



DEVELOPMENT SERVICES ATTACHMENTS
ORDINARY MEETING OF COUNCIL
WEDNESDAY 18 AUGUST 2021

REPORT NUMBER	REPORT TITLE AND ATTACHMENT DESCRIPTION	PAGE NUMBER(S)
DS01 – 08/21	<p>Amendment to Muchea Industrial Park Local Structure Plan 1 – (Lot 102 Great Northern Highway) – Inclusion of ‘Special Use’ zone for a Local Service Centre</p> <p>Attachments</p> <ol style="list-style-type: none">1. Amendment to Local Structure Plan Report2. Local Structure Plan 1 – Explanatory Report3. Schedule of Submissions4. Traffic Assessment Peer Review5. Transcore’s Review of MRWA Concerns6. Intersection Concept Design7. Modified Structure Plan Map8. Additional Information on Waste Water Disposal	1 – 246

MUCHEA INDUSTRIAL PARK

LOT 102 GREAT NORTHERN HIGHWAY

LOCAL STRUCTURE PLAN 1

PART ONE: IMPLEMENTATION

January 2021



MUCHEA INDUSTRIAL PARK
LOT 102 GREAT NORTHERN HIGHWAY
LOCAL STRUCTURE PLAN 1

PART ONE: IMPLEMENTATION

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January 2021

This structure plan is prepared under the provisions of the Shire of Chittering Town Planning Scheme No.6.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON _____

Signed for and on behalf of the Western Australian Planning Commission:

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

_____ Witness

_____ Date

_____ Date of Expiry

TABLE OF AMENDMENTS

Amendment Number	Summary of the Amendment	Amendment Type	Date Approved by WAPC
1	<ul style="list-style-type: none"> • Introduce a 'Special Use' zone at the western entrance to the Muchea Industrial Park; • Update Plan A to be consistent with approved subdivision designs in terms of road alignments and intersection locations; • Delete 'Drainage' reserve within the north-west corner of the 'Conservation' reserve and abutting the 'Loop Road'; • Delete 'Plan B – Access Staging Plan'; • Identify Main Roads WA's 'Controlled Access Route' for oversize overmass vehicles on the western boundary of LSP; and • Update terms of reference from 'Perth Darwin National Highway' to 'Tonkin Highway extension' throughout the document. 	Standard	

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EXECUTIVE SUMMARY

The Muchea Employment Node Local Structure Plan 1 (LSP1) is the first local structure plan to be prepared within the Muchea Employment Node (MEN) and is the final piece of the planning framework over lot 102 Great Northern Highway, Muchea that will facilitate the delivery of prime employment generating land within Muchea, realising a long-term strategic objective for the area.

The MEN has been spatially identified for industrial development in the State's strategic planning framework since the preparation of the *North East Corridor Extension Strategy* by the Western Australian Planning Commission (WAPC) in 2003. The planning framework has followed a logical progression since then, with the WAPC preparing and adopting the *Muchea Employment Node Structure Plan (MENSP)* in 2011 and the subsequent rezoning of the LSP area from 'Agricultural Resource' to 'Industrial Development' through Amendment No. 52 to the Shire of Chittering's Town Planning Scheme No. 6 (TPS6) in June 2015. This logical sequence of events has led to the preparation of LSP1 which will fulfil the final step in the planning process prior to subdivision and development occurring.

LSP1 covers the entirety of lot 102 Great Northern Highway, Muchea which is approximately 149ha in area and part of the wider MEN – a 1,113ha proposed industrial precinct within the Shire of Chittering. LSP1 directly abuts the eastern boundary of Great Northern Highway (GNH) approximately 150m north of its intersection with Brand Highway / Muchea East Road. LSP1's strategic location abutting GNH and on the western periphery of the wider MEN makes it ideally placed to accommodate the first stages of industrial development within Muchea and will serve as the catalyst for further development within the MEN. LSP1 has a direct connection to the recently constructed Tonkin Highway extension approximately 200m to the west, which will assist to further ensure the long-term prosperity of LSP1 and the wider MEN.

LSP1 identifies the vast majority of lot 102 as 'General Industry' with the corresponding objectives, land use permissibility and development standards prescribed for the zone under TPS6 applicable. The General Industry zoning is consistent with the strategic vision for the land and formed the basis upon which the land was rezoned to 'Industrial Development'. The General Industry zone is capable of facilitating a range of industrial land uses, although specific consideration was given in the preparation of LSP1 to the need to accommodate large scale freight/logistics and agri-business operations that are expected to gravitate towards the area based on its strategic location north of Perth and abutting key regional transport infrastructure.

Amendment 1 to LSP1 introduces a Special Use zone at the entry to the development and adjacent Tonkin Highway. The Special Use zone will accommodate a small local service centre and provide a range of local amenities and services for workers in the MEN, local residents and passing traffic.

With respect to site access and staging of development, LSP1 delivers a robust planning framework that integrates seamlessly with the recently constructed Tonkin Highway extension. LSP1 also allows for future integration with surrounding land parcels which are similarly identified for industrial development under the MENSP and in a manner that is consistent with the MENSP.

The planned Road Train Assembly Area (RTAA) abutting the western boundary has also influenced preparation of LSP1, with the plan ensuring development opportunities for land uses that are not only compatible with the RTAA, but can leverage their operations off the large scale freight activities and associated services that are expected to be required. Likewise, the RTAA stands to benefit significantly from its proximity to the industrial precinct. The availability of transport related services and industries immediately adjacent to the RTAA will ensure that repairs, maintenance and other transport services can be carried out with minimal downtime, resulting in a significant saving to industry. LSP1 also allows for other smaller-scale industrial land uses to occur and will provide a framework that is sufficiently flexible to accommodate a diverse range of industrial activities as driven by market demand.

Areas of local reserves have been delineated consistent with the existing environmental features and attributes of the site including:

- Resource Enhancement Wetlands and their associated buffers retained within Conservation Reserves;
- A significant portion of the existing vegetation retained within Conservation Reserves; and
- The existing drainage channel including significant trees recognised and retained within a Drainage / Waterway Reserve.

Table 1 summarises the key land uses and breakdown of LSP1.

Table 1 – Summary Table

Item	Indicative Area	Structure Plan Reference (Section No.)
Structure Plan Area	149 ha	
Area of each proposed land use:		
- General Industry	102.4 ha	
- Special Use	2.1 ha	
- Local Reserves	30.3 ha	
- District Distributor Roads	3.8 ha	
- Local Roads	8.3 ha	
- Future Road Widening	2.1 ha	
Total Estimated Lot Yield	25 - 35 lots	
Estimated Area and Percentage of Local Reservations:		
- Conservation Reserve	21.6 ha (71% of Local Reserves area)	
- Drainage / Waterway Reserve	8.7 ha (29% of Local Reserves area)	

**The lot yield is based on the expected market demand for larger industrial lots to accommodate freight/logistics land uses and is subject to change depending on changes in market demand over time. There is no minimum or maximum lot size or density target prescribed for the MENSPP.*

1.0 STRUCTURE PLAN AREA

This Local Structure Plan applies to lot 102 Great Northern Highway, Muchea being the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan Map (Plan A).

2.0 OPERATION

Pursuant to clause 28 of the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes*, this Structure Plan comes into effect on the day in which it is approved by the Western Australian Planning Commission and is valid for a period of 10 years from that date, unless the period of approval is otherwise extended in accordance with the Regulations.

3.0 INTERPRETATION AND RELATIONSHIP WITH STATUTORY PLANNING FRAMEWORK

This Local Structure Plan constitutes a Structure Plan required to be prepared prior to subdivision and development of the subject land pursuant to Schedule 11 of the Shire of Chittering Town Planning Scheme No. 6 and the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes*.

The Structure Plan Map (Plan A) outlines future land use, zones and reserves applicable within the structure plan area.

Pursuant to the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes*, a decision maker of an application for development approval or subdivision approval is to have due regard to the provisions of this Local Structure Plan, including the Structure Plan Map, Implementation Report, Explanatory Report and Technical Appendices.

4.0 STAGING

Development staging will be influenced by access to the regional road network and availability of service infrastructure.

Access to the first stage of development is provided via an interchange with Tonkin Highway. Secondary stages will generally be accessed via the east-west district distributor road, as identified in the Muchea Employment Node Structure Plan and will be determined by market demand and extension of service infrastructure.

Development staging will follow an orderly sequence and shall not exceed the extension of essential service infrastructure or constructed road access.

5.0 SUBDIVISION AND DEVELOPMENT REQUIREMENTS

These development standards are to be read in addition to the provisions of TPS6, with specific reference to the development standards and provisions prescribed under Schedule 11 – ‘Muchea Employment Node Special Control Area’.

5.1 Zones and Reserves

Plan A prescribes the zones and reserves applicable within the Structure Plan Area. In accordance with clause 27 of the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes*, the zones and reserves designated under this Structure Plan are to be given due regard in the consideration and determination of applications for subdivision and development as if they were zones and reserves under the Scheme.

5.1.1 Local Reserve - Drainage / Waterway

The objective for the Drainage / Waterway reserves identified at Plan A is to set aside land required for significant waterways and drainage.

5.2 Land Use Permissibility

Land use permissibility shall be in accordance with the zones and reserves identified on the Structure Plan Map (Plan A) and the corresponding zone listed under Schedule 2 – Zoning Table of TPS6.

Note – Reference should also be made to Schedule 11 – ‘Muchea Employment Node Special Control Area’ of TPS6 with regards to land use permissibility in the absence of a reticulated water supply.

5.2.1 Special Use Zone

A person shall not use any land, or any building or structure within the Special Use zone, except for the purposes set out at Table 2 and subject to compliance with any conditions set out under Table 2.

Where a use referenced under Table 2 is not defined by TPS6, the definition of the use is in accordance with Division 2, Schedule 1: ‘Model provisions for local planning schemes’ of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Table 2 - Special Use Zone

No.	Site Description	Use	Special Conditions
1.	Muchea Industrial Park - Local Service Centre	<ul style="list-style-type: none"> • Brewery • Consulting Rooms • Child Care Premises • Convenience Store • Factory Unit Building • Farm Supply Centre • Fast Food Outlet • Industry – Light • Industry – Service • Liquor Store - Small • Lunch Bar • Medical Centre • Motor Vehicle Repair • Motor Vehicle, Boat and Caravan Sales • Office • Public Utility • Restaurant • Recreation - Private • Roadhouse • Service Station • Shop • Showroom • Veterinary Centre • Warehouse / Storage 	

5.3 Environmental and Heritage Protection

The environmental features and their associated buffers within the reserves identified at Plan A are to be protected and retained in accordance with the approved management plans required under clause 3.1 of Schedule 11 – Muchea Employment Node Special Control Area of the Scheme. All subdivision and development is to be in accordance with the approved management plans.

5.3.1 Retention and Protection of Key Cockatoo Habitat Trees

Subdivision design and development applications are to consider the retention of key cockatoo habitat trees where reasonable. Key cockatoo habitat trees are those identified at Figure 9 of the Environmental Assessment and Management Strategy approved in association with this Local Structure Plan.

At subdivision stage, the alignment of proposed lot boundaries shall consider the location of key cockatoo habitat trees to maximise opportunities for trees to be retained within future building setback areas.

At the development application stage, the siting of buildings and hardstand areas should reasonably seek to avoid the location of key cockatoo habitat trees to enable their retention where possible.

Ongoing protection and management of key cockatoo habitat trees that are identified for retention is to be in accordance with the future 'Flora, Vegetation, Wetland and Waterway Management Plan' prepared as part of the subdivision process as per part 3.1.1 of Schedule 11 of TPS6.

5.3.2 Vegetation Screen Planting

Industrial buildings within the 'Landscape Enhancement Area' identified on Plan A are to have the southern and eastern elevations screened by tree plantings preferably of a Marri or Wandoo species.

Where a building is proposed to have its primary frontage addressing the street, screen planting should be installed along the front property boundary to allow for entry points to the building to be easily identified and accessible.

5.4 Interface with Adjoining Land

5.4.1 Noise

The local authority may require the preparation and implementation of a Noise Management Plan, prepared by a suitably qualified acoustic consultant, for any development proposed which in the opinion of the local authority may adversely impact on nearby sensitive land uses.

