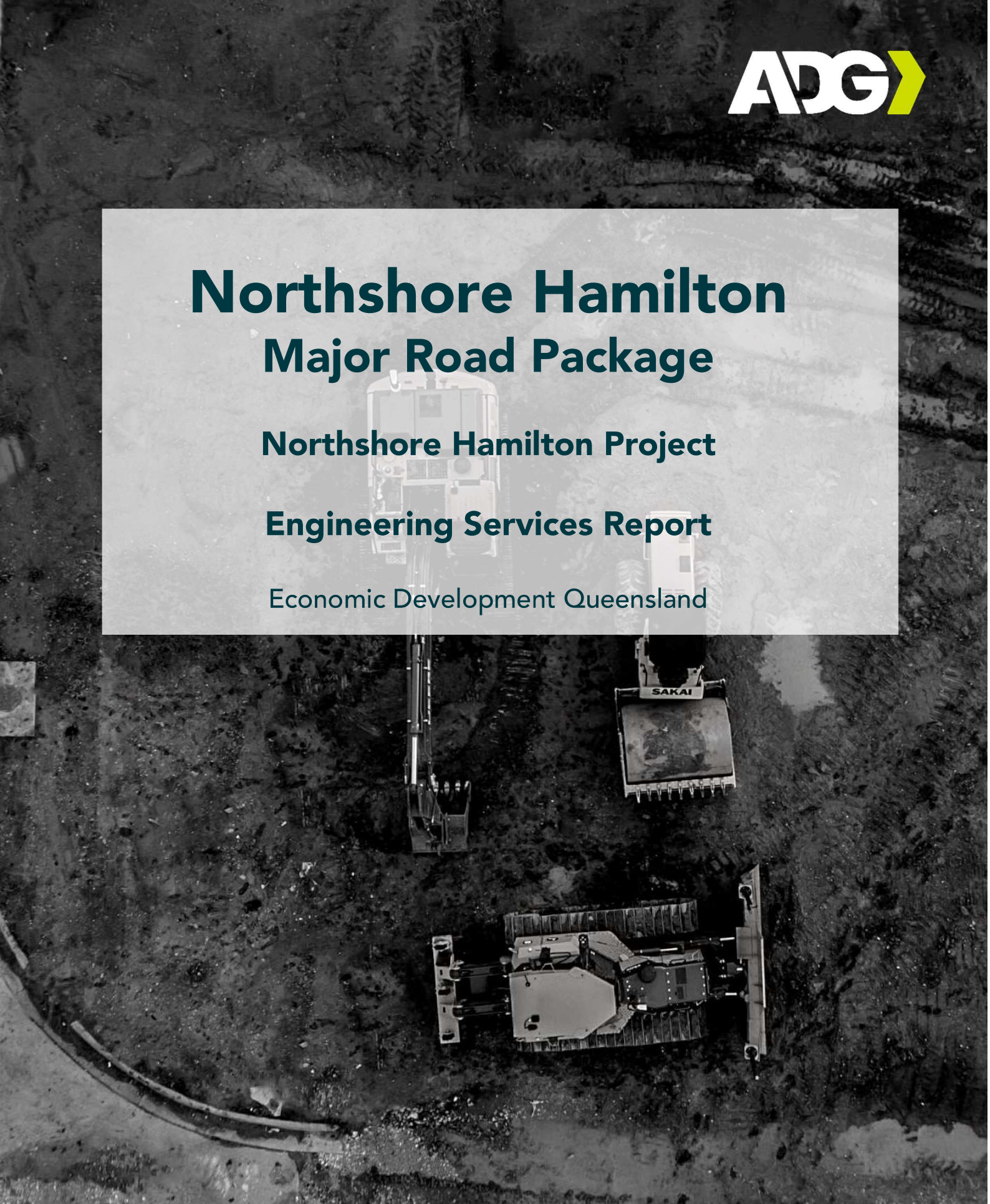
Northshore Hamilton

Major Road Package

Northshore Hamilton Project

Engineering Services Report

Economic Development Queensland



PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2024/1485

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Authority	Name	Signature	Date
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Reviewer	Warren Steiner		20.02.2024

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1 INTRODUCTION

1.1 Background

ADG Engineers (Aust.) Pty Ltd was engaged by EDQ to carry out civil engineering reporting suitable for submission to The Minister for Economic Development Queensland (MEDQ) and any required referral agencies for land located at MacArthur Avenue, Curtin Avenue and Theodore Street within the Northshore Hamilton Priority Development Area. The proposed development application is requesting a permit for the reconfiguration of a lot, expanding from 14 lots to 19 lots, along with associated roads.

