



Utilities Infrastructure Report

for

Housing the Hunter: a plan for renewal at Broadmeadow

for Rhelm Pty Ltd

NL230270 / 24 April 2024 / Revision C

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NL230270

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Introduction

The Department of Planning, Homes & Infrastructure (DPHI) in partnership with City of Newcastle (CN) is preparing Broadmeadow Precinct Place Strategy, structure plan and First-Move Re-zoning (the project) for the Broadmeadow Regionally Significant Growth Area (precinct). Northrop Consulting Engineers have been engaged to investigate utility services within the area.

The study has been undertaken across approximately 313ha of land within the CN Local Government Area. Broadmeadow precinct and the first-move state-led rezoning sites are shown in Figure 1 below.



Figure 1 – Extent of Broadmeadow Precinct.



The Utilities Infrastructure Report is a continuation of the previous stages of works and is generally intended to:

- Describe the existing network.
- Identify the opportunities and constraints within the investigation area, but also more broadly at a sub-regional or regional scale.
- Identify the existing condition and capacity of infrastructure assets in the identified focus area.
- Identify the required extensions, upgrades or new infrastructure or services needed to support the levels of growth envisioned through the investigation area.
- Give consideration to triggers or development thresholds for upgrades.
- Have regard for broader regional networks that will service and connect into the precinct, including identifying any required augmentation.
- Identify the site requirements and infrastructure corridors in the precinct to deliver the enabling infrastructure and services including the size and scale of the infrastructure.

The information within is based on observations from Before You Dig Australia (BYDA) plans, Ausgrid and Hunter Water Corporation GIS network maps, as well as correspondence from relevant authorities.

The key services and associated authority included in the scope of the utilities investigation is generally as follows:

- Potable Water and Sewer Hunter Water Corporation.
- Electrical Ausgrid.
- Gas Jemena.
- Fuel Line Ampol Australia.
- Telecommunications and internet various authorities.

The following advice should be read in conjunction with the Figures and information contained in the appendices.

Potable Water and Sewer (Hunter Water Corporation)

Existing Infrastructure

The Precinct is serviced by Hunter Water Corporation (HWC) for potable water and sewer. Northrop have identified water mains above DN250mm, and sewer gravity mains and rising mains above DN300mm on the existing services plans (Appendix A).

The sewer within the investigation area is collected and transported to the Burwood Wastewater Treatment Works (WWTW) via a series of gravity mains, including a 1050x750mm oviform sewer to the east of Broadmeadow Train Station and a DN1050-1650mm main (interceptor line) running north to south through the precinct, crossing beneath the railway line to the south of Broadmeadow Station. Two other trunk sewer mains also cross the railway line in various sections of the precinct. The interceptor line should be avoided in terms of relocation, and ideally would not be built over. However, HWC advised construction in the vicinity of the asset may be considered provided appropriate



construction methodology is adhered to (piering etc.), noting the asset is quite deep. Trunk sewer lines in the precinct in general are quite flat, therefore major diversion/ relocation is unlikely to be feasible in most instances as it will reduce capacity.

The oviform sewer line, although its actual construction date is unknown, is likely to be an aged asset that was designed and constructed to outdated standards. Given the importance of the asset, it should be avoided. However, HWC have advised if required it may be feasible to build over (noting that relining would be required) and/ or relocate provided an equivalent hydraulic capacity can be maintained.

Potable water for the precinct falls within a single pressure zone that is supplied from the North Lambton 1 Reservoir. (Supply Zone ID WR, North Lambton 1). Water mains then bisect the Precinct to deliver pressurised water to the feeder lines and users.

A large DN600mm trunk main exists in the northern part of the precinct, extending through Smith Park and Newcastle Showground down to Belford St.

Various water and sewer assets cross Styx Creek both below ground, and above ground on raised plinths. These vary from small mains, up to large trunk mains including DN600mm gravity sewer, DN600mm water and DN800mm sewer rising main.

No water or sewer pump stations were identified in the precinct.

In addition to the trunk infrastructure shown on existing services plans, a dense network of smaller water and sewer mains exists through the precinct. If required, relocation of these assets however is not likely to be a significant constraint to the project.



Opportunities and Constraints

HWC assessed the capacity of trunk water and sewer infrastructure to service the Broadmeadow Precinct for the maximum Emerging Scenario Yield, being up to:

- 20,000 homes.
- 15,000 jobs.
- 45,000 people.

HWC confirmed there is sufficient capacity in the trunk sewer network (i.e. the interceptor line). The currently proposed Stage 3 upgrades at Burwood WWTW will provide sufficient treatment capacity to service the Broadmeadow Precinct and is currently planned for completion mid-2028, however the timing will depend on actual growth from this development and other areas within the Burwood catchment.

There is insufficient watermain capacity to service the ultimate yield. Upgrades will be triggered when development reaches approximately 14,400 dwellings, and will consist of a 6km trunk watermain upgrade, comprising the replacement of a DN500mm/ 600mm section and the duplication of a DN250mm section. The extent of works is shown in Appendix D. HWC have estimated the cost of this to be in the order of \$20m. HWC expect these works and the upgrade to Burwood WWTW to be delivered under the Hunter Water Capital Portfolio.

Please note that HWC's capacity assessment is based on standard design water demands and sewer discharge with no consideration given to reducing potable water demand or discharge to the sewer network based on integrated water cycle management measures.

Northrop have reviewed the proposed structure plan and have identified sub-precincts that may require upgrades to HWC water and sewer infrastructure to satisfy minimum requirements in the Water Services Association of Australia (WSAA) - Hunter Water Edition. E.g. multiple developments of higher density residential greater than 8 storeys requires a minimum DN 200mm pipe. The sub-precincts have been identified in red in Figure 2 and Figure 3 below and the drawings in Appendix C. This assessment has been limited to identifying precincts that may require upgrades based on their zoning density and the approximate storeys identified in the emerging scenario yields capacity table (i.e. medium and high density residential, mixed use and commercial). HWC recommend that servicing strategies be formulated for sub-precincts by the lead developer or a delivery authority (should one be established), prior to any infrastructure being delivered.





Figure 2 – Sub Precinct that may require water upgrade



Figure 3 – Sub Precinct that may require sewer upgrade



Northrop have also identified locations where conflicts may exist between large HWC assets and rezoned lots. In these instances, the future planning of the site should give consideration to the location of the asset, or pending HWC approval the asset may be built over or relocated. Refer to Figure 4 and Figure 5 below (red hatched zones) and the drawings in Appendix C.



Figure 4 – Potential conflict with water assets





Figure 5 – Potential conflict with sewer assets.

Given the high level, strategic scale of the structure plan, it is not feasible to identify developer works that would be required to service each lot in the precinct nor identify all service conflictions given the limited information available. Further investigation would be required during future design stages.