5.4.2 Odour

Any proposed development identified by the local authority as having the potential to cause nuisance by way of odour emission is to implement the relevant provisions of the Strategic Odour Management Strategy approved as part of this Structure Plan to the satisfaction of the local authority.

5.5 Building Height

Building heights are restricted in association with the operations of the RAAF Pearce Air Force Base.

5.6 Ceding of Reserves

All 'Drainage / Waterway' reserves depicted at Plan A are to be ceded at subdivision stage with Management Orders issued to the local authority.

All 'Conservation' reserves depicted at Plan A are to be ceded at subdivision stage with Management Orders issued to the local authority. Where an alternate government body or community group has agreed to manage the reserve, the Management Order may be issued to them.

5.7 Access Restrictions

Prior to completion of the Tonkin Highway extension, no direct lot access is permitted to Great Northern Highway without the written approval of Main Roads WA. Upon completion of the Tonkin Highway extension, direct lot access to Great Northern Highway is permitted.

5.8 Modifications to Approved Plan of Subdivision Prior to Endorsement of Diagram or Plan of Survey (Deposited Plan)

Upon lodgement of a diagram or plan of survey (deposited plan), the Commission may endorse its approval of a deposited plan that varies the number of lots from the approved plan of subdivision provided there is no change in the area of developable land and no change to the alignment of roads.

Changes beyond those outlined above may be considered by the Commission but are not expressly permitted under this Local Structure Plan.

6.0 INFRASTRUCTURE

6.1 Infrastructure Funding

Where a developer pre-funds infrastructure that is subsequently identified within a future Development Contribution Plan (DCP), any amount expended upon delivering the infrastructure which exceeds the amount that would have been required under the DCP shall be considered a credit, to be reimbursed to the developer by the local government upon payments from subsequent developers to the local government, consistent with Part 5.8 of State Planning Policy 3.6 – *Development Contributions for Infrastructure*.

6.2 Water Supply

A reticulated water supply is required to be installed at the first stage subdivision to the satisfaction of the Western Australian Planning Commission. The water supply shall be provided in accordance with Part 5.1 of the Local Water Management Strategy approved as part of this Local Structure Plan.

6.3 Wastewater

Reticulated wastewater services are not available to the site, and none are proposed. This means that individual developments are to be responsible for treatment and disposal of general wastewater and trade waste generated on site.

Due to the site's high water table and location within an estuary catchment of the Swan Coastal Plain, on-site primary wastewater treatment is not suitable.

The structure plan provides for the use of on-site secondary wastewater treatment systems via the use of Aerobic Treatment Units. The Shire's scheme has further guidance on use of these units.

Development proposing large volumes of general wastewater or trade waste may need to explore other means of treatment and disposal.

Arrangements for wastewater are to be in accordance with Government policy.

6.3.1 Use of Aerobic Treatment Units

Where ATUs are proposed:

- a. Wastewater loading rates are to be consistent with those stipulated in Table 2 of the Department of Health (DoH) *Supplement to Regulation 29 and Schedule 9 – Wastewater system loading rates*;
- b. DoH approved systems, as listed in the *Approved Aerobic Treatment Units* are to be utilised and installation carried out in line with the *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units*. Where larger systems are required, designs are to be assessed and approved by the DoH;
- c. Appropriate clearance to groundwater, specifically for the treated discharge points, is to be provided through the use of fill where necessary in accordance with Government policy and Section 7.1 of the Local Water Management Strategy;

- d. Allowance is to be made for the setting aside of an adequate land application area for the disposal of treated wastewater. Depending on the level of treatment proposed, this area may need to be unencumbered and have restricted access, such that people do not inadvertently come into contact with treated wastewater; and
- e. Sites within estuary catchments may require the use of nutrient-stripping ATUs and at subdivision stage, restrictions may be placed on title to limit the discharge of nutrients into the environment.

Guidance for requirements of ATU design is detailed in section 6.1 of the Local Water Management Strategy with relevant policies and guidelines summarised in section 1.3. Provision of a minimum clearance to groundwater from ATU discharge points (irrigation areas) is an inherent design requirement of all ATUs. Relevant clearance requirements for the site are detailed in Government policy and section 7.1 of the Local Water Management Strategy.

6.3.2 Effluent Sensitive Area

An 'Effluent Sensitive Area' is shown on Plan A - Local Structure Plan, which represents a 100m buffer between the edge of the wetland and any use which may have impacts on the wetland and related vegetation.

Nutrient-stripping ATUs are to be used within this area. Guidance for requirements of ATU designs is provided in Sections 1.3 and 6.1 of the Local Water Management Strategy.

At subdivision stage, restrictions may be placed on title to limit the discharge of nutrients into the environment.

6.3.3 Trade Waste

Industrial wastewater (trade waste) is to be treated or stored within lots and should not be discharged into the drainage network. Where storage is necessary, wastewater is to be removed from site and transported to an appropriate treatment facility.

Onsite industrial wastewater (trade waste) treatment plants should be designed and constructed in accordance with *Water Quality Protection Note 51: Industrial wastewater management and disposal*. Any proposed use that generates industrial wastewater is to provide details regarding the treatment and/or storage of the industrial wastewater (trade waste) as part of the development application.

6.4 Drainage and Stormwater run-off

As outlined in the Local Water Management Strategy, and in section 3.9.2 and Figure 13 of the Part Two: Explanatory Report, the general approach to drainage and stormwater run-off is as follows:

- a. Individual lot drainage and stormwater management - Surface water runoff from individual lots is to be managed in accordance with parts 8.1.1 to 8.1.3 inclusive and part 8.2.1 of the Local Water Management Strategy. Details of the proposed lot detention areas are to be submitted at the development application stage;
- b. A network of treatment and conveyance swales; and
- c. A series of flood storage areas.

6.4.1 Wash Down Areas

As the structure plan area is likely to attract land uses associated with freight and logistics, the development and management of hardstand areas needs to be managed to limit impact on the environment.

Surface water runoff from individual lots is to be managed in accordance with parts 8.1.1 to 8.1.3 inclusive and part 8.2.1 of the Local Water Management Strategy. Details of the proposed lot detention areas are to be submitted at the development application stage.

6.5 Roads

As notated on Plan A, only the portion of the "Loop Road" west of the intersection is to be constructed as part the delivery of LSP1. The balance of the road east of the intersection is to be constructed by others if/when necessary to service the land to the east of LSP1. The necessary road reserve to accommodate the "Loop Road" is to be ceded at first stage subdivision.

7.0 ADDITIONAL INFORMATION

Additional Information	Approval Stage	Consultation Required
Management Plans to be provided as necessary and in accordance with Part 3.1 'Management Plans' of Schedule 11 of TPS6.	Subdivision Approval	In accordance with Part 3.1 of Schedule 11 of TPS6.
Further Management Plans may be required in accordance with Part 4.3 'Management Plans' of Schedule 11 of TPS6.	Development Application	In accordance with Part 4.3 of Schedule 11 of TPS6.
A 'Landscaping Plan' to be provided for land within the 'Landscape Enhancement Area' to demonstrate compliance with Part 5.3.3 of this Local Structure Plan.	Development Application	N/A
A 'Key Cockatoo Habitat Tree Retention Plan' is to be provided to identify the trees to be retained and protected as part of subdivision works and/or development.	To accompany all subdivision and development applications	N/A



LEGEND

TOWN PLANNING SCHEME No. 6

ZONES

- General Industry
- Special Use

LOCAL RESERVES

- Conservation
- Drainage / Waterway

OTHER

- Structure Plan Boundary
- District Distributor Road
- Local Distributor Road
- Local Road
- MRWA Controlled Access Route for Oversize Overmass Vehicles
- 100m Effluent Sensitive Area (Refer Part 6.3.2)
- Landscape Enhancement Area
- Full movement intersection (unsignalised)

Notes:

1. Local roads are indicative only and subject to change and refinement at subdivision stage.
2. All road reserve widths, truncations, road cross sections and intersection treatments will be determined at subdivision stage.
3. The Structure Plan Map depicts the ultimate development scenario post completion of Tonkin Highway and the downgrading of the southern section of Great Northern Highway.



MUCHEA INDUSTRIAL PARK AMENDMENT 1

LOCAL STRUCTURE PLAN 1 PART TWO: EXPLANATORY REPORT

January 2021



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**MUCHEA INDUSTRIAL PARK
AMENDMENT 1
LOCAL STRUCTURE PLAN 1**

PART TWO: EXPLANATORY REPORT

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Traffic Analysis - WSP

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Appendix 1: Retail Needs Assessment

Appendix 2: Traffic Impact Assessment Addendum

Appendix 3: Original Traffic Impact Assessment (2015)

1.0 PLANNING BACKGROUND

1.1 Introduction and Purpose

Local Structure Plan 1 (LSP 1) for the Muchea Industrial Park (MIP) was approved by the Western Australian Planning Commission (WAPC) on 13 October 2017. LSP 1 is the overarching framework guiding the staged subdivision and development of approximately 150 hectares of industrial land. To date, the WAPC has issued subdivision approvals for the first two stages and development has significantly progressed. BP has constructed one of the largest roadhouses and truck stops in Western Australia and the vision for a strategic employment node in Muchea is being delivered. The proponent, Harvis, has constructed the first stage lots with the majority already sold. The MIP has generated significant momentum and as a result, attracted interest from parties seeking to invest in the MIP and deliver land uses that were not originally anticipated at the time LSP 1 was prepared.

LSP 1 was primarily expected to attract land uses requiring large laydown and storage areas associated with the resources sector. Whilst this is still the case, an opportunity has arisen to further diversify the range of land uses capable of occurring within the MIP in order to enhance the services and amenities available to workers. These services and amenities would also provide for local residents within the primary catchment as well as passing traffic on Tonkin Highway.

Whilst an element of 'shop' and 'retail' offerings has been planned within the broader Muchea Employment Node (MEN) from the outset, it has become apparent that these types of uses will be viable in the shorter-term. To investigate the matter further, Harvis commissioned the preparation of a Retail Needs Assessment (RNA) (refer Appendix 1). The RNA concludes that within the primary catchment of the MIP, there is currently unmet demand for an additional 925m² of shop / retail floor space. By the year 2031, the RNA estimates that unmet demand will increase to approximately 2,045m² of shop / retail floor space based on an expanding workforce population within the MIP combined with population growth within the primary catchment.

Amendment 1 to LSP 1 has been prepared to facilitate development of a local service centre at the entrance to the MIP in response to an identified demand for shop / retail services and other complimentary uses. A 2.1 hectare site has been selected that is anticipated to provide for up to 6,850m² of nett leasable area (NLA). This floor space is planned to accommodate up to 2,650m² of uses such as drive-thru fast food, fuel retail, medical services / consulting rooms, a small supermarket with a liquor offering as well as up to 4,200m² of service-based light industrial uses such as automotive repairs / parts and tyres. The specific site has been determined based on its strong locational attributes, both in the context of Harvis' MIP as well as the broader MEN. These include:

- High-level of exposure to Tonkin Highway enabling the capture of passing trade;
- Easy navigation for vehicles travelling on Tonkin Highway in both directions, with efficient and legible access provided to the site;
- Its location within the first stages of subdivision and development, allowing for delivery of the local service centre in the shorter-term. This will bring services and amenities to the MIP sooner and create additional jobs and investment up-front;

- Synergies with the existing BP Roadhouse on the opposite side of the 'Loop Road' that will combine to create a focal point at the entrance to the MIP, strengthening the node and assisting to define the precinct at the key access point to the broader MEN from Tonkin Highway; and
- It will service an immediate industrial catchment that is being developed as part of the first stages of the MIP. This will maximise the immediate customer base and provide services and amenities within immediate proximity of the first employment uses in the MIP.

This Part 2 - Explanatory Report explains and justifies the amendments to the Part 1 – Implementation Report and the LSP Map. It does not replace the previous Explanatory Report prepared in support the original LSP 1 (September 2017) rather, it forms an addendum and is supplementary to, the previous Explanatory Report and addresses only the proposed amendments.