The purpose of this Engineering Servicing Report (ESR) is to provide advice on the proposed roadworks and adjoining development lots specifically including earthworks, roadworks, drainage, sewerage, water supply, electricity, and gas. The delivery of roads and creation of serviced lots is required to support the delivery of the Brisbane Athletes Village for the 2032 Olympic and Paralympic Games.

1.2 Property Detail

The details of the property for the proposed development can be seen in Table 1 - Property Details below.

Table 1 - Property Details

Title	▪ Lot 12 on SP317637; ▪ Lot 301 on SP257483; ▪ Lot 302 on SP338484; ▪ Lot 303 on SP338484; ▪ Lot 1162 on SP108458; ← Lot 1 on SP140140 is included within the application area ▪ Lot 886 on SL6135; ▪ Lot 100 on SP294919; ▪ Lot 968 on SL5770; ▪ Lot 711 on SL4546; ▪ Lot 1 on SP338484; ▪ Lot 800 on SP210924; ▪ Lot 1 on 238221; ▪ Lot 5 on SP273062; and ▪ Lot 1161 on SP1084571.
Street Address	MacArthur Avenue, Curtin Avenue West, Cullen Avenue and Theodore Street, Hamilton.

The location of the proposed development is demonstrated in Figure 1 – Proposed Extent of Development within Northshore Hamilton PDA .