Required upgrades to the water and sewer network in the precinct are likely to be delivered by individual developers under Hunter Water's Developer Works delivery model in which the developer is required to design, construct and fund upgrades to service their development and the assets transferred to Hunter Water upon completion. This excludes works to trunk infrastructure that are delivered under the Hunter Water Capital Portfolio as specified above. Certain developer works, in particular those that service a precinct, may be eligible for Hunter Water funding under the Connecting Asset Funding Standard. Other works such as asset relocation or upgrades to service a single development will be solely funded by the developer. Formal correspondence from HWC, including a broad outline of various funding arrangements and developer charges for the precinct, is included in Appendix D.

Any proposed modifications to Styx creek as part of the structure plan, including widening or adoption of green spine would need to consider these assets. In particular minimum cover is required to be achieved for all below ground assets, and suspended infrastructure will need to be extended (where applicable) and access maintained, subject to HWC approval.

Road raising is proposed along Griffiths and Lambton Road to reduce the time of flood inundation. This will impact the existing DN600mm sewer gravity main that runs along Griffiths Rd and the other



various trunk lines that cross the two roads which includes the interceptor line. It is likely that access lids will require adjustment and HWC may require replacement of the assets. Smaller assets may be required to be lifted to suit the new levels where feasible.

Electrical (Ausgrid)

Existing Infrastructure

After a review of the existing infrastructure via Ausgrid GIS, the following key electrical infrastructure items were identified (refer to Figure 6 below and Appendix B):

- Zone substation 256 (Adamstown 132/ 11kV) is located 1km south of the precinct. This zone substation utilises 2 x 50MVA Rated transformers. The zone substation has 24 feeder banks installed of which 9 of these are spare allowing for ample opportunity for future 11kV connections.
- Zone substation 257 (Broadmeadow 132/ 11kV) is located centrally in the precinct. The substation is supplied via 132kV underground cables and also utilises 2 x 50MVA transformers. The zone substation can allow for a maximum of 24 feeder connections installed of which 8 of these are spare allowing for ample opportunity for future 11kV connections.



Figure 6 – Existing Zone Substations



Both zone substations may also permit the extension of an 11kV feeder from the zone substations auxiliary transformer, increasing the maximum total number of feeders for each zone by one.

The other key limiting factor of each zone substation is the transformer rating. Each zone substation is rated for a nominal max output of 100MVA. The zone substation current rating is limited further as shown below.

Zone 256: Maximum 11kV output of:

- 3848A when transformers are motor cooled (limited by the 11kV cables installed in the zone) Approx. 73MVA.
- 3098A when transformers are naturally cooled Approx. 59MVA.

Zone 257: Maximum 11kV output of:

- 5424A when transformers are motor cooled (limited by oil temperature) **Approx. 105MVA.**
- 3400A when transformers are naturally cooled (limited by oil temperature) 65MVA.

Broadmeadow zone substation was upgraded in 2013 with new transformers and switchgear (*esdnews*, 2022). Additionally, the 11kV cables currently installed out of the zone substation look to be well sized to allow for the maximum 11kV feeder rating of approx. 8MVA per feeder.

Due to the large number of spare 11kV feeders available at both zone substations (nominally between 17-19 spare), it is expected that proposed upgrades in the Broadmeadow area could be supplied from the existing Ausgrid 132kV zone substations. Large connections may require dedicated 11kV feeders to be installed to the closest zone substation rather than connecting to the existing 11kV feeders in Broadmeadow.

Opportunities and Constraints

Ausgrid provided a response to the preliminary enquiry for an initial review of the Broadmeadow Precinct on 20/12/2023, attached in Appendix E.

Ausgrid has confirmed Adamstown Zone Substation ZN.256 has approximately 8 spare feeders and approximately 40MVA spare capacity. And Broadmeadow Zone Substation ZN.257 has approximately 9 spare feeders with approximately 35MVA spare capacity. ZN.257 currently has a peak loading of approximately 23MVA, that includes loads outside of the assessment area. Based on the initial review and similar precincts within Ausgrid's network, ZN.257 should have enough capacity to support the additional load. This will need to be re-assessed during the re-development of the precinct.

If Broadmeadow reaches capacity, additional supply may be sourced from Adamstown Zone Substation.

If the load in both Zone Substations have reached maximum capacity, then a new Zone Substation will need to be constructed as neither have the provisions to install a third transformer. The maximum capacity may also be limited due to the 132kV network, this may reduce the zone's capacity by up to 10%. If a new zone substation were required, it should ideally be located away from the existing Broadmeadow and Adamstown zone substations for network security and effective servicing of electrical load. To allow for a cost-effective construction, it should be located near two or more 132kV transmission feeders (see appendix A for transmission feeder routes).

There are various high voltage lines that traverse rezoned lots as identified on the drawings in Figure 7 below and Appendix C. These lines should be avoided where possible in future site planning, or if required relocated subject to Ausgrid approval.

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Figure 7 – High Voltage Lines in Precinct (Maroon Lines)

The proposed road raising on Griffiths Road to reduce the time of flood inundation may impact the existing 132kV line that runs along Griffiths Rd and the 33kV line that crosses the road. Any below ground infrastructure will require access lids to be adjusted and Ausgrid will likely require replacement of the assets to suit the new levels.

Gas (Jemena)

Existing Infrastructure

There is a retired gas works site on Clyde St in Hamilton North which is located near the northern extent of the precinct. The BYDA plans indicate a Gas Distribution/ Regulator set is located at this site and initial discussion with Jemena indicated this asset is required in the long term. The exact location of the asset is yet to be determined, nor the feasibility to have it relocated. For the purposes of the structure planning, it is recommended the asset be maintained in its current form.

High-pressure gas mains (i.e. pressure of 1050kPa or greater) extend from the gas works site, running along Clyde St than heading north along Chatham Rd. The high pressure main generally appears to be located within the road reserve and Jemena have confirmed this is a live asset that is required to remain in the long term. The proposed scenario appears to maintain this road reserve.





EXISTING HIGH PRESSURE GAS MAIN

Figure 8 – High Pressure Gas Infrastructure

Opportunities and Constraints

DPHI/ CN have confirmed that there is no requirement for natural gas services to be provided for new developments. Therefore, it is not anticipated that any upgrades will be required.



Fuel Line (Newcastle Pipeline Company)

Existing Infrastructure

The DN300 high pressure tensile steel pipeline owned by Ampol Australia is generally located adjacent to Styx Creek and crosses the creek on the eastern side of the precinct. Ampol have confirmed there is no future planning for the asset to be relocated.



Figure 9 – Fuel Line (Purple Line)

Opportunities and Constraints

As outlined in the letter of advice issued by Ampol Australia on 26 April 2023 and included in Appendix F, any development in the vicinity of the pipeline easement is strictly regulated in accordance with their standard minimum protection requirements and this needs to be considered to any works in the vicinity of the asset. Refer to the Hazard and Risk Assessment by Sherpa Consulting for detail of the fuel line and how it has been considered in the structure plan.



Telecommunication

Existing Infrastructure

The BYDA plans indicate nine different telecommunication authorities have assets located within the Broadmeadow Precinct, these include:

- Vocus Communication.
- TPG Telecommunication.
- Telstra.
- Swoop.
- Superloop.
- Optus.
- NextGen Group.
- AARNet.