Amendment 1 to LSP 1 is supported by the necessary technical reports as follows:

- Appendix 1: Retail Needs Assessment (Shrapnel Urban Planning) – demonstrates the need for the local service centre in Muchea and demonstrates the suitability of the proposed location;
- Appendix 2: Traffic Impact Assessment Addendum (WSP) – demonstrates that the anticipated increase in traffic volumes can be suitably accommodated via the planned network of roads and intersections; and
- Appendix 3: Original 2015 Traffic Impact Assessment (GTA Consultants) – provided for information purposes only and to be used as a point of reference when reading the Traffic Impact Assessment Addendum at Appendix 2.

1.2 Planning Framework

1.2.1 Strategic Planning Framework

Muchea Employment Node Structure Plan (August 2011)

Prepared by the WAPC and finalised in 2011, the Muchea Employment Node Structure Plan (MENSP) sets the high-level strategic framework for the planning of an employment node in Muchea. The MENSP has guided previous local scheme amendments and structure plans within the MEN that are in turn, coordinating the subdivision and development of the first stages of the MIP. With specific reference to the purpose of this amendment, the MENSP includes a list of land uses that are planned to occur within the MEN including indicative areas for these uses.

Table 1.1 of the MENSP outlines an indicative 'land use area split' for the MEN to the year 2030 based on a total demand for 596 hectares. The predominant land use typologies anticipated for the MEN were 'primary/rural' at 47% of the total land area, 'storage/distribution' at 24%, 'service industry' at 16% and 'manufacturing/processing/fabrication' at 9.5%. Whilst relatively minor by comparison, the MENSP also made provision for approximately 1.0 hectare of 'shop/retail' and 6.4 hectares of 'other retail' at 1% of the total area. Consistent with the planning for the MEN, this amendment to LSP 1 will provide for approximately 2,650m² of 'shop/retail' and 'other retail' floor space, delivering a range of uses intended to service employees of the MEN as well as local residents and passing trade on Tonkin Highway.

Shire of Chittering Local Planning Strategy (2019)

The Shire of Chittering's Local Planning Strategy (LPS) was finalised in 2019 and serves as the local strategic framework guiding land use planning across the Shire. The LPS was finalised after LSP 1 was approved and as such, includes specific objectives and strategies for LSP 1 as part of the broader MEN.

In terms of planning for industrial land uses, the key objective stated in the LPS is to:

“provide for and protect industrial land uses at strategic locations and limit ad-hoc industrial locations throughout the Shire”.

To achieve this objective, the LPS seeks to:

- *Make Muchea Industrial Park a focus for industrial development; and*
- *Promote and cater for a range of compatible uses within industrial zoned land and incorporate design features that address buffers and amenity, including fencing, vegetation buffers, open space and other compatible transition uses.”*

With specific reference to the MEN, the LPS identifies the following objectives:

- *Promote industrial development within the Muchea Industrial Park; and*
- *Respect the rural amenity and environmental values in the design and development of the Muchea Industrial Park.*

The second objective listed above has been suitably addressed through the preparation and approval of LSP 1, which identifies those areas of land capable of development and those with environmental values that warrant protection and management within local reserves. As the amendment covers an area previously identified for industrial development, on site environmental values are not a relevant consideration to the proposal.

In order to promote the MEN for industrial development, the LPS outlines the following relevant strategies and actions:

- *Maximise efforts to realise economic flow-on effects generated by State infrastructure projects, including Northlink; and*
- *Direct all future industrial development to the Muchea Industrial Park.*

The proximity of the proposed amendment site to Tonkin Highway (Northlink) is a critical factor in why this location for the local service centre has been chosen. The high-exposure and direct access provided by the MENs only interchange with Tonkin Highway provides an unrivalled opportunity for not only diversifying and enhancing the local amenities available for employees and travellers, it will increase the employment density within the MEN, attract business investment in the shorter-term and serve as a catalyst for further investment and business attraction. This ability for the amendment site to accommodate a local service centre in the short term stems directly from Tonkin Highway, thereby maximising the economic flow-on effects generated by State infrastructure, as strategised by the Shire's LPS.

Further elements of the LPS that support the proposed amendment that aren't specifically related to industrial land uses or the MEN are identified in terms of the more general provision of retail services and the economic opportunity that road infrastructure projects, such as the Tonkin Highway extension, provide. One of the key issues identified at clause 4.5.3 'Key issues summary' of the LPS in relation transport, is to explore the opportunities presented by Northlink (Tonkin Highway extension), whilst acknowledging the challenge that new transport routes present in terms of the Shire's existing retail services not capturing south-bound commuter traffic. The LPS also identified the likely economic impact that the Bindoon Bypass project will have on the Bindoon Townsite, with regional traffic no longer passing through Bindoon.

North-south regional traffic will however, directly pass the MIP as a result of the Tonkin Highway extension. Consistent with the opportunities and challenges identified in the LPS, the proposed local service centre will capitalise on the opportunity afforded by the recent completion of Tonkin Highway and ensure that the retail demand generated by passing trade is not leaked as a result of the Bindoon Bypass, but can still be captured within the Shire of Chittering.

The proposed amendment is consistent with the provisions of the LPS and is a timely response to the recent changes in the regional road network and the ongoing delivery of the MIP by Harvis.

Draft Muchea Industrial Park Structure Plan (October 2020)

Once adopted, the draft Muchea Industrial Park Structure Plan (MIPSP) will supersede the MENSP outlined above. The MIPSP is described as a reviewed and updated version of the MENSP in response to changes to the transport network, updates to the policy framework and the need to review the original economic assumptions that informed the MENSP.

With regards to the distribution of land uses, the MIPSP (similarly to the MENSP) acknowledges that a small proportion of floor space within the overall structure plan area will comprise 'other retail' and 'shop/retail' land uses, totalling approximately 2% of the total floor area within the MIPSP. The proposal to deliver a small proportion of shop/retail and service commercial uses at the main entrance to the MIPSP is therefore consistent with the direction of the draft MIPSP. In terms of distribution, the proposed location within the overall structure plan is considered highly suited given its exposure to Tonkin Highway, ease of access for both estate and regional traffic, its ownership structure and approval status.

The proposed site is covered by an approved subdivision application and is contracted for sale to a reputable and established developer who intends to purchase and develop the site, subject to standard conditions of sale. The delivery timeframe for the project is therefore short-term and will serve to stimulate further activity within the MIPSP and build on the momentum generated thus far.

1.2.2 Statutory Planning Framework

Local Planning Scheme No. 6

Harvis' MIP is zoned 'Industrial Development' under the Shire's Local Planning Scheme No. 6 (LPS 6). The primary objective for the 'Industrial Development' zone is to designate the land for future industrial development and employment creation purposes through the preparation and endorsement of structure plans. The MIP is also covered by the 'Muceha Employment Node Special Control' area which sets out the detailed reporting requirements and matters to be addressed at each stage of the planning process i.e. structure planning, subdivision and development.

Schedule 2 – Zoning Table of LPS 6 confirms that land use permissibility within the zone is to be in accordance with an approved structure plan. In order for a decision maker to assess and determine land uses at the development application stage, the structure plan needs to suitably accommodate the intended land uses through an appropriate zoning designation on the structure plan map.

Clause 4.9 of LPS 6 'Requirements for Industrial Zones and land Uses' will apply to future development proposals within the 'Industrial Development' zone, which includes the proposed local service centre. The most relevant provisions that will need to be addressed at the subsequent development application stage include the requirement to manage pollutants (if any) and on-site wastewater disposal.

Local Structure Plan 1

The proposed local service centre is currently designated 'General Industry' under LSP 1. The majority of land uses that are intended to occur within the local service centre such as 'shop' and 'fast food outlet' are not permitted within the 'General Industry' zone as per Table 2 of LPS 6. In order to provide certainty for future applicants and decision-makers alike, a structure plan amendment that assigns an appropriate zoning is required, as is proposed by this amendment.

Local Planning Policy No. 33 – Muceha Industrial Park Design Guidelines

All future development proposals within the MEN will be required to have due regard to the provisions of the Muceha Industrial Park Design Guidelines (the Guidelines), adopted as a local planning policy by the Shire of Chittering. The Guidelines establish a range of development standards such as building design, setbacks, landscaping and signage that will need to be considered in the preparation and assessment of future development applications.

State Planning Policy 4.1 – State Industrial Buffer Policy (SPP 4.1)

SPP 4.1 seeks to protect the long-term security of industrial land from encroachment by sensitive land uses. As such, SPP 4.1 is not applicable to the proposed LSP amendment as the range of land uses that are provided for within the Special Use Zone are not defined as sensitive land uses. The amendment will provide for employment-generating land uses only and does not propose accommodation of any type. As such, the potential for and need to manage land use conflict is not a consideration for this proposal. Notwithstanding, it is intended that the design response to the sites context within a broader General Industry precinct will respond appropriately, as discussed in further detail under section 3.1 below.

1.2.3 Pre-lodgement Consultation

The following stakeholders and agencies were consulted in the preparation of this amendment:

- The Shire of Chittering; and
- The Department of Planning, Lands and Heritage (DPLH).

No fundamental issues were raised during the pre-lodgement consultation. The DPLH recommended that potential alternative locations be investigated for the local service centre based on traffic and access considerations. The locational attributes that have informed the site selection of the local service centre are discussed in the section 1.1 above and 3.0 below.

2.0 AMENDMENT PROPOSAL

As outlined above, the current LSP 1 Map identifies the proposed local service centre as 'General Industry'. Land use permissibility is therefore in accordance with the 'General Industry' column of the LPS 6 zoning table however, many uses that are intended to occur are not capable of approval within the 'General Industry' zone. The zoning designation on the structure plan map therefore requires amending to provide certainty regarding the intended land use outcomes. The primary purpose of this amendment is therefore to change the zoning designation on the LSP Map for the local service centre, with other minor changes proposed to reflect the more recent subdivision approvals.

As LPS 6 does not have a suitable 'standard' zoning for a local service centre (or similar), an alternative zoning approach is proposed. Specifically, a 'Special Use' zone will be identified on the LSP Map with a corresponding land use table inserted into the Part 1 – Implementation report. The 'Special Use' table prescribes a list of land uses that are suitable and desirable for a local service centre that is proposed on the periphery of an industrial estate and is also adjacent a primary regional road that accommodates significant regional traffic. The 'Special Use' zone provides an opportunity for a more discreet, tailored approach to the land use planning for the site, as compared to a standard zoning approach. At ultimate development, it is expected that the local centre will comprise up to approximately 2,650m² of shop/retail NLA and approximately 4,200m² of service industry-type uses.

In addition to the primary purpose of the amendment i.e. to provide for a local service centre at the entrance to the MIP, there are a number of minor modifications proposed in response to the subdivision design and approval process that has occurred since LSP 1 was approved. These are summarised as follows:

- The east-west road (Canaveral Way) adjacent the northern boundary of the proposed 'Special Use' zone and running parallel to the 'Loop Road' has been straightened to provide a more regular lot shape for the local service centre;
- The small 'Drainage' reserve in the north-west corner of the 'Conservation' reserve and adjacent the 'Loop Road' has been deleted consistent with the approved Urban Water Management Plan;
- 'Plan B – Access Staging Plan' has been deleted in its entirety as it is no longer relevant post-construction of the Tonkin Highway extension and the associated interchange connection with the MIP; and
- The location of Main Roads WA's (MRWA) 'Controlled Access Route' for oversize overmass vehicles has been identified on the western boundary LSP 1 based on MRWA's controlled network which was confirmed as part of the initial subdivision for Stage 1.

The minor modifications listed above do not necessitate changes to the text within the Part 1 – Implementation report, with the changes limited to the LSP Map.

3.0 PLANNING CONSIDERATIONS

The following sections explain and justify the proposed amendment and are limited to the planning matters relevant to the proposed local service centre. Matters that have already been addressed through the preparation of the original Part 2 - Explanatory Report (September 2017) that are not affected by the proposed amendment are not discussed as part of this report.

3.1 Local Service Centre – Size and Composition

The amendment proposes to enable development of a 2.1 hectare site as a local service centre providing amenities for workers within the MEN as well as regional traffic travelling along Tonkin Highway and local residents within the catchment. The 2.1 hectare gross site area is estimated to comprise up to 2,650m² of shop/retail floor space and 4,200m² of compatible service-commercial and industry - service businesses at full development.