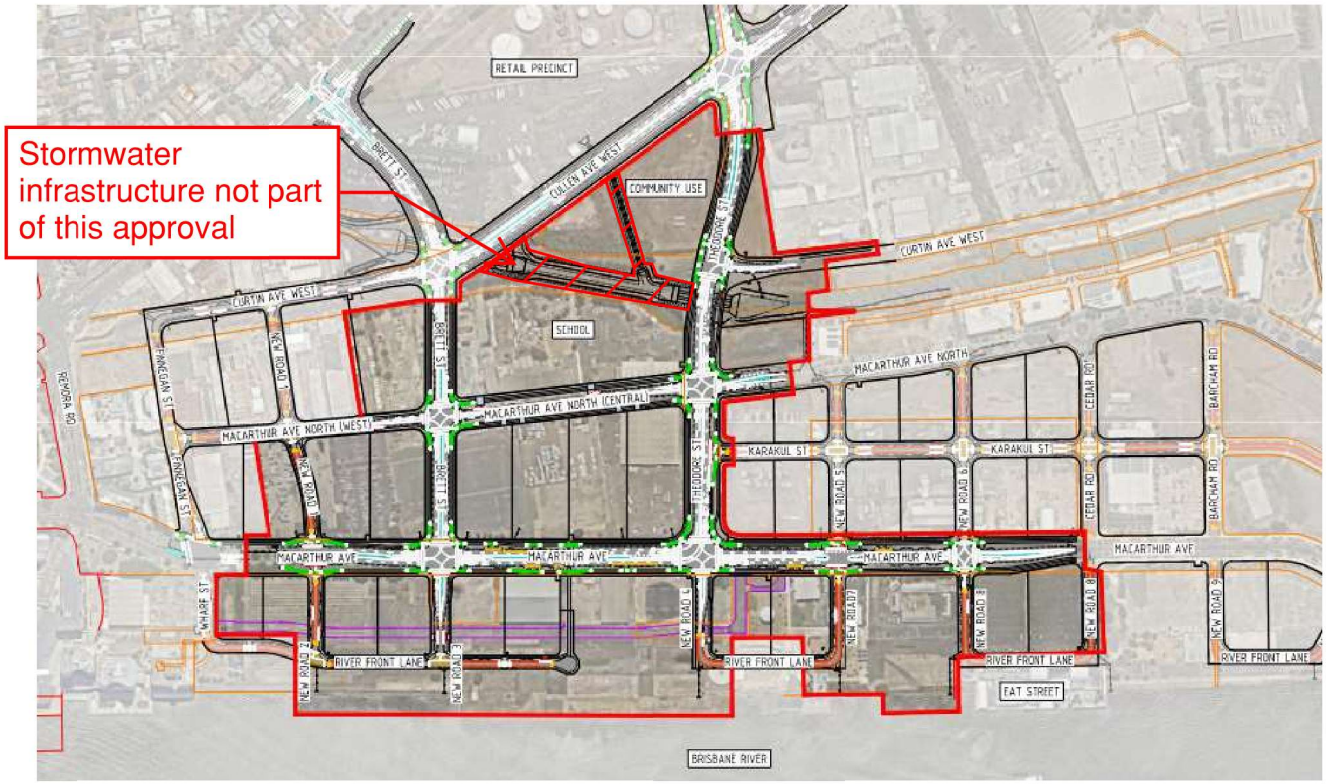

Figure 1 – Proposed Extent of Development within Northshore Hamilton PDA

1.3 Existing Site Features

The site is bordered by Cullen Ave West to the northwest, Remora Road to the east, Macarthur Avenue to the east, and Theodore Street to the northeast. The subject site is characterised by areas currently designated for industrial purposes, carparking and temporary event space.

1.4 Summary of Proposed Infrastructure

This application is to provide the necessary road, drainage, and services infrastructure to allow proposed allotments to be serviced. Earthworks will also be undertaken within allotments to provide a free draining pad at a suitable level for future development to occur (future development within allotments to be submitted under separate application).

The following infrastructure is proposed as part of this application.

Infrastructure Category	Details
Transport – Roads / Intersections	• Proposed roads extents include MacArthur Ave South, MacArthur Ave North, Brett Street, Theodore Street, Curtin Ave West and access roads. • Proposed roadwork includes upgrades to existing roadways and new roadways. • Scope includes seven signalised intersections and three unsignalised intersections
Culverts / Bridges	• A major culvert crossing proposed at Theodore Street south of Curtin Ave West. Culverts required to traverse the existing east-west open channel.
Water	• Reticulated water and service connections to be provided to all allotments included as part of this application. • Trunk water mains to be provided in accordance with network modelling.
Sewer	• Reticulated sewer and service connections to be provided to all allotments included as part of this application. • Trunk sewer mains to be provided in accordance with network modelling.
Stormwater	• Stormwater drainage to be provided within all existing road upgrades and proposed roadways. Drainage connections to be provided to all allotments included as part of this application. • ~~Open channel construction directly adjacent the proposed major culvert to be provided as part of this application.~~
Parks & Open Space	• Landscaping / streetscape to be provided to all proposed existing road upgrades and new roadways. • No dedicated parks or open space is included as part of this application. • Landscaping to the open channel to meet hydraulic and maintenance requirements.

Open drainage channel not part of this approval →

2 BULK EARTHWORKS

Bulk earthworks will be undertaken to deliver the road network and allotments pad levels in compliance with Brisbane City Council (BCC) Standards, specifically achieving the minimum road grades and crossfalls. Finished surface levels will also ensure the relevant standards for flood immunity are achieved. The proposed earthworks strategy will aim to minimise the required earthworks, and a methodology of reducing the disparity between cut and fill volumes will be adopted.

Extensive geotechnical investigations and testing has been undertaken on the site to inform the design and construction.

Earthworks will also be undertaken within allotments to provide a free draining pad at a suitable level for future development to occur (future development within allotments to be submitted under separate application). In isolated locations, interface bulk earthworks will be undertaken adjoining allotments.

The bulk earthworks phase will also include pre-loading of the roadways to mitigate future settlement. Pre-loading of approximately 1m of temporary fill in addition to the 0-2 m of permanent fill will be undertaken for a period of approximately 3-18 months, subject to geotechnical advice.

Final levels across the road works and the associated bulk earthworks quantities for cut and fill will be confirmed as part of the detailed design phase. A preliminary layout plan is provided as part of this development approval submission and is included in Appendix A.

3 ROADWORKS INFRASTRUCTURE

3.1 Proposed Roadworks

The application proposes the construction of approximately 2.3km of new and upgraded roads, six (6) signalised intersections and two (2) unsignalised intersections. The proposed road network and intersection geometry is generally in accordance with the Northshore Hamilton Review 20% Design Traffic Report prepared by Urbis dated 13 June 2023.

The road network will provide access to each individual allotment. All verge works are to be in accordance with the proposed typical cross-sections.

Cycleways, pedestrian and shared footpaths will be implemented as part of the development to provide pedestrian / cyclist linkage between proposed roads within the PDA and KSD. These pathways are to be generally in accordance with the Transport Masterplan recommendations, TMR guidelines and Austroads.

A preliminary layout plan and cross-sections are provided as part of this development approval submission and is included in Appendix A.

4 STORMWATER

4.1 Stormwater Quantity

Historically, the area within the Northshore Hamilton PDA was used for industrial purposes. Stormwater runoff from the PDA was discharged either to the constructed channels or directly to the Brisbane River.