The type of asset varies, however generally consists of below ground fibre or cabling. The significance of the infrastructure was unknown at the time this report was written. Note the existing service plans in Appendix A do not depict the telecommunication infrastructure.

Opportunities and Constraints

Given the various authorities in the precinct, formal liaison has not been undertaken with each provider, but it is not anticipated that there would be any significant limitations to providing service to the precinct. It is suggested that communication infrastructure be assessed during the future design phases and formal consultation can take place during the development application stage for each lot.



Conclusion and Recommendations

Consultation has been undertaken with Hunter Water Corporation (HWC), Ausgrid, Jemena and Ampol in relation to the Housing the Hunter: a plan for renewal at Broadmeadow.

The first-move state led rezoning

The first-move state led rezoning (approximately first 3,425 new homes), will likely trigger water and sewer upgrades to satisfy minimum requirements outlined in the Water Services Association of Australia (WSAA), and relocations due to service conflictions, as shown in figures 2-5. No other notable upgrades are likely to be required for the initial stage of works.

The broader precinct

For the final anticipated yield of approximately 20,000 homes, the following key impacts are anticipated to utility services:

- HWC confirmed there is sufficient capacity in the trunk DN1050-1650mm sewer network that traverses the precinct (i.e. the interceptor line). The currently proposed Stage 3 upgrades at Burwood WWTW will provide sufficient treatment capacity to service the Broadmeadow Precinct and is currently planned for completion mid-2028.
- There is insufficient water main capacity to service the ultimate yield. Upgrades will be triggered when the precinct reaches approximately 14,400 dwellings and will consist of a 6km trunk water main upgrade, comprising the replacement of a DN500mm/ 600mm section and the duplication of a DN250mm section. Refer Appendix D.
- Various sub-precincts have been identified which are zoned to be multi-storey and may require water and sewer upgrades to satisfy minimum requirements outlined in the WSAA. HWC recommends that servicing strategies be formulated for sub-precincts by the lead developer or a delivery authority (should one be established), prior to any infrastructure being delivered. Refer Figure 2 and Figure 3.
- There are two zone substations located in the vicinity of the precinct refer Figure 6. Adamstown ZN.256 is rated at approx. 73MVA and has a total of 9 spare 11kV feeder banks with approximately 35MVA spare capacity. Broadmeadow ZN.257 is rated at approx. 105MVA and has a total of 8 spare 11kV feeder banks with approximately 40MVA spare capacity. The existing network appears to have a substantial amount of additional capacity for future growth and upon review, Ausgrid expects that the existing Zone Substations will have capacity for the increased load.
- There is a retired gas works site on Clyde St in Hamilton North on which a Gas Distribution/ Regulator set is located – refer Figure 8. Jemena indicated this asset is required in the long term. High-pressure gas mains extend from the gas works site, running along Clyde St then heading north along Chatham Rd. The high-pressure main generally appears to be located within the road reserve and Jemena have confirmed this is a live asset that is required to remain in the long term. DPHI/ CN have confirmed that there is no requirement for natural gas services to be provided for new developments, therefore it is not anticipated that any gas upgrades will be required.
- The DN300 high-pressure tensile steel pipeline owned by Ampol Australia is generally located adjacent to Styx Creek and crosses the creek on the eastern side of the precinct – refer Figure 9. Ampol have confirmed there is no future planning for the asset to be relocated. Refer to the Hazard and Risk Assessment by Sherpa Consulting for detail of the fuel line and how it has been considered in the structure plan.



• Various telecommunication authorities have assets located within the Broadmeadow Precinct. Given the various authorities, formal liaison has not been undertaken with each provider, but it is not anticipated that there would be any significant limitations to providing service to the precinct. It is suggested that communication infrastructure be assessed during the future design phases and formal consultation can take place during the development application stage for each lot.

General

Various locations have been identified where conflicts may exist between authority infrastructure and rezoned lots (refer Figure 4, Figure 5 and Figure 7). In these instances the future planning of the site should give consideration to the location of the asset, or pending authority approval the asset may be built over or relocated. Note due to the lack of available information, the future extension of the light rail has not been considered in the assessment of utility conflicts.

The HWC oviform sewer line located on the eastern side of the precinct (refer Appendix A sheet 3 and 4), is likely to be an aged asset that was designed and constructed to outdated standards. However, HWC have advised if required it may be feasible to build over (noting that relining would be required) and/ or relocate provided an equivalent hydraulic capacity can be maintained. In our experience the design and construction requirements working in the vicinity of this asset are quite onerous therefore disturbance or building over this asset should be avoided, where possible.

A large DN600mm trunk HWC water main exists in the northern part of the precinct (refer Appendix A sheet 1), extending through Smith Park and Newcastle Showground down to Belford St. Given the significance of this asset disturbance should be minimised, however it is not infeasible for it to be relocated.

Road raising is proposed along Griffiths and Lambton Road to reduce the time of flood inundation. This will impact the existing services most notably trunk water, sewer and high voltage electrical lines, and smaller utility services for water, sewer, electrical, gas and communication. It is likely that access lids will require adjustment, and where feasible assets be raised to suit the new surface levels (where feasible).

The information outlined within this report is commensurate with a planning proposal assessment in the endeavour to provide initial advice for the proposed structure plan. It is not intended to provide detailed information or outcomes, but rather it is expected that further investigation, design, and formal liaison with utility infrastructure providers will be required to be undertaken in due course to confirm and further develop design outcomes.

Note: School infrastructure and transport initiatives are indicative only and subject to detailed design, analysis, feasibility review, funding commitments etc. No investment decisions have been made. Furthermore, the final list, extent, details, locations of initiatives will be subject to the satisfactory resolution of the above.



Limitation statement

Northrop Consulting Engineers Pty Ltd (Northrop) has been retained to prepare this report based on specific instructions, scope of work and purpose pursuant to a contract with its client. It has been prepared in accordance with the usual care and thoroughness of the consulting profession for the use by Rhelm Pty Ltd. The report is based on generally accepted practices and standards applicable to the scope of work at the time it was prepared. No other warranty, express or implied, is made as to the professional advice included in this report.