Development of the local service centre is likely to be staged to match the gradual increase in demand for shop/retail offerings. Whilst the first stage will be delivered in the short-term, future expansion up to the anticipated ultimate floor space amount is likely to occur sequentially based on the following growth factors:

- The increasing size of the MEN workforce over time, which is expected to continue to grow even once the proposed local service centre is built-out;
- The relocation of the Road Train Assembly Area to the MRWA site directly adjacent to the MIP;
- An increase in traffic numbers along Tonkin Highway; and
- An increase in the residential population within the primary catchment of the proposed local service centre.

3.1.1 Retail Needs Assessment

An RNA has been prepared by retail consultant Shrapnel Urban Planning and forms Appendix 1 to this report. The key findings of the RNA are summarised as follows:

- Even without development of the MEN and the associated workforce population, there is currently an unmet demand for an additional 925m² of shop/retail floor space within the primary catchment based on the existing resident population;
- To the year 2031, growth of the MEN workforce combined with resident population growth within the primary catchment will create an estimated unmet demand for retail / shop floor space of approximately 2,045m²;
- Demand will continue to increase beyond 2031 as the MEN workforce and local resident population continues to grow such that in the longer-term, additional centres may be warranted within the MEN; and
- The proposed site for the local service centre is the most suitable location within the MIP, given its high visibility, 'gateway' access into the first stage of development within the MIP, its ability to complement other uses within the MIP and its ease of access for employees entering and leaving the MIP via the loop road.

Based on the findings of the RNA, a first stage development for approximately 925m² of retail/ shop floor space is considered viable, with additional floor space to accommodate other complimentary service-commercial and industry – service land uses. Whilst the shop/retail floor space technically includes drive-thru fast food uses, it is anticipated that a substantial portion of demand for these uses will be generated by passing trade in addition to the resident and workforce population numbers. As such, it may be feasible that 925m² of shop/ retail floor space is warranted in addition to any drive-thru fast food uses however, this will be at the discretion of the proponent.

3.2 Land Use Permissibility

Table 2 – Special Use Zone within the Part 1 – Implementation report provides a list of permitted land uses for the local service centre that are informed by the following key objectives:

- Provide services and amenities for employees within the MIP and broader MEN and alleviate the need to travel for daily shopping needs and personal services;
- Provide food offerings and a respite destination for drivers / vehicles travelling north-south on the regional road network;
- Provide convenient access to a wide range of retail offerings for north-south regional traffic and capture retail expenditure within Muchea and the Shire of Chittering in order to minimise leakage;
- Encourage and facilitate complementary uses that allow for multi-purpose trips to the centre;
- Allow for land uses that have synergies with, and support the MRWA Road Train Assembly Area (RTAA) and other industrial uses within the MEN;
- Avoid and minimise the potential for land use conflict by not permitting land uses that may be incompatible with industrial uses in close proximity;
- Orientate retail uses that require higher-levels of exposure towards Tonkin Highway and the loop road and provide for industry – service uses further from Tonkin Highway to assist management of the interface with the adjoining General Industry lots; and
- Not permit any sensitive-land uses that have the potential to conflict with the General Industry-zoned land to ensure that industrial uses are not compromised by competing land uses.

3.3 Design Considerations and Interface with Industrial Uses

The detailed design of the proposed local service centre will be undertaken by the future owner of the site. Given the size of the site and the fact that it is covered by an existing subdivision approval, there are no constraining factors that would preclude development of the site as proposed by this amendment. As with all development sites, there are certain attributes that will necessitate a design response and should inform future detailed designs. These are summarised as follows:

- Access to the site is restricted in certain locations based on the outcomes of subdivision approval reference WAPC 155948. These access restrictions will be placed on the title of the proposed 2.1 hectare local service centre lot and are identified on the 'Design Principles Plan' (refer Figure 1). As demonstrated by the Design Principles Plan, the site can comfortably accommodate legible and unfettered access / egress notwithstanding the access restrictions;
- Uses that are expected to benefit most from the high exposure to Tonkin Highway, such as drive-thru fast food and a potential service station, will naturally gravitate to the western boundary. Internal traffic and circulation areas will need to accommodate visitor movement for these uses; and
- The adjoining, undeveloped lots to the east and north will remain zoned 'General Industry' under LSP 1. Whilst the land uses capable of occurring within the proposed Special Use Zone are not 'sensitive land uses' and do not warrant any particular buffer or management response, it is preferable and intended that the shop/retail uses that provide customer amenities such as food, beverage and convenience shopping will avoid orientating towards General Industry zoned land. As depicted on the Design Principles Plan, shop/retail uses should orientate towards the southern boundary where they are visible for wayfinding purposes and will be easily accessible to customers of the BP Roadhouse.

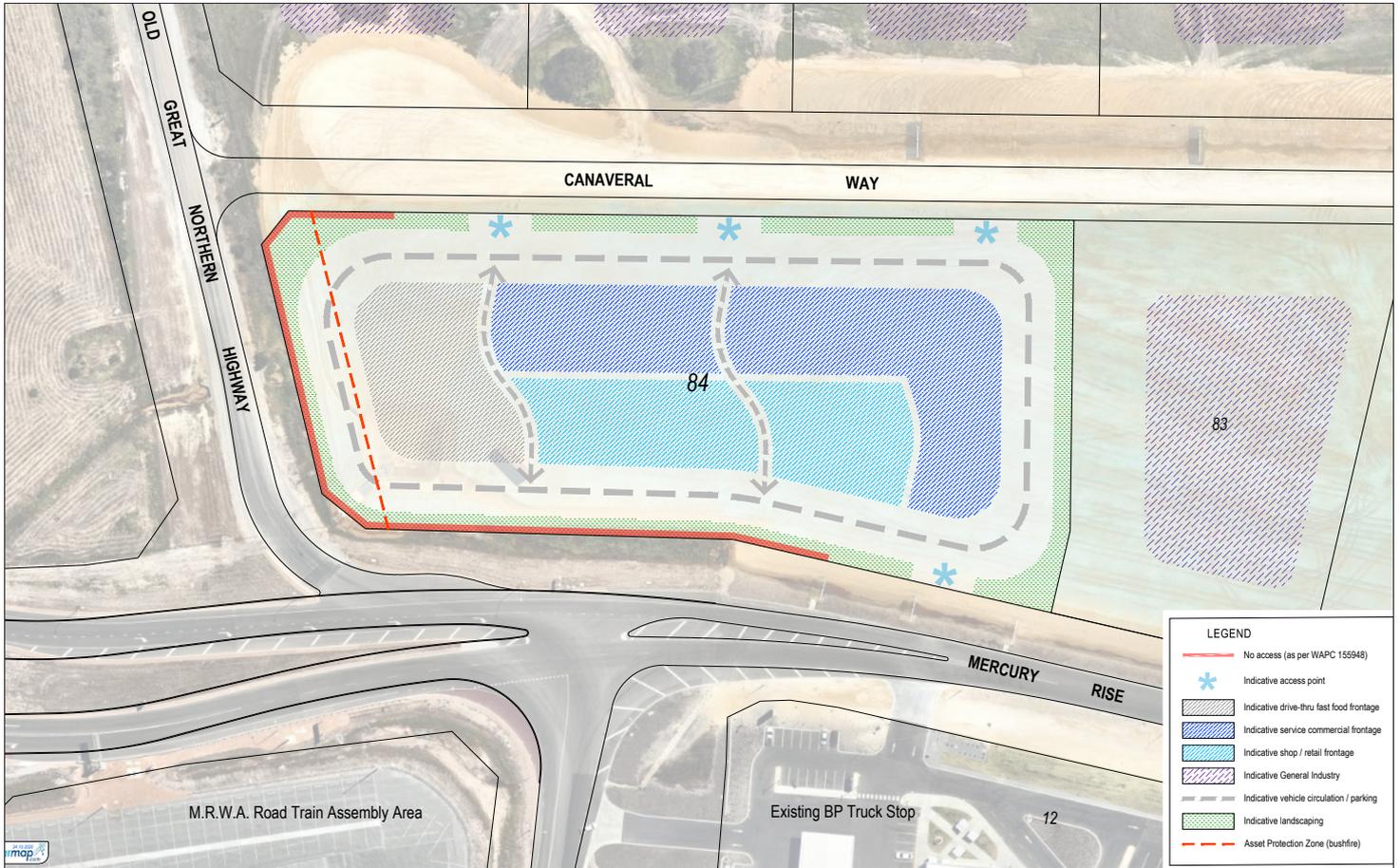


Figure 1 - Design Principles Plan

3.4 Movement Network

An addendum to the original Traffic Impact Assessment (TIA) has been prepared to support the proposed LSP amendment (refer Appendix 2). The primary purpose of the TIA Addendum is to identify any changes in traffic volumes that are expected to result based on the anticipated land uses within the local service centre. This is compared to the traffic volumes modelled under the original TIA based on the anticipated industrial uses (refer Appendix 3 – Original TIA). The TIA Addendum considers other factors not directly related to the purpose of this amendment, such as the opening of Tonkin Highway which was planned, but not constructed, when the original TIA was prepared, as well as other minor changes to the road network that were approved as part of the initial subdivision applications.

The addendum to the TIA confirms that a relatively minor 16% net increase in daily traffic volumes is expected to occur as a result of the proposed local service centre. This is considered a conservative assumption, as the TIA Addendum models 3,150m² of shop / retail floor space by 2031 whereas the RNA and in turn, this LSP Amendment, plan for approximately 2,650m² of shop / retail floor space. Having assessed the ability for the previously planned network of roads and intersections to accommodate this 16% increase in traffic volumes, the TIA Addendum concludes that all roads will function satisfactorily as per their original cross sections and reserve widths detailed in the original TIA. All intersection treatments and geometry as planned and in some cases, constructed, remain suitable and do not require modifications or upgrading as a result of this proposal.

3.4.1 Vehicle Movement and Circulation

For the purpose of the TIA Addendum, it was assumed that all external in-bound traffic will access the local service centre site via a left-in driveway from Mercury Rise. The location of this driveway is capable of achieving the necessary separation distance from the Tonkin Highway interchange established by the conditions of subdivision approval WAPC 155948. Specifically, condition 11 of WAPC 155948 prohibits access to and from Mercury Rise within approximately 145 metres of the western boundary (old Great Northern Highway alignment) of the site. Accordingly, the proposed local service centre has a suitably wide southern frontage (approximately 205 metres) so as to accommodate a Mercury Rise driveway that achieves the necessary separation from the interchange.

Vehicles exiting the local service centre will do so onto Canaveral Way before heading east and then south, back onto Mercury Rise. The TIA Addendum has assessed all intersections based on the increased traffic volumes associated with this movement and determined that they do not require modification or upgrading.

3.4.2 Other Intersections

In addition to the above, the TIA Addendum also considers changes to two MIP intersections that are not related to the local service centre the subject of this amendment. These changes are summarised as follows:

1. The Mercury Rise 'full movement' intersection shown on the LSP Map has been constructed as a 90 degree corner, consistent with its current role providing access to the MIP lots. If and when Mercury Rise is extended to the east by others, further scenario testing will be required to determine whether any additional intersection controls will be required. The TIA addendum however, confirms that the current intersection will function satisfactorily at full development of the MIP.
2. The original LSP (Plan B – Access Staging Plan) proposed a left in / left out (LILO) intersection for the section of GNH that intersects with the Tonkin Highway interchange. Through the subdivision process for Stage 1 of the MIP, MRWA confirmed that this short length of GNH would not be accessible to the public. It was designed and constructed as a restricted access road for 'high wide loads' using GNH. The TIA addendum considers the removal of this intersection and confirms that redistribution of local traffic that may have used this intersection can be accommodated on the broader network without consequence. The LSP 1 Map has been updated to show this restricted access route to provide clarity and certainty for proponents and decision-makers.

3.5 Other considerations

3.5.1 Bushfire

A Bushfire Management Plan (BMP) was prepared and approved as part of the subdivision approval for Stage 1 of the MIP where the proposed local service centre is located. The Bushfire Attack Level (BAL) Contour Plan prepared in association with the BMP identified the western portion of the proposed local service centre is affected by a bushfire hazard (refer Figure 2 – BAL Contour Plan). In order to manage this potential bushfire hazard, the BMP identifies a 13m wide Asset Protection Zone (APZ) where no buildings will be constructed. The APZ can be easily accommodated under the proposed development scenario for the local service centre as the 13m area adjoining the western boundary will be developed for landscaping (low bushfire threat), car parking and vehicle circulation. This design response will effectively manage the potential bushfire threat and bushfire does not constrain development of a local service centre.

