax: (02) 49785199 hunter@adwjohnson.com.au abn 62 129 445 398

Plotted By: malc Plot Date: 21/08/12 - 10:43 Cad File: N:\37672 Northbank\Dwg\37672-INFRA-001-C.dwg

Appendix B

CORRESPONDENCE WITH AUTHORITIES

HWC CORRESPONDENCE INDICATING APPROVAL OF WATER STRATEGY EA POWER RELOCATION EMAIL

Hunter Water Corporation
ABN 46 228 513 446
Customer Enquiries 1300 657 657
enquiries@hunterwater.com.au

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300

21 January

Ref: 2006-126

ADW Johnson Pty Limited
PO Box 3717
TUGGERAH NSW 2259

Att: Mr Hugh Williams

Dear Hugh

RE: APPROVAL OF TOMAGO INDUSTRIAL AREA WASTEWATER SERVICING STRATEGY

Thank you for your submission of the Tomago Industrial Area Sewer Servicing Strategy Issue B - January 2011.

Hunter Water is satisfied that all matters have been appropriately and the strategy presents the optimal servicing solution for the proposed development and adjoining lands. Consequently, Hunter Water approves this servicing strategy. This approval is valid for a five year period from the date of this letter, however, Hunter Water reserves the right to require a revision to the strategy should any of the following circumstances arise:

- The development does not substantially proceed within this five year timeframe;
- Significant changes in development profile (ie yield, timing and/or staging); or
- Changes in sewer discharge from the development; or
- Hunter Water Design Standards or criteria are revised impacting the loading derived from the development; or
- Operation circumstances change; or
- Legislative or regulatory changes are imposed on Hunter Water**.**

Should any of the above circumstances arise within the five-year approval period, the strategy will require revision by the developer and approval by Hunter Water. Should the maximum 5 year period elapse it is a mandatory requirement that the strategy be reviewed by the developer and approved by Hunter Water prior to proceeding with the works related to water, wastewater or recycled water supply. This process should commence with submission of new Development Assessment application, Preliminary Servicing application or Feasibility analysis to ensure that the most current information, system modelling and performance, and design standards are used in the analysis.

Should the strategy need to be reviewed, the revised servicing strategies shall apply only to those development stages not already completed, or for which detail designs have not yet been approved. The revision of servicing strategies shall be completed by the developer and again be reviewed and approved by Hunter Water. Any costs associated with these reviews shall be borne by the developer.

Please note that approval of a strategy is not an approval to connect the development to Hunter Water's water and sewerage systems, nor does it guarantee capacity / connection availability at the time it is required. Connection and/or capacity availability will only be confirmed by submission and determination of a Development Assessment application.

I note that Revision B of the strategy does not have the figures included in Revision A. Could you please ensure that these are included in the final version which should be identified as "Revision C".

Please submit three hard copies and one soft copy of the final strategy clearly marked as "Final". If you have any queries, please do not hesitate to contact me on 4979 9545.

Yours Sincerely

Malcolm Withers
Senior Account Executive Major Development

145 Newcastle Road
Wallsend NSW 2287

Address all mail to
PO Box 487 Newcastle
NSW 2300 Australia

Telephone +61 2 13 15 25

EnergyAustralia

30 September 2010

Emma Barnet
Contact Officer
Northbank Enterprise Hub
GPO Box 39
SYDNEY NSW 2001
Phone: 02 9228 6550
Fax: 02 9228 6466
emma.barnet@planning.nsw.gov.au

Re: Northbank Enterprise Hub, subdivision for industrial purposes (MP 10_0153)

Dear Emma,

Thank you for the advice regarding WEPL Investments Pty Ltd application for the Northbank Enterprise Hub.

WEPL & ADW Johnson Pty Ltd have taken the initiative to brief EnergyAustralia on the project. We have had ongoing discussions with them regarding the adjoining development and powerline relocations have been completed to allow site works on that site. WEPL & ADW Johnson are well aware of our requirements for early advice regarding electricity connection for the development and any relocation works required for existing powerlines.