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Appendix A – Existing Service Plans



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EXISTING SERVICES OVERVIEW PLAN

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EXISTING SERVICES PLAN SHEET 1



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REIMAGINING BROADMEADOW

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EXISTING SERVICES PLAN SHEET 2

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REIMAGINING BROADMEADOW

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Appendix B – Existing Electrical Infrastructure

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Broadmeadow NSW Infrastructure Investigation Appendix A - Existing Infrastructure Summary

JOB No.	SIZE	SCALE	DESIGNER		SHEET	REV NO.
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Broadmeadow NSW Infrastructure Investigation ppendix A - Existing Infrastructure Summary

JOB No.	SIZE	SCALE	DESIGNER		SHEET	REV NO.
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Appendix C – Proposed Scenario

	\rightarrow	Proposed light rail
	O• >	Potential light rail extension options
		Existing railway line
S	0	Existing railway station
	()	Proposed interchange

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	PRECINCT BOUNDARY
	EXISTING BOUNDARY LINE EXISTING WATER MAIN > 300mm
	EXISTING HIGH PRESSURE GAS MAIN
	EXISTING NEWCASTLE PIPELINE COMPANY FUEL LINE (300mm TENSILE STEEL LINE)
	EXISTING 33kV HV ELECTRICAL
	EXISTING 132kV HV ELECTRICAL
	TRAIN STATION
	MIXED USE
	COMMERICAL
	EMPLOYMENT / URBAN SERVICES
	LOCAL CENTRE
	SCHOOLS
	ENTERTAINMENT / INDOOR RECREATION
	LOWER DENSITY RESIDENTIAL
	MEDIUM DENSITY RESIDENTIAL
	HIGHER DENSITY RESIDENTIAL
	OPEN SPACE / RECREATION
	BIODIVERSITYAREA

NOTES

- A. EXPANSION/UPGRADE TO EXISTING PARK. NEED TO CONSIDER EXISTING HV.
- B. HIGH PRESSURE GAS MAIN WITHIN ROAD RESERVE TO REMAIN. NOTE THIS SHOULD NOT BE IMPACTED BY WORKS.C. ANY WORKS TO STYX CREEK WILL NEED TO CONSIDER FUEL
- LINE INCLUDING RESTRICTIONS WITHIN EASEMENT FOR PLANTING, ACCESS ETC AND EXISTING HWC ASSETS.
- D. RELOCATION OF HV REQUIRED OR TO BE CONSIDERED IN PLANNING OF SITES.

DRAWING TITLE	JOB NUMBER
CIVIL ENGINEERING PACKAGE	NL230270
	DRAWING NUMBER
PROPOSED SCENARIO OVERVIEW PLAN	CSK02.01

DRAWING SHEET SIZE = A1

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NOTES

- A. MINIMUM PIPE SIZE Ø200mm TO SERVICE POTENTIAL DEVELOPMENTS IN THIS RE-ZONED AREA AS SPECIFIED BY WSA WATER SUPPLY CODE. PIPES SMALLER THAN Ø200mm LIKELY NEED TO BE UPGRADED.
- B. NO EXISTING WATER RETICULATION NETWORK FRONTING SITES OR OF SUFFICIENT SIZE TO SERVICE POTENTIAL DEVELOPMENTS IN RE-ZONED AREA. UPGRADE LIKELY TO BE REQUIRED.
- C. WATER MAIN TRAVERSES THROUGH RE-ZONED AREA. POTENTIAL DEVELOPMENTS MAY NEED TO PLAN AROUND ASSET, OR ASSET TO BE BUILT OVER OR RELOCATED. SUBJECT TO HWC APPROVAL.
- NOTE: ANY FUTURE PLANNING OF LIGHT RAIL TO CONSIDER EXISTING TRUNK UTILITY SERVICES

	NL230270
	DRAWING NUMBER
EXISTING WATER SERVICES PLAN	CSK02.11

DRAWING SHEET SIZE = A1

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Appendix D – HWC Water Upgrade + Correspondence

Trunk Water and Sewer Capacity – Required Capital Upgrades

Hunter Water has assessed the capacity of trunk water and sewer infrastructure to service the Broadmeadow Precinct for the maximum Emerging Scenario Yield identified after the Enquiry by Design Workshop held in October 2023:

- 17,500 dwellings.
- 12,500 jobs.
- 4,300 students.

There is sufficient capacity in the trunk sewer network to service the growth scenario outlined above, while the currently proposed Stage 3 upgrades at Burwood Wastewater Treatment Works (WWTW) will provide sufficient treatment capacity to service the Broadmeadow Precinct, the timing will depend on actual growth from this development and other areas with the Burwood catchment.

A 6km trunk watermain upgrade, comprising the replacement of a 500mm/600mm section and the duplication of 250mm section, will be required once development within the Broadmeadow Precinct reaches 14,400 dwellings. This upgrade is detailed in the attached map and the costing template supplied by CIE, indicative estimate is \$20m which is suitable accuracy for this economic appraisal.

Hunter Water expects that the required trunk watermain upgrade will be delivered under the Hunter Water Capital Portfolio, with Stage 3 upgrades to the Burwood WWTP already identified for delivery in the Capital Portfolio

Hunter Water is reintroducing developer charges following recommendations set out by the NSW Productivity Commission's Infrastructure Contributions Review. The final developer charges have now been reviewed and registered by the NSW Independent Pricing and Regulatory Tribunal (IPART). To provide the development community with time to adjust to the new arrangements, the NSW Government has directed Hunter Water to phase-in developer charges over several years:

- From 1 July 2023: 0%
- From 1 July 2024: 25%
- From 1 July 2025: 50%
- From 1 July 2026 onwards: 100%

The Broadmeadow Precinct is located within the following sewer and water Developer Servicing Plan (DSP) catchments, with the current developer charges (100%) provided for completeness:

- W.1 Newcastle and East Lake Macquarie: \$1,007.89 per Equivalent Tenement
- S.4 Burwood Wastewater Treatment Plant: \$0 per Equivalent Tenement

Hunter Water will incorporate the forecasted growth for the Broadmeadow Precinct into the next review of developer charges (around 2028), and the capital infrastructure upgrades required to cater for future growth in each of the water and sewer DSPs will be reflected in updated DSP charges.

More information on the reintroduction of developer charges can be found at: <u>https://www.hunterwater.com.au/building-and-developing/developers-and-designers/developer-charges</u>.

Please note that Hunter Water's capacity assessment is based on standard design water demands and sewer discharge with no consideration given to reducing potable water demand or discharge to the sewer network based on integrated water cycle management measures.

Developer Delivered Works

Required upgrades to the water and/or sewer networks below the threshold for delivery under the Hunter Water capital portfolio will need to be delivered by individual developers under Hunter Water's Developer Works delivery model (more information is available at https://www.hunterwater.com.au/building-and-developers-and-designers/developer-deeds).

In general terms, the Developer Works delivery model makes it the responsibility of the individual developer to design, construct and fund upgrades to the water and/or sewer network(s) to service their development and the assets gifted to Hunter Water upon completion. Certain Developer Works are eligible for Hunter Water funding under the Connecting Asset Funding Standard (more information is available at https://www.hunterwater.com.au/documents/assets/src/uploads/documents/Developer-Charges/Standard-Connecting-Assets-Funding.pdf).

Given the current strategic scale of planning for the Broadmeadow Precinct, Hunter Water is unable to provide advice on Developer Works that may be required within the Broadmeadow Precinct, nor potential eligibility under the current Connecting Asset Funding Standard.

Northrop Consulting Engineers have conducted desktop investigations into sub-precincts that may require developer-funded works based on design criteria contained in the respective water and sewer codes of the Water Services Association of Australia (WSAA) - Hunter Water Edition. Please refer to the Northrop Utility Servicing Report for this analysis.