3.5.2 Drainage

An Urban Water Management Plan (UWMP) has been prepared and approved over Stage 1 of the MIP which includes the proposed local service centre site. Development of the site as facilitated by this amendment will implement the drainage strategy outlined in the UWMP, specifically:

- A bio retention area within a larger lot detention area will be provided on site to treat and retain minor stormwater events. The location of the lot detention area is expected to coincide with the low-point of the site in the south-west and/or north-west corner(s);
- Major events will be detained within the local detention area to maintain the pre-development flow rates before discharging into the road side conveyance swales constructed as part of subdivisional works; and
- Conveyance swales adjoin the southern and western boundaries of the site and will allow for onsite surface water to be discharged into a western or southern direction, depending on final earthworks and site design.

3.5.3 Environmental Considerations

As previously stated, subdivision approval has been granted for Stage 1 and subdivisional works, including earthworks, have been undertaken in accordance with the approved engineering drawings. All environmental matters have been addressed as part of previous planning processes and the proposed local service centre site is unconstrained by environmental factors.

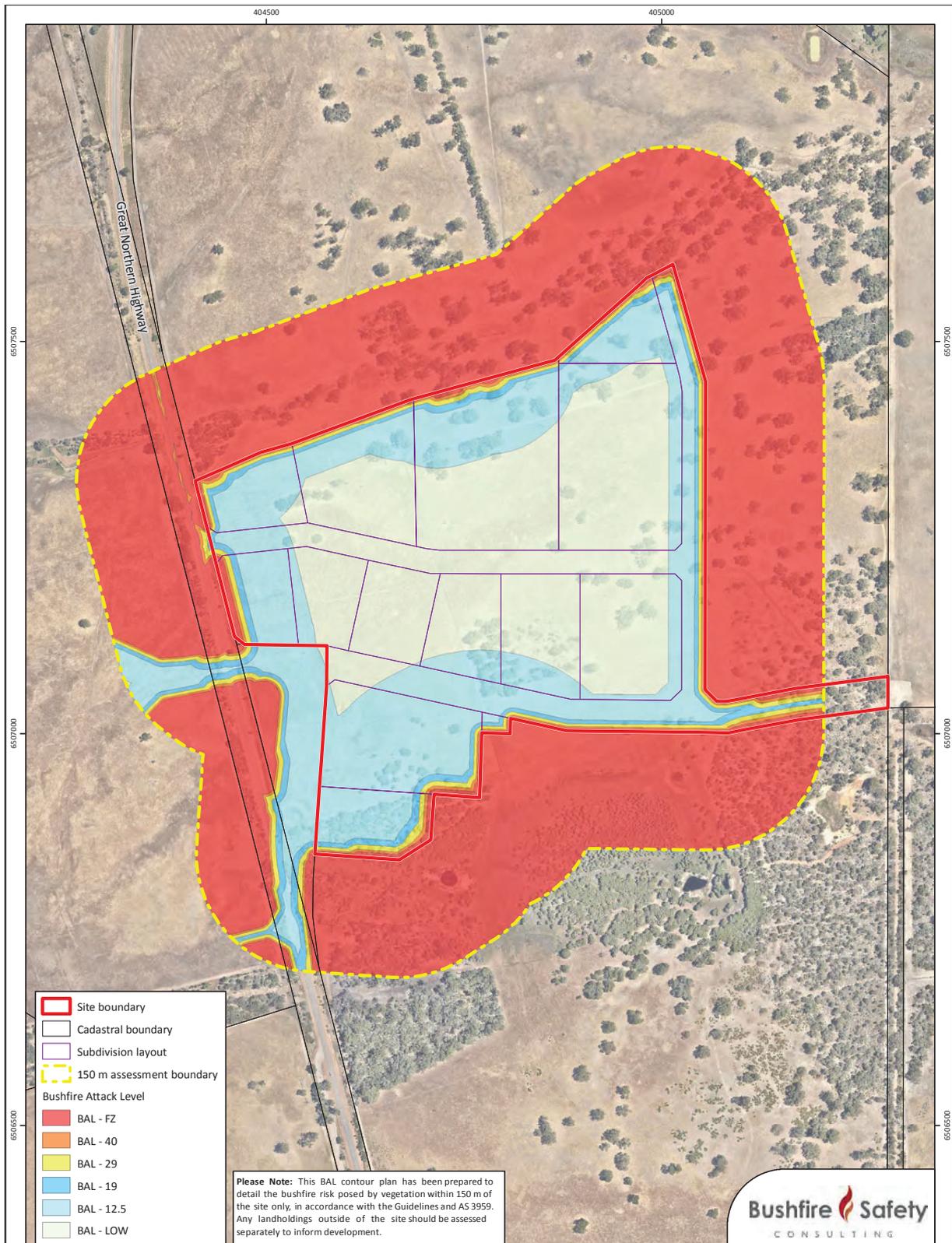


Figure 2 - BAL Contour Plan

Source: Bushfire Safety Consulting

3.5.4 Infrastructure Servicing

A connection to a potable water supply and an underground electricity supply is required through standard subdivision conditions and will be delivered as part of subdivisional works prior to the title for the local service centre being created.

Wastewater treatment will occur on-site using secondary treatment systems with nutrient removal in accordance with the subdivision approval. The site is not within the 'effluent sensitive area' identified on the LSP Map. At 2.1 hectares in area, the local service centre site is suitably sized to allow for onsite treatment to occur. Details and specifications (including irrigation areas) for the treatment of effluent on-site will need to be provided as part of the development application in accordance with clause 6.3.1 of the LSP and the approved UWMP.

APPENDICES

- Appendix 1: Retail Needs Assessment
- Appendix 2: Traffic Impact Assessment Addendum
- Appendix 3: Original Traffic Impact Assessment (2015)

APPENDIX 1

Retail Needs Assessment

Muchea Industrial Park LSP 1 Amendment

Proposed Special Use Zone Retail Needs Assessment

December 2020

SHRAPNEL URBAN PLANNING

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SUMMARY AND CONCLUSIONS

CLE Town Planning + Design, on behalf of Harvis Capital Pty Ltd is proposing an amendment to the Shire of Chittering's Muchea Industrial Park Local Structure Plan 1, which proposes, amongst other things, to create a 2.1 hectare Special Use zone for the purpose of establishing a commercial services activity centre at the main entrance into the Industrial Park's first stage of development.

It is intended that this facility will evolve into a useful and convenient complement to the Industrial Park, accommodating a range of complementary business, community and retail services. The purpose of this Retail Needs Assessment is to assess the potential for the proposed retail services.

An analysis of the nature and role of existing retail floorspace in the towns within a defined study area indicated that the quantity of Shop/ Retail floorspace provided in the study area is relatively small and provides only a Neighbourhood/ Local level of retail service provision to the local population. Only about 20% of the study area's household retail expenditure potential is spent in the study area.

This is unsurprising given the relatively small population in the study area and its reasonable level of access (for a rural community) to Metropolitan Perth. The study area's retail floorspace provision is, however, unevenly spread in relation to the population, and is particularly poor within the Primary study area component, which is focussed on Muchea.

Accordingly, this assessment finds that there is a compelling rationale for facilitating the development of additional local-serving retail floorspace within the Primary study area, with Muchea itself being the obvious location. The proposed commercial services activity centre Special Use site provides an excellent opportunity for this to occur, while also catering for various other future needs of the businesses and employees that will populate the Industrial Park over coming decades.

After assessing:

- The household retail expending potential of study area households;
- The existing shortfall of available Shop/ Retail floorspace in the Primary study area;
- Study area population and population forecasts; and
- Estimates of the potential retail spending contribution of the future employees in the Industrial Park and Employment Node over time;

it is concluded that:

- There is a current unmet demand for an additional 900 sqm of Shop/ Retail floorspace in the Primary study area;
- Based on a conservative Primary Study Area population forecast and a plausible Industrial Park employment forecast, the demand for Shop/ Retail floorspace in the proposed services centre is estimated to potentially reach 2,640 sqm by 2031, and 3,795 sqm by 2041;
- The employee estimates beyond 2031 apply to the wider Employment Node as a whole , as well as the Industrial Park. Therefore, in the longer term, some or all of the estimated Shop/

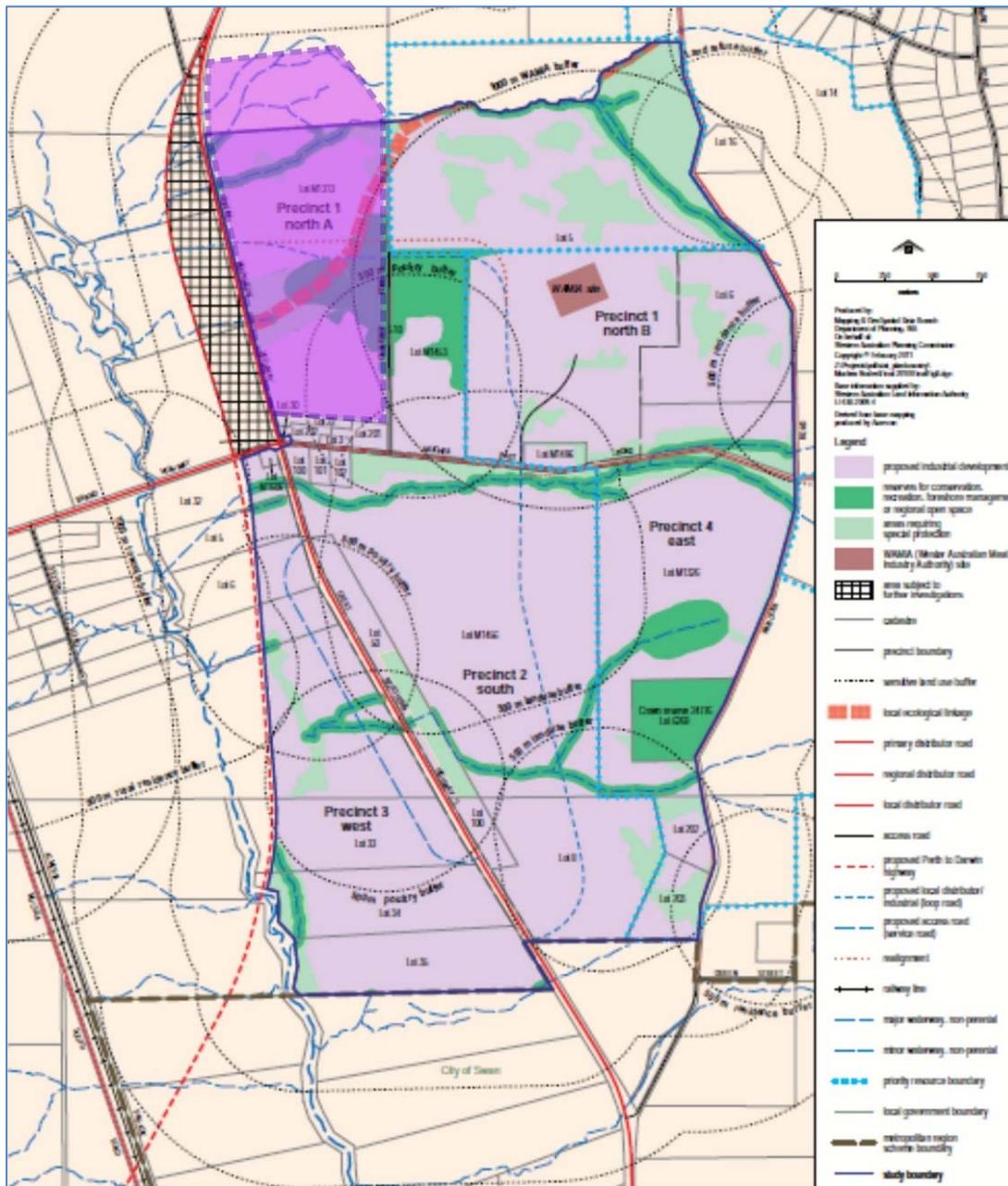
Retail floorspace demand beyond 2031 will probably need to be satisfied within one or more other convenience retail outlets within the wider Employment Node;

- Although there will certainly be some percentage of non-local “passing traffic” that will stop at the proposed services centre and use the available facilities there, at this stage it is not possible to reliably assess the potential extent of this patronage prior to the establishment of at least the first stage of Shop/ Retail development in the Industrial Park;
- Assuming the Shop/ Retail component of the proposed service activity centre settles at 2,500 - 2600 sqm by 2031, it is likely that the overall site area needed for this component would be in the vicinity of 7,000 sqm (due mainly to parking and access requirements), leaving approximately two-thirds (14,000 sqm) of the overall Special Use site area left for the establishment of other potential service activity centre uses.