As part of the proposed roadworks a new underground piped stormwater system will be provided. The stormwater system will capture stormwater runoff in gullies and field inlets and convey it through underground infrastructure directly to the Brisbane River or constructed channels. Similar to the existing piped drainage network no detention is proposed for roadways.

Stormwater drainage connections will be provided to each individual allotments, all internal allotment drainage including onsite detention will be subject to a Site Based Stormwater Management Plan to be developed for each allotment and be subject to a separate application.

The design of all stormwater infrastructure will be in accordance with Queensland Urban Design Manual (QUDM) and Brisbane City Council (BCC) standard drawings.

Final stormwater design across the proposed development will be confirmed as part of the detailed design phase. A preliminary drainage layout plan is provided as part of this development approval submission and is included in Appendix A.

4.2 Stormwater Quality

As part of the development of the PDA, the opportunity exists to achieve a significant improvement in the quality of stormwater runoff discharged from the site by applying the principles of Water Sensitive Urban Design (WSUD). This would deliver a holistic solution for the overall development that achieves the multiple sustainability and accessibility-based objectives that also apply to development of the PDA while also delivering an aesthetically pleasing and functional road network.

A Site Based Stormwater Management Plan will be provided as part of the detailed design phase to addresses the stormwater treatment measures required to support the operational (i.e., post-construction) phase of the development for road reserve areas. All internal allotment stormwater quality treatment will be subject to a Site Based Stormwater Management Plan to be developed for each allotment, and be subject to a separate application.

4.2.1 Adopted Water Quality Objectives

The following water quality objectives for the treatment of stormwater runoff during the operational phase is proposed for this project. A detailed Stormwater Management Plan to be provided as part of the detailed design phase will provide confirmation of the adopted water quality objectives.

Characteristic Objective	Objective
Load Based Objectives	
Total Suspended Solids	80% reduction in annual load
Total Phosphorus	60% reduction in annual load
Total Nitrogen	45% reduction in annual load
Gross Pollutants	90% reduction in annual load
Other Objectives	
Suitability for secondary contact recreation	As defined in the National Health and Medical Research Council Guidelines for Managing Risks in Recreational Waters (2008), including intestinal enterococci 95th percentile ≤40 organisms per 100 mL

4.2.2 Adopted Solutions

Based on the considerations of the project, the proposed stormwater treatment philosophy is proposed for the Northshore Hamilton PDA, summarised as follows.

Allotments

The treatment of stormwater runoff from buildings/allotments (i.e., areas outside road reserves) is proposed to be lot-based. This is an appropriate response given that buildings will tend to drain directly to the underground drainage system and the relatively low ground levels across the development significantly constrain the ability for the drainage system to discharge to a regional or end of line treatment device. Similarly, unless the road reserves were to be made significantly wider, the areal requirements for treatment effectively preclude the siting of treatment measures for buildings within the road reserve.

Consequently, in this case the treatment of runoff from buildings/allotments is best achieved by on-site measures (for example green roofs, proprietary treatment devices and bioretention systems), prior to the discharge of runoff from each allotment.

Site Based Stormwater Management Plans, tailored to the development proposed within each allotment, will need to be prepared in support of the development of each allotment.

Road Reserves

Similar to the treatment of allotment runoff, ground level constraints limit the ability to drain flow to a regional treatment device.

As a consequence, the proposed method of treatment of runoff from road reserves is via bioretention systems suitably located within the road reserve which treat runoff prior to its entry to the underground drainage system. The solution proposed for the Northshore Hamilton PDA is to use the street trees proposed within the road reserve to also serve as bioretention systems and provide the necessary treatment of runoff from road reserve areas.

5 WATER RETICULATION

5.1 Existing Infrastructure

Review of available GIS Mapping for Urban Utilities, in addition to the available detailed survey commissioned undertaken by Land Partners, demonstrates that the proposed roadworks is situated in an area of existing water reticulation infrastructure.

5.2 Proposed Infrastructure

Urban Utilities (UU) have been engaged to confirm the overall water reticulation master planning for the PDA. Concept design of the water reticulation network has been informed by the NSH PDA Water Supply and Sewer Preliminary Analysis dated 4th of November 2020 prepared by Cardno.

Initial advice indicates that water reticulation will require upgrades external to the site, the trigger date for these works is to be confirmed by UU. The final proposed water reticulation design across the proposed roadworks will be confirmed as part of the detailed design phase, with a preliminary layout plan provided as part of this development approval submission.