Asset Relocation

As with Developer Works, the current strategic scale of planning for the Broadmeadow Precinct means that Hunter Water is unable to provide explicit advice on asset relocations. Northrop Consulting Engineers have conducted an analysis of existing Hunter Water assets and has prepared mapping indicating sub-precincts that may require relocation of Hunter Water assets, subject to the final developable footprints within the sub-precincts. Please refer to the Northrop Utility Servicing Report for this analysis.

Precinct-wide Servicing Strategies

A precinct wide and catchment wide servicing strategy will be required to be developed for both water and wastewater services incorporating IWM considerations as appropriate prior to infrastructure being delivered. Precinct/ local strategies would normally be prepared by the lead developer or a Delivery Authority if one were to be established for a area this size. Hunter Water would update/ refine regional strategies as required. More detail on the process is available at :

https://www.hunterwater.com.au/building-and-developing/developers-and-designers/subdividing-and-developing/developer-servicing-startegies

Regards

Greg McHarg

Account Manager Major Development (Lake Macquarie LGA | Newcastle LGA | Port Stephens LGA) Hunter Water Corporation | 36 Honeysuckle Drive Newcastle NSW 2300 | PO BOX 5171 HRMC NSW 2310 T 02 4081 5835 | M 0457 317 080 | E greg.mcharg@hunterwater.com.au

Appendix E – Ausgrid Correspondence

Kane Sinclair

From:	Robert Mitchison <rmitchison@ausgrid.com.au></rmitchison@ausgrid.com.au>
Sent:	Wednesday, 20 December 2023 2:30 PM
То:	Evelyn Tram
Cc:	Andrew Busch
Subject:	Broadmeadow Precinct Preliminary Enquiry

Evelyn

Ausgrid have completed an initial review of the Broadmeadow Precinct proposal and at this point in time I can confirm the following:

- Broadmeadow zone spare capacity is approximately 40MVA with 8 spare panels
- Adamstown zone spare capacity is approximately 35MVA with 9 spare panels

The current Broadmeadow zone peak loading is approximately 23 MVA, which includes loads outside the study area. Based on loads for similar precincts in the Ausgrid area the available capacity should support the establishment of the Broadmeadow precinct development, with a future requirement to re-assess the need for upstream upgrades as it progresses over time. I expect that more detailed planning studies will be required for each stage to allow for infrastructure development to meet the development requirements.

Neither zone substations have provision to install a third transformer so a new zone substation will be required when the spare capacity is fully utilised. There are also some upstream limitations on the 132kV network which may reduce the zone capacity by up to 10%.

The ultimate loads in the emerging scenarios seem high based on Ausgrid's experience in similar mixed load areas in Sydney, noting that diversity has not been considered according to the letter.

If you have any questions please contact me.

Regards

Robert Mitchison Customer Manager

0408 581600 145 Newcastle Road, Wallsend, NSW 2287 rmitchison@ausgrid.com.au

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This e-mail may contain confidential or privileged information. If you have received it in error, please notify the sender immediately via return e-mail and then delete the original e-mail. If you are the intended recipient, please note the change of sender email address to @ausgrid.com.au. Ausgrid has collected your business contact details for dealing with you in your business capacity. More information about how we handle your personal information, including your right of access is contained at http://www.ausgrid.com.au/

Thursday, 30 November 2023

Northrop Consulting Engineers Pty Ltd ATTENTION: Kane Sinclair

Subject: Emerging Scenario Load Calculations for Broadmeadow Re-imagining

Dear Kane,

An area-based assessment has been completed using guidelines from AS/NZS3000 and Ausgrid network standard NS109 to confirm the indicative loads required for emerging scenario. These calculations utilise an approximate VA/m2 value which varies depending upon the land usage to determine what the expected electrical load may be. These calculations have been completed conservatively, and there may be efficiencies to be found once a detailed scope of each scenario is available.

Please note that these values are approximate only and are based on the values provided in the "Emerging Scenario Yields_Capacity" document provided on 10/11/2023 (also attached in this letter).

Please see below for a summary of the existing, proposed and total loads calculated for scenarios one to three.

	EMERGING SCENARIO
Existing Estimated Load:	54,153A / 2,043A
Additional Load:	309,052A / 11,660A
Total Load:	363,205A / 13,703A

Broadmeadow zone substation (ZN257) has been constructed with 24 feeder connections, of which 8 are spare. Adamstown Zone substation (ZN256) has been established with 24 feeder connections, of which 9 are spare. In this instance, Broadmeadow Zone substation will reach capacity, it is expected that Adamstown Zone substation could provide additional points of connection to support this increased load. Ausgrid will be required to confirm if the additional load on the zone substation transformers, internal cabling etc. can facilitate the emerging scenario.

Please note that these calculations do not take into account diversity on the LV or 11kV network. Further feedback will need to be provided by Ausgrid to confirm the suitability of the existing network to cater for the proposed yields outlined below in the "Emerging Scenario Yields_Capacity" spreadsheet.

Yours faithfully,

Jamie Antonuccio – Electrical Design Team Leader Power Solutions (NSW) Pty Ltd

Postal PO Box 278 Charlestown NSW 2290 Head Office The Landmark C106/215 Pacific Highway Charlestown NSW Sydney Office Suite 710, Level 7 91 Philip Street Parramatta NSW 2150 Phone 1300 732 293 office@powersol.com.au www.powersol.com.au

Power Solutions Reference:	6103									E)science Infrastructure Design
Distributor Reference:	TBC						Qustics designs in a guaranteed time			
Address:	Broadmeado	w NSW							solutions 1300 732 29	3
Usage	Zoning	Lot Area (sqm)	Area Efficiency*	Building Envelope (sqm) (Lot Area x Efficiency)	Min VA/sqm	Max VA/sqm	Min VA	Max VA	Average Amps (415V)	Average Amps (11kV)
				Existing	Load					
Education	SP2	78,140	70	3,125,600	5,469,800	5,979	226			
Entertainment	SP2	65,554	50%	32777	80	160	2,622,160	5,244,320	5,472	206
Local Centre	E2	14,853	100%	14853	70	100	1,039,710	1,485,300	1,756	66
Mixed Use	MU1	57,670	90%	51903	50	70	2,595,150	3,633,210	4,332	163
Open Space	RE1	273,776	100%	273776	10	20	2,737,760	5,475,520	5,713	216
Residential	R3	252,111	90%	226900	5	15	1,134,500	3,403,499	3,157	119
Transport and Utility Facilities	SP2	834,757	75%	626068	30	60	18,782,042	37,564,083	39,195	1,479
	D (A)	54,153**	2,043							
	-									
Commercial	E2	167,579	300%	502737	70	100	35,191,590	50,273,700	59,450	2,243
Entertainment Arena	RE1	34,911	50%	17456	80	160	1,396,440	2,792,880	2,914	110
Indoor Recreation	SP2	33,122	50%	16561	50	70	828,050	1,159,270	1,382	52
Employment/Urban Services	E3	315,573	150%	473360	70	100	33,135,165	47,335,950	55,976	2,112
Residential	R2	81,574	150%	122361	5	15	611,805	1,835,415	1,702	64
Residential	R3	132,666	300%	397998	5	15	1,989,990	5,969,970	5,537	209
Residential	R4	159,152	900%	1432368	5	15	7,161,840	21,485,520	19,927	752
Mixed use	MU1	39,822	500%	199111	50	70	9,955,572	13,937,800	16,620	627
Mixed use	MU1	121,299	750%	909741	50	70	45,487,067	63,681,894	75,938	2,865
Mixed use	MU1	76,359	1000%	763587	50	70	38,179,334	53,451,068	63,738	2,405
Publicly Accessible Open Space	RE1	200,059	100%	200059	10	20	2,000,590	4,001,180	4,175	158
Residential (UGL Site)	R3	96,163	100%	96163	5	15	480,815	1,442,445	1,338	50
PA Open Space (UGL Site)	RE1	16,970	100%	16970	10	20 169,700 339,400		339,400	354	13
			То	otal (kVA)	267,706					
						A	ADDITIONAL LO	AD (A)	309,052***	11,660