INTRODUCTION

CLE Town Planning + Design, on behalf of Harvis Capital Pty Ltd is proposing an amendment to the Shire of Chittering’s Muchea Industrial Park Local Structure Plan 1. The area the subject of the proposed amendment is a relatively small section (approximately 150 ha) of the much larger Muchea Employment Node. The Employment Node is approximately 1,167 ha in area, some 693 ha of which is destined for future industrial development after allowing for retention of conservation and other protected areas (Figure 1).

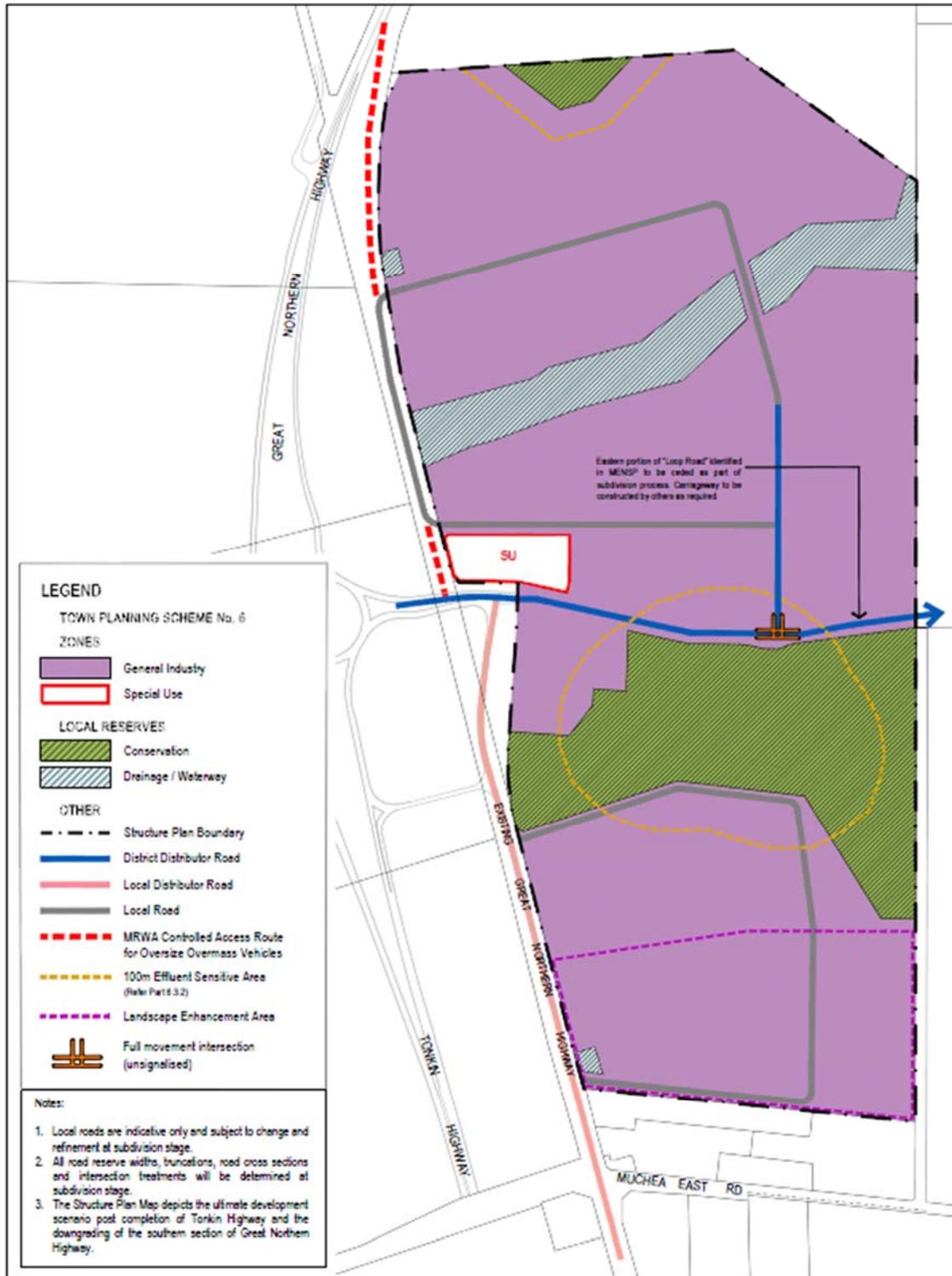
Figure 1 Muchea Industrial Park (darker purple) within the wider Muchea Employment Node context



The amendment to Local Structure Plan 1 proposes, amongst other things, to create a 2.1 hectare Special Use zone for the purpose of establishing a commercial services activity centre at the main

entrance into the Industrial Park’s first stage of development (Figure 2). The services activity centre is intended to evolve into a highly useful and convenient complement to the Industrial Park, which will increase its attractiveness to developers and businesses.

Figure 2 Proposed Special Use zone within the Industrial Park context



The location of the Special Use site is considered to be the most appropriate for the proposed services centre given the site’s highway visibility and outstanding “gateway” access into the first development stage of the Industrial Park (Figure 3). No other site in the Industrial Park is regarded as suitable for the services centre, given the scope of the potential complementary land uses envisaged and the necessary ease of access for industrial area employees entering and leaving the Industrial Park. Indeed, it was the site’s outstanding location that ignited commercial interest in establishing the proposed services centre in the first place.

Figure 3 Special Use site in local context



Rationale for the Special Use Zone

Due to its locational qualities, the proposed Special Use site is unique, and possesses an inherently higher and better land use potential than the other industrial-zoned lots that are to be established throughout the Industrial Park. Comprehensive development of the Industrial Park, which is assured given its location and major transport/ logistics role within WA’s economy, could possibly be complete, or close to completion, by 2031¹.

That assessment is supported, not only by the future potential of the Industrial Park as a whole, but on the well-recognised significance of the Muchea Road Train Assembly Area (RTAA) and its location at the confluence of several important transport routes. Fairly rapid development expectations for the Industrial Park are therefore understandable and emphasise the necessity for securing the proposed Special Use site as soon as practicable in order for it not be snapped up early for a use or

¹ Source: Harvis Capital Pty Ltd; 2020.

uses that may, in the longer run, not fully utilise the potential access and economic benefits of this unique site. Some examples of potential uses envisaged for the Special Use site are:

- Specialised and/ or high-tech service businesses that would benefit from the Industrial Park location but require only relatively small premises (e.g. a veterinary supplies centre).
- Vehicle and other machinery parts, service, sales and repair facilities which could serve not only the Industrial Park, but the wider Employment Node as a whole.
- Multi-purpose industry-focussed rentable office/ meeting/ conference facilities.
- A childcare centre for the regular daily use and benefit of Industrial Park employees.
- Various *suitable* light industrial and service commercial uses requiring relatively small sites.
- A range of food, beverage, fast-food, indoor dining and (potentially) other types of retail services (e.g. a small supermarket) established to cater for the convenience needs of:
 - employees working within the Industrial Park’s various industries and transport/ logistics operations,
 - local residents within the surrounding district, who are very poorly catered for in this regard at present, and
 - passing travellers.

As will be demonstrated in this report, it is intended that the proposed services activity centre will fulfill several necessary purposes, including provision of much needed additional local/ neighbourhood-level retail services to the local resident population, which is currently lacking in such services. This particular role is one of the reasons the planning framework is proposed to accommodate the services centre within an obviously purposeful Special Use zone which, although it complements the Industrial Park’s main purpose, is not part of the “General Industry” zone itself.

Retail Needs Assessment

It is the proposal for retail uses, within the larger suite of other potential services in the Special Use zone, which is the main reason for this Retail Needs Assessment. The potential for some level of retail services provision in the Muchea Employment Node has been envisaged by the WAPC since planning for it commenced more than a decade ago. A retail component is also still envisaged in the WAPC’s current (2020) update of its original 2011 Employment Node structure plan.

Until now, however, the previously recognised potential for retail services in the Muchea Employment Node has been expressed in very general terms and has not previously advanced to the point of identifying a specific location for some of the anticipated retail facilities. This report therefore aims to:

- Confirm the potential need and prospects for the provision of an appropriate range of future retail and other service commercial services within the proposed Special Use site.
- Assess the potential scope for, and appropriate timing of such services.

Terminology

The following terms may be used in this report:

Retail in its non-technical, common sense meaning is used frequently in the interests of readability.

Shop/ Retail (SHP) – Planning Land Use Category (PLUC) 5 – specifically refers to one of two Retail categories defined by the WAPC (see SPP 4.2 for details) and includes virtually all retail activities normally found within shopping centres. It *excludes* many of the uses normally referred to as “bulky goods” retail but does include some potentially bulky items such as household appliances.

Other Retail (RET) – Planning Land Use Category (PLUC) 6 – is the other specific Retail category defined in detail by the WAPC. It mostly includes outlets for those retail uses normally referred to as “bulky goods” (e.g. furniture, floor coverings, etc), but also includes hardware. Other Retail precincts often also include one or more fast food outlets, even though these are currently classified as “Shop/ Retail” by the WAPC.

Total Retail specifically refers to Shop/ Retail plus Other Retail.

Net Lettable Area (NLA) in square metres is the unit of measurement for all retail and other commercial floorspace. It includes all internal floorspace except stairs, toilets, lift shafts and motor rooms, escalators, tea rooms and other service areas, lobbies, and areas used for public spaces or thoroughfares². Note that non-public storage areas within large shops (such as supermarkets) are generally not classified by the WAPC as “Shop/ Retail” NLA, but as “Storage” NLA.

Retail Needs Assessment (RNA): The study sometimes required under Clause 6.2.2 of SPP 4.2 to estimate the retail needs and indicative distribution of retail floorspace across the activity centres in a local government area; and to guide the preparation of district and activity centre structure plans.