As such, EnergyAustralia's only request would be to formalise those requirements for completeness.

Yours Sincerely

Greg Skinner
EnergyAustralia
Area Manager Lower Hunter
(Maitland, Cessnock and Port Stephens)
Distributions, Operations and Reliability

Scott Day

From: Kevin Smith [kevin.smith@energy.com.au]
Sent: Thursday, 14 October 2010 8:12 AM
To: Scott Day
Subject: Fw: 37672 - NorthBank (132kv Power Line Relocation)
Attachments: 11886-POWER-001-A 2010-10-08.pdf

Scott,
Great news, Option 2 looks viable.

Kevin Smith
Senior Consulting Engineer – Major Connections
System Planning & Regulation | EnergyAustralia
Wallsend Administration Building, 145 Newcastle Road, Wallsend NSW 2287 AUSTRALIA
☎ (02) 49101215 | 0439 591 079 | (02) 4399 8018
✉ kevin.smith@energy.com.au

----- Forwarded by Kevin Smith/energyAustralia/AU on 14/10/2010 08:04 AM -----

Glenn Ford/Network/energyAustralia/AU

11/10/2010 10:53 AM

To: Kevin Smith/energyAustralia/AU@energyAustralia
cc: Bernie Daniels/NetNorth/energyAustralia/AU@energyAustralia
Subject: Re: Fw: 37672 - NorthBank (132kv Power Line Relocation) Link

Kev,

The proposal looks feasible, possible issues meybe;

- Available fffset from RTA road - possible need for gaurd rails on certain poles and/or possible easement requirements on adjoining land
- multi-circuit poles required i.e. 132kV, 33kV, 11kV and LV. May need the LV and/or 11kV underground to save pole height.

Regards,
Glenn Ford
Overhead Mains Design
EnergyAustralia

---

scottd@adwjohnson.com.au

Kevin Smith/energyAustralia/AU

11/10/2010 07:48

To: Bernie Daniels/NetNorth/energyAustralia/AU@energyAustralia, Glenn Ford/Network/energyAustralia/AU@energyAustralia
cc:
Subject: Fw: 37672 - NorthBank (132kv Power Line Relocation)

Fordy,
I would like to come and talk to you about hits and the best way for option selection etc

Kevin Smith
Senior Consulting Engineer – Major Connections
System Planning & Regulation | EnergyAustralia
Wallsend Administration Building, 145 Newcastle Road, Wallsend NSW 2287 AUSTRALIA
☎ (02) 49101215 | 0439 591 079 | (02) 4399 8018
✉ kevin.smith@energy.com.au

----- Forwarded by Kevin Smith/energyAustralia/AU on 11/10/2010 07:47 AM -----

Scott Day <scottd@adwjohnson.com.au>

08/10/2010 02:12 PM

To Kevin Smith <kevin.smith@energy.com.au>
cc Craig Marler <craigm@adwjohnson.com.au>, Mathew Radnidge <mathewr@adwjohnson.com.au>
Subject 37672 - NorthBank (132kv Power Line Relocation)

Hi Kevin,

Thanks for meeting with me yesterday in relation to our Northbank project.

As you know there is an existing 132kv crossing Lot 1001, our client's site. We are considering options for its relocation to best suit our proposed development planning of the site. An option for our consideration is to relocate the 132kv power line to Tomago Road as shown on the attached plan.

We seek preliminary advice from Energy Australia as to whether this is a satisfactory option, subject to environmental assessment, design, etc.

We look forward to your reply within the fortnight as suggested in the meeting would be great for us to continue on with our planning for the site or earlier if possible.

Thanks – looking forward to your response.

Scott

Regards,
Scott Day
Environmental Engineer
ADW Johnson Pty Limited
Hunter Office
Unit 7/335 Hillsborough Rd, Warners Bay 2282
Email: scottd@adwjohnson.com.au

Ph: 02 4978 5100
Mobile: 0414 689 091
Fax: 02 4978 5199