Notes:

*True Existing load is unknown and does not take into account multiple storey dwellings when calculation area loads. Ausgrid to confirm. **Proposed load is indicative only, Ausgrid to review and confirm based on "Emerging Scenario Yields_Capacity" spreadsheet. ***Area - Efficiencies beyond 100% have been utilised to account for multi-storey buildings. Refer to the "HOB (Storeys)" Column in the "Emerging Scenario Yields_Capacity" Spreadsheet

Emerging Preferred scenario

						нов			Mix		Dwelling:	Emp		Residential	Dwellings	Dwellings	Dwellings	Population	Employment		
	Proposed (additional)	Area	Efficiency	NET FSR	LZN	(storeys)	HOB (m)	Posi	Potail/Com	Affordable	GFA	(X:GFA)	Emp Density (X:Ha)	(GFA)	(Market) (90sqm)	(Affordable) (90sqm)	(Total)	(@2.4ppd)	(GFA)	Jobs	Students
	Commercial	167 579	90%	2 00	F2	6	20	Nesi	100%		0	75		_	()	()	0	0	301 643	4 022	
	Entertainment Arena	34 911	50%	0.50	RF1	0	20	0%	100%	0%	0	80					0	0	8 728	109	
	Indoor Recreation	33 122	50%	0.50	SP2	0	0	0%	100%	0%	0	35		-			0	0	8 280	237	
	Employment/Lirban Services	315 573	90%	1.50	E3	3	9	0%	100%	0%	0	00	100	-			0	0	426 023	4 260	
	Mixed use	39 822	100%	2 00	MU1	10	40	70%	30%	10%	90	35	100	55 751	558	62	619	1 487	23 893	683	
	Mixed use	121 299	100%	3 00	MU1	15	50	80%	20%	10%	90	35		291 117	2 911	323	3 235	7 763	72 779	2 079	
	Mixed use	76,359	100%	4 00	MU1	23	75	90%	10%	10%	90	35		274 891	2 749	305	3 054	7,330	30 543	873	
	Publicly Accessible Open Space	164.045	100%	0.00	RF1	0	0	0%	0%	0%	0	0		-	2,110	000	0,001	0	00,010	0.0	
	Publicly Accessible Open Space	36.014	100%	0.30	RE1	0	0	0%	100%	0%	0	80		-			0	0	10.804	135	
HN	Residential (Hamilton North - UGL site)	96,163	75%	1.50	R3	8	27	100%	0%	10%	90	80		108,184	1.082	120	1.202	2.885	0	0	
HN	Publicly Accessible Open Space (UGL site)	16,970	100%	0.00	RE1			0%	0%	0%	0	0		-	.,		0	0	0		
	Residential	21.556	100%	0.40	R2	3	9	100%	0%	10%	90	80		8.622	86	10	96	230	0	0	
	Residential	18,564	100%	0.60	R2	3	9	100%	0%	10%	90	80		11.138	111	12	124	297	0	0	
	Residential	27.755	100%	0.70	R2	4	14	100%	0%	10%	90	80		19,428	194	22	216	518	0	0	
	Residential	13,700	100%	0.75	R2	4	14	100%	0%	10%	90	80		10.275	103	11	114	274	0	0	
	Residential	11.198	100%	1.00	R3	6	20	100%	0%	10%	90	80		11,198	112	12	124	299	0	0	
	Residential	84,529	100%	1.50	R3	8	27	100%	0%	10%	90	80		126,794	1,268	141	1,409	3,381	0	0	
	Residential	36,939	100%	1.70	R3	8	27	100%	0%	10%	90	80		62,796	628	70	698	1,675	0	0	
	Residential	13,300	100%	2.00	R3	9	34	100%	0%	10%	90	80		26,600	266	30	296	709	0	0	
	Residential	45,409	100%	2.30	R4	10	34	100%	0%	10%	90	80		104,441	1,044	116	1,160	2,785	0	0	
	Residential	4,236	100%	2.70	R4	12	40	100%	0%	10%	150	80		11,438	69	8	76	183	0	0	
_	Residential	58,946	100%	2.80	R4	18	62	100%	0%	10%	150	80		165,050	990	110	1,100	2,641	0	0	
	Residential	37,261	100%	3.60	R4	22	75	100%	0%	10%	150	80		134,138	805	89	894	2,146	0	0	
	Total	1,475,250												1,421,862	12,976	1,442	14,418	34,603	882,695	12,398	0

	Existing (as-is)	Area	Efficiency	NET FSR	LZN	HOB (storeys)	HOB (m)	Rosi	Mix Retail/Com	Affordable	Dwelling: GFA	Emp (X:GFA)	Emp Density (X:Ha)	Residential (GFA)	Dwellings (Market) (90sgm)	Dwellings (Affordable) (90sqm)	Dwellings (Total)	Population (@2.4ppd)	Employment (GFA)	Jobs	Students
	Schools	78,140	100%	1.00	SP2			0%	0%	0%	0				· · · /					100	1,270
	Entertainment Stadium	64,554	100%	1.00	SP2			0%	100%	0%	0	80							64,554	807	
ΒT	Local Centre	2,798	100%	1.50	E2			75%	25%	10%	100	35		3,148	28	3	31	76	1,049	30	
ΒT	Local Centre	12,055	100%	2.00	E2			85%	15%	10%	100	35		20,493	184	20	205	492	3,616	103	
BT	Mixed Use	3,346	100%	0.90	MU1			66%	33%	10%	100	35		1,988	18	2	20	48	994	28	
BT	Mixed Use	54,324	100%	2.00	MU1			85%	15%	10%	100	35		92,351	831	92	924	2,216	16,297	466	
	Restricted Access Open Space	89,620	100%	0.00	RE2			0%	0%	0%	0	0		-			-	-	-		
	Publicly Accessible Open Space	184,155	100%	0.00	RE1			0%	0%	0%	0	0		-			-	-	-		
HN	Residential (Hamilton North)	135,838	100%	0.60	R2			0%	0%	0%	0	0		-	354		354	850	-		
BT	Residential	4,644	100%	0.75	R2			100%	0%	10%	100	80		3,483	31	3	35	84	-		
BT	Residential	23,265	100%	0.90	R2			100%	0%	10%	100	80		20,939	188	21	209	503	-		
DS	Residential (Donald Street South)	25,285	100%	0.90	R2			0%	0%	0%	0	0		-	31		31	74	-		
BT	Residential	42,443	100%	1.50	R3			100%	0%	10%	100	80		63,664	573	64	637	1,528	-		
BT	Residential	20,638	100%	2.00	R3			100%	0%	10%	100	80		41,275	371	41	413	991	-		
	Transport and utility facilities	834,757		0.00	SP2			0%	0%	0%	0	0									
	Biodiversity area	79,707	100%	0.00	SP2	0	0	0%	0%	0%	0	0		-			-	-	-		
	Total	1,655,568	-	-			-	-	-	-	-		-	247,340	2,611	247	2,858	6,860	86,511	1,534	1,270