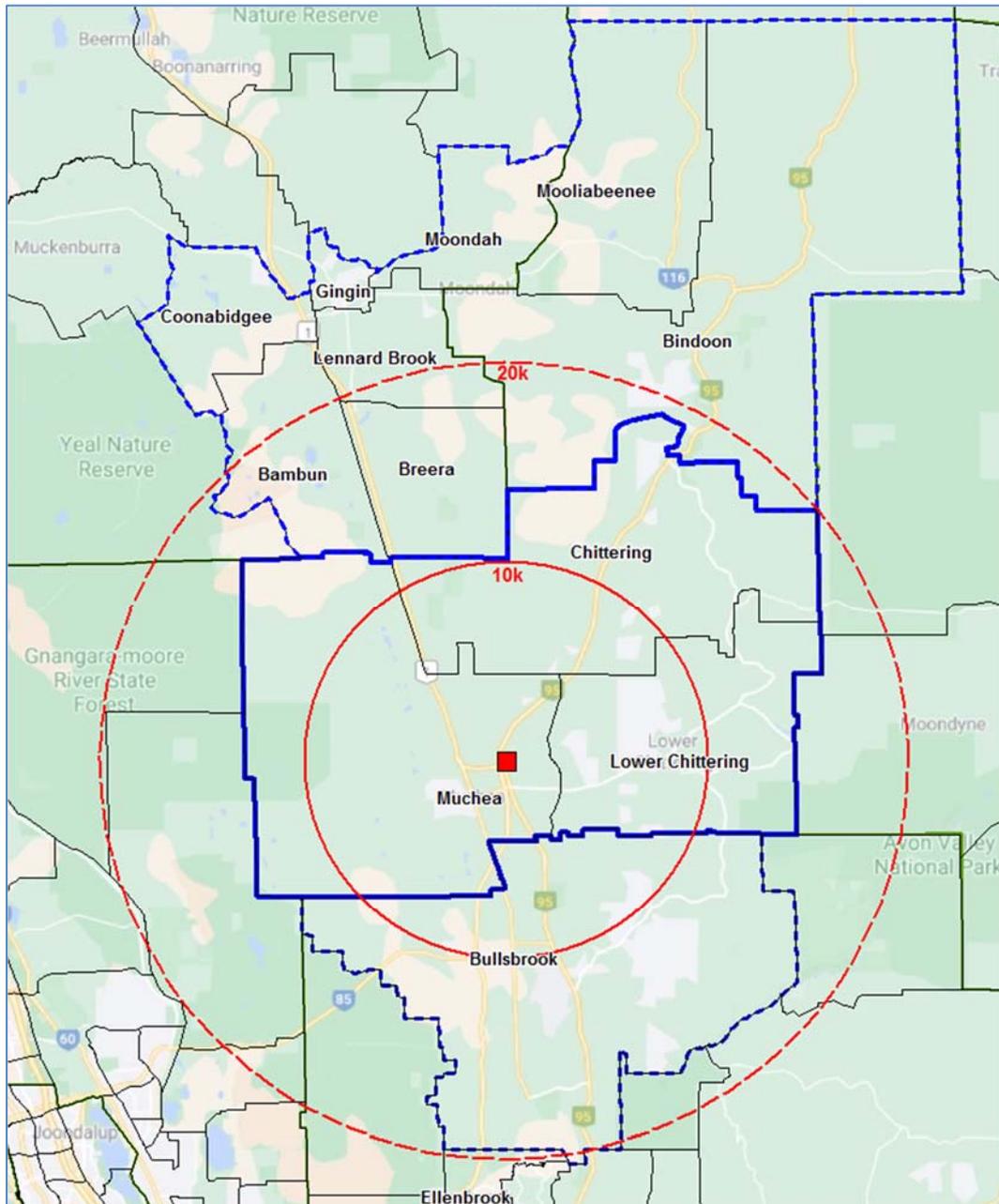
² The related term Gross Leasable Area (GLA) includes these things.

RETAIL NEEDS ASSESSMENT

Study Area

The study area defined for the purposes of this assessment is presented in Figure 4. It comprises a “Primary” area (solid blue line) which contains the Muchea, Chittering, and Lower Chittering “State Suburbs”, which are the populated rural areas most likely to benefit from any additional retail services at Muchea. Two secondary or “Frame” areas have also been defined – one north of the Primary area and other south (both dashed blue lines).

Figure 4 Defined Study Area showing named State Suburbs



The overall study area is comprised of 12 ABS State Suburbs (names indicated in Figure 4) – three in the Primary area, one in the southern Frame area and the rest in the northern Frame area. The red square in Figure 4 marks the location of the proposed Special Use site at Muchea, while red circles

define the 10 and 20 km radii around the Special Use site. State Suburbs were selected as the most relevant sources of population data for this assessment, being the most useful in area.

Relevant Towns

The towns within the defined study area currently serving most of the local retail needs of the study area population and travellers through the area, are:

- Gingin (about 25km NNW of the SU site)
- Bindoon (about 23km NNE of the SU site)
- Muchea (town site about 2km SW of the SU site)
- Bullsbrook (10km South of the SU site).

The commercial centres within each of these towns were surveyed for the purposes of this assessment and the quantity and quality of retail floorspace estimated. Shop/ Retail (PLUC 5) and Other Retail (PLUC 6) floorspace has been estimated separately.

Gingin Town Centre

Gingin is a small, pleasant town centre located about 3.5 kilometres (by car) to the east of the Brand Highway. It is therefore primarily a local service centre with an independent non-chain supermarket. Estimated retail floorspace in the Gingin town centre is:

- Shop/ Retail: 1,350 sqm;
- Other Retail: 870 sqm;
- Total Retail Floorspace: 2,220 sqm



Bindoon Town Centre

Bindoon town centre, which accommodates the Shire of Chittering offices, is an attractive and well-maintained retail and other commercial services centre which caters for tourists as well as local residents. Amongst other things it contains an IGA supermarket, large hardware outlet and a popular café/ restaurant.

Construction of the extensive Bindoon By-pass is scheduled to start within a few months and will very likely have some negative impact on Bindoon tourist visitation. Current estimated retail floorspace in the Bindoon town centre is:

- Shop/ Retail: 2,500 sqm;
- Other Retail: 1,000 sqm;
- Total Retail Floorspace: 3,500 sqm



Muchea

Muchea, the main focus of this assessment, is a small low-density settlement accommodating a population of 759 persons living within 282 dwellings. Muchea's only Shop/ Retail outlet at the moment is a small IGA store incorporating a post office, with Mobil service station attached. There is also a rural supplies store on the eastern side of the IGA. The new BP service station to the immediate south of the proposed Special Use site now also provides some new Shop/ Retail

floorspace in the form of fast food provisions and a sit-down café/ lunch area. The current estimated overall retail floorspace in Muchea is:

- Shop/ Retail: 600 sqm (includes 200 sqm in new BP service station near RTAA);
- Other Retail: 350 sqm;
- Total Retail Floorspace: 950 sqm.



Bullsbrook

Bullsbrook town centre is about 10 km south of Muchea and is regarded as a somewhat higher-order centre than those in the other study area towns discussed above. While it is larger in some respects than the other town centres, its Shop/ Retail offering is still just that of a relatively small neighbourhood centre. It would therefore serve its well-populated hinterland for mainly neighbourhood/ local needs. Muchea residents would, in all likelihood, also use it more frequently for much of their “local” shopping due to the modest offering in their own local facilities, and Bullsbrook’s relative proximity compared to the other study area town centres to the north. The Current estimated retail floorspace in the Bullsbrook town centre is:

- Shop/ Retail: 1,800 sqm;
- Other Retail: 1,600 sqm;
- Total Retail Floorspace: 3,400 sqm.





Summary of existing retail floorspace in study area towns

Table 1 summarises the estimated retail floorspace in each of the towns listed above. The lower section of the table presents an estimate of the approximate annual turnover of the Shop/ Retail and Other Retail components of the floorspace.

Table 1 Retail floorspace in selected towns/ Indicative annual Shop/ Retail turnover estimate (2020)

Retail Floorspace	Gingin	Bindoon	Muchea	Bullsbrook	Total
Shop/ Retail (sqm)	1,350	2,500	600	1,800	6,250
Other Retail (sqm)	870	1,000	350	1,600	3,820
Total Retail (sqm)	2,220	3,500	950	3,400	10,070
At assumed annual turnover per sqm of...					Ave
Shop/ Retail floorspace	\$4,000	\$6,000	\$3,000	\$6,000	\$5,280
Other Retail floorspace	\$2,000	\$2,500	\$1,500	\$2,500	\$2,295
Average (total retail)	\$3,216	\$5,000	\$2,447	\$4,353	\$4,147
Annual retail turnover within the centres would be in the order of...					
Shop/ Retail (\$million)	\$5.40	\$15.00	\$1.80	\$10.80	\$33.00
Other Retail (\$million)	\$1.74	\$2.50	\$0.53	\$4.00	\$8.77
Total turnover/ annum (\$million)	\$7.14	\$17.50	\$2.33	\$14.80	\$41.77

It should be noted in Table 1 that, although the retail floorspace area estimates are considered to be reasonably accurate, the dollar turnover per square metre estimates are based on site observations, on-line searches of asking rents for commercial properties in the study area, plus industry knowledge and experience. The accuracy of these estimates is therefore not guaranteed, but is considered reasonable enough for the purpose of comparing the retail floorspace data in Table 1 to the household spending data discussed in the following section of this report.

The survey of retail floorspace in the towns clearly indicates that the Shop/ Retail component of the available floorspace is very “local” in nature – the equivalent of the numerous local and small neighbourhood centres within the Perth metropolitan context. The quantity of Other Retail floorspace, on the other hand, is more significant than would be found in the average urban local/ neighbourhood centre because of the role that category of floorspace has in serving the numerous practical needs of rural/ agricultural operations in the study area.

Ellenbrook Central

This centre is the closest large centre to the defined study area and is now an easy 20-minute drive from Muchea. It is very busy most of the time. This is due, not only to the patronage of its home district of Ellenbrook and immediate surrounds, but to its advantageous location at the edge of the

large rural hinterland to the north which, now and until a planned district centre in Bullsbrook is eventually constructed, will cater only for small local/ neighbourhood retail floorspace demand.

- Shop/ Retail: 28,501 sqm;
- Other Retail: 30,926 sqm;
- Total Retail Floorspace: 59,427 sqm

(Source WAPC Land Use and Employment Survey ~2016)



Population and Retail Spending

This section assesses the overall spending potential of the study area's population with a view to estimating the proportion of its expenditure likely to occur within the retail floorspace available in the study area's towns, verses elsewhere – i.e. outside the study area, including online. Table 2 presents 2016 household and population data for the study area, including estimates of household and individual retail spending.

Table 2 Population and annual retail spending by study area households (2016)³

Data Item	Primary Area	Frame Nth	Frame Sth	Total Study Area
Households	1,428	1,148	1,959	4,535
Persons	3,999	2,628	5,185	11,812
Convenience Shop/ Retail (\$M/ annum)	\$37.10	\$25.34	\$50.06	\$112.49
Comparison Shop/ Retail (\$M/ annum)	\$12.33	\$7.52	\$16.86	\$36.71
Total Shop/ Retail Spend (\$M/ annum)	\$49.42	\$32.85	\$66.92	\$149.20
Avg annual Shop/ Retail Spend per household	\$34,610	\$28,618	\$34,162	\$32,900
Avg annual Shop/ Retail Spend per person	\$12,359	\$12,502	\$12,907	\$12,631
Total Other Retail Spend (\$M/ annum)	\$20.11	\$12.77	\$25.24	\$58.12
Avg annual Other Retail Spend per household	\$14,085	\$11,119	\$12,887	\$12,817
Avg annual Other/ Retail Spend per person	\$5,030	\$4,857	\$4,869	\$4,921
Total Retail Spend (\$M/ annum)	\$69.54	\$45.62	\$92.17	\$207.32
Avg annual Total Retail Spend per Household	\$48,695	\$39,738	\$47,049	\$45,717
Avg annual Total Spend per Person	\$17,388	\$17,359	\$17,776	\$17,552

Sources: Households & Population – ABS; Retail Spending – Market Data Systems (2016)

³ NOTE: For the purposes of this assessment it is assumed that the 2016 household expenditure estimates presented in Table 2 still apply in 2020.

A comparison between the estimated annual retail spending on **Shop/ Retail** goods within the study area's town centres in Table 1 (\$33.00 million), and the corresponding total Shop/ Retail spending potential of the study area's households in Table 2 (\$149.20 million), indicates that the various towns currently cater for approximately 22% of the population's Shop/ Retail expenditure, (and 20% of its total retail expenditure). Some 80% of the total retail spending potential of the study area population is therefore spent outside the study area within larger centres in metropolitan Perth, and online.

The large "Ellenbrook Central" secondary centre would be one of the major beneficiaries of this situation now that the Tonkin Highway extension has made that centre so accessible to the entire study area – particularly the Primary area. Other well-positioned major centres such as the Joondalup Strategic Metropolitan Centre would also be benefiting from retail expenditure sourced from the study area.

Retail Floorspace Needs (Primary study area)

Current Unmet Demand (2020)

It seems inevitable that the nature and role of the retail floorspace in the study area's towns will, for the foreseeable future, remain at the "small neighbourhood/ local" scale, however, there is definitely scope for the provision of this local retail floorspace to be increased within the **Primary study area**. The current Shop/ Retail offering within the Primary area is clearly inadequate compared to what is available in the larger town centres in both Frame areas.

The estimated annual retail turnover of \$2.33 million in the existing Muchea "centre" (Table 1) is a mere 3.4% of the retail spending potential of Primary area households (\$69.54 million). Most of the convenience spending by the Primary area population is therefore occurring in the Frame area town centres – some of it in Bindoon, with the majority of it likely to be in Bullsbrook. The population of the Primary area in 2020 is 4,299 persons, some 33% of the study area's total population, yet its current quantity of retail floorspace (950 sqm) is only 9% of the study area's total retail floorspace.