All water reticulation that will be designed and constructed to service the proposed adjoining developments with potable water will be in accordance with the SEQ Water Supply and Sewerage Design and Construction Code and UU Design Criteria.

A preliminary water reticulation layout plan is provided as part of this development approval submission and is included in Appendix A.

6 SEWER RETICULATION

6.1 Existing Infrastructure

Review of available GIS Mapping for Urban Utilities, in addition to the available detailed survey undertaken by Land Partners, demonstrates that the proposed roadworks is situated in an area of existing sewer reticulation infrastructure.

6.2 Proposed Infrastructure

Urban Utilities (UU) have been engaged to confirm the overall sewer reticulation master planning for the PDA. Concept design of the sewer reticulation network has been informed by the NSH PDA Water Supply and Sewer Preliminary Analysis dated 4th of November 2020 prepared by Cardno.

The final proposed sewer reticulation design across the proposed roadworks will be confirmed as part of the detailed design phase, with a preliminary layout plan and sections provided as part of this development approval submission. All sewer reticulation that will be designed and constructed to service the proposed adjoining developments will be in accordance with the SEQ Water Supply and Sewerage Design and Construction Code and UU Design Criteria.

A preliminary sewer reticulation layout plan is provided as part of this development approval submission and is included in Appendix A.

7 ELECTRICAL / COMMUNICATIONS NETWORK

Review of available GIS Mapping for Energex, Telstra and NBN, in addition to the available detailed survey undertaken by Land Partners, demonstrates that the proposed roadworks is situated in an area of both above and below ground electrical and communications infrastructure.

Given the presence of the above and below ground electrical and communications infrastructure, the proposed roadworks is well situated for multiple potential points of connection to expand this network to service the created lots. It is anticipated that an electrical and communications consultant will be engaged as part of detailed design to provide an electrical network design for the proposed roadworks, as well as to liaise with Energex, Telstra and NBN.

The communications design will also have regard to the Northshore Telecommunication Master Plan v1.4 prepared by Gravel Road.

8 GAS NETWORK

Review of BYDA responses, in addition to the available detailed survey undertaken by Land Partners, indicates that the proposed roadworks is situated in an area of existing gas infrastructure. Existing gas mains includes high, medium and low pressure mains in various locations throughout the site.

The proposed roadworks and future development will require some existing gas mains to be removed. In select locations gas mains will be relocated to ensure a gas service is maintained to existing customers. A 300mm gas distribution main traversing the site will be maintained and relocated in select locations.

EDQ and APA are currently in discussions to confirm extents of mains to be removed and relocated. It is anticipated that APA will engage a suitably quality consultant as part of detailed design phase to provide gas network design required as part of the roadworks.

9 CONCLUSION

As a result of the investigations carried out to date the site may be suitably engineered in accordance with the relevant Brisbane City Council Planning Scheme Policies, Brisbane City Council standard drawings, and any other applicable standards and guidelines. ADG therefore considers the proposed roadworks and adjoining development allotments is feasible in recognition of the findings within this report.

APPENDIX A

Preliminary Layout Plans & Sections

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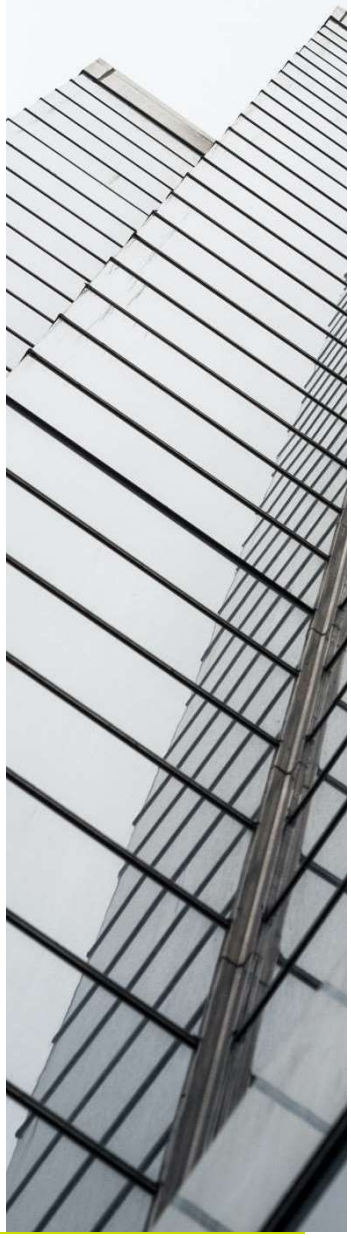

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