Total Additional + Existing	Area	Efficiency	NET FSR	LZN	HOB (storeys)	HOB (m)	Mix		Dwelling:	Emp	Emp Density (X·Ha)	Residential	Dwellings (Market)	Dwellings (Affordable)	Dwellings	Population	Employment	Jobs	Students	
							Resi	Retail/Com	Affordable	GFA dable	(X:GFA)		(GFA)	(90sqm)	(90sqm)	(Total)	(@2.4ppd)	(GFA)	000	orddonito
Schools	78,140									0	0	0 0	C	0	0	0	0	0	100	1,270
Commercial	167,579									-	75	-	-	-	-	-	-	301,643	4,022	-
Entertainment/Indoor recreation	132,587									-	195	-	-	-	-	-	-	81,562	1,153	-
Employment/Urban Services	315,573									-	-	100	-	-	-	-	-	426,023	4,260	-
Local Centre	14,853									200	70	-	23,641	213	24	236	567	4,666	133	-
Mixed use	295,150									470	175	-	716,098	7,067	785	7,852	18,844	144,507	4,129	-
Publicly Accessible Open Space	401,184									-	80	-	-	-	-	-	-	10,804	135	-
Restricted Access Open Space	89,620									-	-	-	-	-	-	-	-	-	-	-
Residential	721,668									1,750	1,360	-	929,463	8,308	880	9,188	22,051	-	-	-
Transport and utility facilities	834,757									-	-	-	-	-	-	-	-	-	-	-
Biodiversity area	79,707									-	-	-	-	-	-	-	-	-	-	-
Total	3,130,818						C	0 0	0 0	2,420	1,955	5 100	1,669,202	15,587	1,689	17,276	41,463	969,205	13,932	1,270
	3,130,579																			

Publicly Accessible Open Space	401,184
Restricted Access Open Space	222,207
Biodiversity area	79,707
	703,098

13% 7% 3% 22%

301,914

166% 51% 30218061% Excel Area GIS Area

Appendix F – High Pressure Fuel Pipeline

Untitled Map

Write a description for your map.

Monast

200 gle Earth

147 Darling St

Broadmeadow

Legend

1 1 1 1 1 1 1

- 1233 ABC Newcastle
- 📍 147 Darling St
- X Anytime Fitness Newcastle
- Audi Centre Newcastle
- 🛛 Australia Post -
- D BP
- 🛱 Broadmeadow
- 😧 Club
- Feature 1
- Feature 10
- 👌 Feature 11
- la Feature 12
- 실 Feature 13
- 🔞 Feature 2
- 💶 Feature 3
- 🕹 Feature 4
- 🕰 Feature 5
- Feature 6
- 🛤 Feature 7
- Feature 8
- Feature 9
- Treddy's Fishing World
- 😗 Go
- T Hotel
- 😫 Hunter Stadium
- Inner City Winemakers
- & Newcastle City Tennis Centre
- Mewcastle Motor Registry
- la Newcastle Pipeline Company
- Newcastle West DSM
- A Park
- PwC
- St
- Station
- S UGL Resources

AMPOL AUSTRALIA PETROLEUM PTY LTD Pipelines Control Centre 2 Solander Street, Kurnell NSW 2231 Locked Bag 2000, Taren Point NSW 2229

ABN 17 000 032 128 ACN 000 032 128

Dear Sir/Madam,

IMPORTANT NOTE – This document sets out the minimum requirements related to protecting the pipeline from physical damage only. Any and all other requirements, including but not limited to local community and development standards and safety requirements in or around the pipeline, will require the developer to undertake its own enquiries and risk assessment(s).

The material set out below provides you with some information on our pipeline and lists our standard requirements for any development in the vicinity of the pipeline easement.

A. Background

Ampol Australia Petroleum Pty Ltd ('Ampol') is the owner and operator of the Newcastle Pipeline Company's (NPC) high pressure liquid petroleum products pipeline which carries refined petroleum products from the Ampol Refinery at Kurnell (Sydney) to Silverwater Terminal, and on to various terminals in Newcastle. This pipeline transfers approximately 4,000,000,000 litres of fuel each year, negating the need for about 45,000 road tankers per year between Sydney and Newcastle. The pipeline is a 300mm nominal diameter buried high tensile steel line that is fully wrapped in polyethylene coating, and protected from corrosion by a cathodic protection system. Gasoline and Diesel products that are transported by the pipeline are also dosed with a corrosion inhibitor for further protection. The maximum allowable operating pressure (MAOP) of the pipeline is 10,000 kPa. The pipeline is licensed under the Pipeline Act 1967; the Pipelines Regulation 2005 by NSW Resources and Energy and complies with the Gas & Liquid Petroleum Pipelines Code, AS 2885 - 2012.

Being underground, the pipeline is not apparent from the surface, except for the necessary warning signs that are placed at intervals along the route to inform any other parties (such as persons excavating in the vicinity) of its presence. As part of the licence requirements, a weekly ground patrol is conducted to ensure that no activities (e.g. excavation, building, etc.) are being carried out over the pipeline that may hinder its operation or maintenance.

B. Minimum Civil Works Requirements

Please note the following standard requirements of the Newcastle Pipeline Company when carrying out any civil work in the vicinity of the Newcastle Pipeline "Licensed Easement". Whilst these requirements are extensive, you may be required to comply with other specific requirements of the Newcastle Pipeline Company as work progresses.

1. Final design of all activities must be approved by Ampol prior to any work over the pipeline easement commencing.

- 2. Detailed drawings of project design and its exact location to be supplied to Ampol.
- 3. Minimum finished depth of cover to the pipeline to be not less than 1000mm
- 4. The developer may be required to fully expose the pipeline for Ampol to inspect its coating and carry out any repairs to same in the area of the project. A clearance of approximately 500mm is required around the pipeline to enable inspection and any repairs.
- 5. The pipeline must be accurately located using a water or air lance (pot holing) to ensure all proposed activity, crossings and structures remain clear as per noted elsewhere in this document. Dry Vacuum machine are NOT to be used.
- 6. The developer is to reconsolidate the ground after excavation; using fresh Sydney Washed River Sand to a minimum cover of 300mm around the pipeline prior to backfilling.

7. Excavations within 1.0 meter of the pipeline are to be carried out by hand (shovel), not by machine.

No excavator larger than 20t to be used within 5 metres of the pipeline easement. Only gummy buckets are allowed within 5 metres of the pipeline easement. NO tiger teeth.

Note: Civil works required under paragraphs 4, 5 & 6 above to be at the full cost of the Third Party Contractor.

- 8. Vehicle Access 5 Metres wide must be provided from a public road along the full length of the easement in each development.
- 9. The easement area is not to be used for any type of storage, but may be used for vehicle parking with appropriate approved surface material.
- 10. Vehicle movements over the easement are limited to an axle loading of 8 Tonnes on formed roads, grass verge or unsealed areas are subject to risk assessment.
- 11. No trees may be planted on the easement. Specifically, the following tree species are not to be planted on or within **2 metres** of the pipeline easement:

Populus Species		-	Poplar Tree
Cinnamomum	-		Camphor Laurel
Schinus Molle	-		Pepper Trees
Salix Species	-		Willow Trees
Erythrina Species		-	Coral Trees
Jacaranda Mimosifolia		-	Jacaranda Tree
Plantinus Species		-	Plane Trees
Eucalyptus Species	-		Gums, Stringy Barks, etc.
Grevillea Robusta		-	Silky Oak
Ficus Species	-		Fig Trees

- 12. No Structures may be constructed on the easement.
- 13. Stormwater run-off must not be discharged onto the easement.

14. Any drainage or excavation in the easement must be approved by Ampol prior to commencement.

- 15. Any buried service crossing the pipeline must cross perpendicular to the pipeline and maintain a minimum of 500mm clearance from the pipeline. Parallel services are subject to risk assessment.
- 16. Any construction, included buried services, within 5 Metres of the easement, and in the easement, must be supervised by a pipeline surveillance contractor from our Line Patrol Contractors unless varied through a work permit issued by the pipeline surveillance contractor. Please provide 3 working days' notice of the need for a surveillance contractor's attendance. Site visit and pipeline locating by electronic pipe locator shall be carried out at no cost. Our line patrol contractor Dean Allison (M 0414 787 339), can provide a schedule of rates on application.
- 17. No compaction by roller is permitted above the pipeline unless there is a minimum of 900mm cover from the level to be compacted to the top of the pipe. Details of all compaction above the pipeline must be submitted to the undersigned for approval irrespective of the depth of cover. Vibrating Rollers are not to be used over the pipeline easement, and the maximum static roller weight (with approval) is 8 tonnes.
- 18. Any structure close to the easement must be fully supported off the easement to enable an excavation generally 2 Metres deep (to the bottom of our pipeline) along the adjacent edge of the easement to be dug without affecting the structures integrity. We request that detailed structural drawings be forwarded to us for review.
- 19. NDD Potholing must be undertaken to validate the location of buried pipelines by physically exposing them. The NPC pipeline must be validated and proven before commencing excavation works. Potholing must conform to AS5488 2013 Quality accuracy levels for location accuracy.

Hydro vacuum excavation is used for non-destructive digging (pot holing) however caution should be exercised as it can damage the pipeline coating. All pot holing may only be carried out under supervision from a Ampol pipeline patrol person or their nominated agent. Maximum allowable pressure is 2,000kPa from the lance and the vacuum must be kept at least 100mm away from the pipeline coating.

20. Where HDD or bore is planned to pass under, over or near the NPC pipeline, the location of the pipeline must be proven initially by NDD and subsequently by excavation. The excavation is to be extended to a distance of 1 meter from the pipeline on the side from which the bore will approach. The position and direction of the bore head is to be checked when it reaches the excavation to ensure the required minimum clearance of 500mm between the bore and the pipeline will be maintained. In addition, progressive measurement checks of the length of the bore on the approach towards the pipeline must be made to ensure that the bore head has not missed the bore proving excavation and travelled off alignment either horizontally and/or vertically. The final pull back (annulus) diameter of the bore with reaming tools shall be assessed to ensure a minimum clearance of 500mm from the pipeline is maintained.

21. If any damage is done to the pipeline as a result of your works in the pipeline easement, you must:

- a) immediately notify the attending patrolman or, if no patrolman is present, immediately phone 1800 043 122;
- b) immediately take measures to minimise the extent of the damage to the pipeline and the amount of petroleum products lost from the pipeline;
- c) advise Ampol, via the undersigned, of the existence and extent of the damage to the pipeline within 30 minutes and comply with any directions given by Ampol; and
- d) as soon as possible and at Ampol's option, either:

- i. repair the pipeline at your cost so as to return it to the condition it was in prior to the damage; or
- ii. pay to Ampol or NPC all costs incurred by Ampol or NPC in carrying out the necessary repairs to the pipeline to return it to the condition it was in prior to the damage occurring; and
- e) Undertake all necessary work to remediate any environment that becomes contaminated as a result of spillage from the pipeline.
- 22. In undertaking your works, you agree to indemnify Ampol and NPC against other costs, expenses and/or losses sustained by Ampol and/or NPC as a consequence of any direct or indirect action(s) caused by you (including any of your employees, contractors, subcontractor and/or any other third party representative) that results in any loss or damage to the pipeline, or an individual, including but not limited to any cost associated with product spilled from the pipeline and costs incurred by Ampol and/or NPC associated with any investigation or prosecution by any regulatory body.

C. Other Requirements

The pipeline is licensed by Department of Planning, Industry and Environment. The Department will provide necessary support to ensure that the safety of the pipeline is not compromised. One of the licence conditions of the pipeline is that 24 Hour access is available in the event of an emergency (e.g. pipe rupture). Another condition is that the pipeline easement is to be patrolled at least once per week, and at least once per month by walking from end to end.

In the situation where Ampol gives permission for a third party to install a fence/gate across the pipeline easement, the approval would be given on the condition that an approved Ampol security lock be installed in series with the property owner's/tenant's lock on an agreed security chain, so that we have continued 24-Hour access to the easement at all times.

It is your responsibility to ensure that you (including your employees, subcontractors, and/or other representatives) at all times understand and undertake your works in a safe and secure manner, and in accordance with all relevant laws. If at any time you (or any of your employees, subcontractors, or other representatives) are unsure of your obligations and/or requirements (safety or otherwise) you should seek professional assistance prior to commencing and/or continuing any civil and/or construction works in or around the pipeline.

Yours sincerely,

Ampol Australia Petroleum

for Newcastle Pipeline Pty Ltd

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Mick de France Pipelines Coordinator <u>mxdefra@ampol.com.au</u>

0409 810 189