The ratio of Shop/ Retail floorspace per person in the Primary area is therefore only 0.14 sqm per capita, whereas it averages 0.48 sqm per capita across the entire study area (Primary + Frame areas). This is considerably lower than the 0.53 sqm per capita average generally applicable to local/ neighbourhood centres across the Perth metropolitan region. Furthermore, because of Gingin's location at the periphery of the northern Frame area, if the northern Frame area was extended further north to fully cover Gingin's overall catchment population, then the floorspace per capita ratio figure for this enlarged study area would be even lower than it currently is. It is therefore clear that the overall study area is undersupplied with neighbourhood/ local level Shop/ Retail floorspace, with the Primary area being the worse off.

Accordingly, there is a compelling rationale for facilitating the development of additional local-serving retail floorspace in the Primary area, with Muchea as the obvious location. The proposed commercial service centre Special Use site provides an excellent opportunity for this to occur, while also conveniently serving various other future needs of the businesses and employees that will populate the Industrial Park over coming decades. Seeking to focus establishment of the additional required floorspace on the existing Muchea retail outlet is not appropriate because, since construction of the main highway by-pass, that site is now effectively on a side-road.

Accounting for these factors it is considered reasonable that, for local retail floorspace planning purposes, a Shop/ Retail floorspace per capita ratio of .35 sqm be applied within the Primary area itself. This ratio strikes a reasonable and practicable balance point between the ratio for the study area as a whole, and the inappropriately low ratio currently applying to the Primary area component of the study area.

Applying the .35 sqm per capita ratio to the current Primary area population (4,299 in 2020), results in an estimate of 1,505 sqm of Shop/ Retail floorspace in Muchea instead of the existing 600 sqm⁴. This floorspace would be generating annual Shop/ Retail turnover of between \$4.5 million and \$6.0 million, depending on the quality of the floorspace⁵, thus putting it on a par with the estimated performance of Gingin town centre. It would also be saving local residents much travel time. Therefore, taking account of the approximately 200 sqm of retail space now provided within the BP Service Station, it is concluded that ***there is currently (2020) an unmet demand for 905 sqm of Shop/ Retail floorspace within the Primary area.***

Population Forecasts

As the Primary area population increases over time, as it is forecast to do, the demand for additional retail floorspace will also increase. Previous population counts and forecasts for the defined study area are presented in Table 3.

Table 3 Study Area population and forecasts 2011-2041

State Suburb	2011	2016	2021	2026	2031	2036	2041
	<<< ABS Census		Forecast >>>				
Primary Area***							
Muchea	1,018	968	1,054	1,130	1,215	1,300	1,390
Chittering	503	911	1,003	1,078	1,146	1,226	1,312
Lower Chittering	1,558	2,120	2,317	2,470	2,643	2,828	3,026
Total	3,079	3,999	4,374	4,678	5,004	5,354	5,728
Northern Frame							
Coonabidgee	110	124	130	137	147	157	167
Bambun	45	50	53	55	59	63	67
Gingin	743	852	895	944	1,009	1,077	1,149
Lennard Brook	184	194	204	215	230	245	262
Breera	35	37	39	41	44	47	50
Moondah	30	31	33	34	37	39	42
Mooliabeenee	140	157	171	182	194	207	221
Bindoon	1,063	1,183	1,289	1,374	1,464	1,562	1,666
Total	2,350	2,628	2,812	2,983	3,184	3,397	3,625
Southern Frame							
Bullsbrook	4,326	5,185	6,100	6,985	7,975	8,509	9,079
Total	4,326	5,185	6,100	6,985	7,975	8,509	9,079
Total Study Area	9,755	11,812	13,287	14,646	16,163	17,260	18,432

*** Note: Between 2011-2016 population figures in the sub-areas were affected by various boundary changes

Sources: ABS Census; WA Tomorrow (WAPC); SHRAPNEL URBAN PLANNING

⁴ Includes the 200 sqm now available in the new BP service station.

⁵ The assumed annual turnover per sqm of the existing Muchea floorspace (\$3,000) is due to its poor quality.

As indicated in Table 3, forecast population growth between 2016 and 2041 is highest in the southern Frame area (75%), second-highest in the Primary area (43%) and lowest in the Northern Frame area (38%). The numeric population increase in the Primary area between 2020 and 2041 is forecast to be 1,429 persons⁶. Applying the .35 sqm per capita standard to this anticipated population growth, results in an estimated additional future requirement for some **500 sqm of Shop/ Retail floorspace by 2041**.

Potential Demand from Employees

In addition to the current unsatisfied residential household demand for retail floorspace in the Primary area, and the additional demand that will result from local area population growth over the next couple of decades, there will also be considerable future demand in the short, medium and longer-terms, resulting from industrial businesses establishing in the Industrial Park and (later) the Employment Node as a whole. It is currently envisaged that development of the Industrial Park alone could generate a requirement for some 1100-1200 employees within it by 2030⁷. Also, the WAPC has very recently expressed the view that employment within the fully developed Employment Node as a whole could eventually reach some 2,500 in the longer term⁸.

Employees of the Industrial Park and the Employment Node will find it very convenient to have Shop/ Retail facilities provided at the main access road to their place of employment. This will apply particularly to fast food outlets for lunches, etc, and, potentially, to a small supermarket such as an IGA, which would very conveniently facilitate necessary domestic-purpose shopping after work, prior to the (in many cases long) drive home. The timesaving and convenience this would offer over time would be very significant and provide an obvious additional benefit to employees working in the Industrial Park and wider Employment Node. Such convenience benefits would also apply on a more occasional basis for the purchasing of other goods that may, over time, be offered in both Shop/ Retail and Other Retail outlets as they develop.

Potential Employee Expenditure

In order to estimate the potential retail expenditure of Industrial Park and Employment Node employees over time, the following conservative **assumptions** have been made:

- An average of \$1,550 per annum spent on lunches by individual employees (source: ING Direct research; 2017); with 60% of Industrial Park/ Employment Node employees buying their lunch and 40% bringing it from home (conservatively modified downwards from a 70%/30% estimate by McCrindle Research Pty Ltd 2020);
- An Average WA household grocery spend per week of \$240 (source: ABS/ Budget Direct; 2020); with 25% of Industrial Park/ Employment Node employees' weekly household food/ groceries being purchased within the Special Use zone, on the way home after work;
- An average additional overall weekly spend of \$10 by 50% of employees;
- An average annual Shop/ Retail floorspace turnover of \$6,000 per sqm within the services centre Shop/ Retail component.

⁶ Primary area persons: Base 4,299 (2020); then + 75 (2020-21) + 1,354 persons (2021-41)

⁷ Sources: Harvis Capital P/L (Industrial Park development estimates and related employment research 2020); Economic and Employment Lands Strategy, April 2012; WAPC Land Use and Employment Survey 2015-2017.

⁸ Draft Muchea Employment Node Structure Plan; WAPC 2020

The results of this combination of assumptions are presented in Table 4.

Table 4: Estimate of Shop/ Retail floorspace demand by Industrial Park/ Employment Node employees 2021-2041

Item	Spend/ Empl. per annum	% Spent in IP/ EN	Year: Employees:	2021	2026	2031	2036	2041
Lunches	\$1,550	60%		\$28	\$586	\$1,153	\$1,748	\$2,325
HH Groceries	\$12,480	25%		\$94	\$1,966	\$3,869	\$5,866	\$7,800
Other Spend	\$520	50%		\$8	\$164	\$322	\$489	\$650
Total Estimated Spend \$(Thousands)				\$129	\$2,715	\$5,344	\$8,103	\$10,775
Assumed Ann. Turnover/ sqm of Shop/ Retail floorspace				\$6,000				
Employees Shop/ Retail floorspace demand (sqm)				22	453	891	1,350	1,796

As indicated in Table 4 Shop/ Retail floorspace demand generated by employees could equal approximately 450 sqm by 2026, almost 900 sqm by 2031 and potentially up to 1,800 sqm by 2041.

Total Potential Shop/ Retail Floorspace Demand

The three Shop/ Retail floorspace demand drivers described in the previous three pages and Table 4 have been combined into one consolidated estimate (Table 5) and are summarised as (numbers rounded to nearest 5 sqm):

- Primary Study area current shortfall based on household demand: 905 sqm
- Future demand from forecast population growth 2020 – 2041 (500 sqm);
- Expenditure by employees 2021-2041 (20 sqm – 1,795 sqm).

Table 5: Existing and future demand for Shop/ Retail floorspace (figures are in sqm NLA and rounded to the nearest 5 sqm)

Demand Components	2021	2026	2031	2036	2041
Existing Muchea service station/ shop (assume relocation of existing shop to SU site)	400		Ind. Park only + to Ult. Empl. Node Employment 400	400	400
BP Service Station	200	200	200	200	200
Current (sqm NLA)	600	600	600	600	600
Additional Shop/ Retail Floorspace Demand 2021 - 2041 (sqm NLA)					
Primary Area Residents	905	1,030	1,155	1,280	1,405
From Employees	20	455	890	1,350	1,795
From Passing Traffic	-	-	-	-	-
Total Shop/ Retail Demand (sqm NLA)	1,525	2,085	2,645	3,230	3,800

Key points to note in Table 5:

- This assessment indicates that in 2021 there will be a demand for 1,525 sqm of Shop/ Retail floorspace in the Primary study area and a supply of only 600 sqm. There will therefore be an unmet demand for an additional 920 sqm of Shop/ Retail floorspace in 2021.
- Based on the population and employment forecasts, and related assumptions, Shop/ Retail floorspace demand could potentially reach 2,645 sqm in the Industrial Park by 2031, and 3,800 sqm in the Employment Node as a whole by 2041.
- The Shop/ Retail floorspace estimates beyond 2031 apply to the wider Employment Node as a whole (not just the Industrial Park component). In the longer term some of this additional

retail floorspace demand will probably need to be satisfied within one or more other small retail outlets located within the wider Employment Node.

- An assumption has been made that the existing Muchea shop business would, in due course, be relocated to the future Special Use zone. Whether or not this actually occurs is considered irrelevant to the estimates in Table 5 as it is likely that most of the spending currently occurring at the existing store would be quickly diverted to any new retail facilities of a similar genre in the Industrial Park, thus still satisfying the demand estimated in Table 5.

Passing non-local Traffic

The benefits to retail centres/ outlets of vehicular “passing traffic” are generally accepted as a truism yet such benefits are in fact significantly over-estimated. All successful retail outlets require a suitable, highly visible, location and this, most of the time, involves a sufficient amount of overall “busyness”, including vehicular traffic. However, to be considered as a potential source of additional retail business, estimates of “passing traffic” must of course exclude any such traffic which is transporting local people past the centre who already regularly use the centre. Assessing “non-local” passing traffic therefore generally requires detailed technical surveys.

The new BP service station at Muchea is well placed as a stop for motorists to refuel and refresh before entering Perth after (say) a four-hour drive from Geraldton, or a seven-hour drive from Meekatharra. It is also likely that some percentage of that patronage will take the opportunity to dine at an appropriate facility in the retail component of the Special Use site opposite the service station. There are also the numerous trucks that are already stopping at the RTAA, but these don't count as “passing traffic” because the RTAA is their specific destination and the drivers count as employees. In relation to the Special Use site and proposed retail facilities, it is therefore concluded that:

- There will certainly be **some percentage of non-local “passing traffic”** that will stop at the proposed services centre and use the available facilities there, thus contributing to the demand for the facilities provided in the services activity centre.
- At this stage, however, it is not possible to reliably assess the potential extent of this patronage prior to the establishment of at least the first stage of the proposed development, which will then start to reveal the attractiveness of the facility to passing non-local travellers – i.e. those with no other specific business or interest in the service centre other than stopping to refuel and refresh.

Site Area

Assuming the Shop/ Retail component of the proposed service activity centre settles at (say) 2,500 sqm by 2036, it is likely that the site area needed for this particular component would be in the vicinity of 7,000 sqm (due mainly to parking and access requirements) leaving approximately two-thirds (14,000 sqm) of the overall Special Use site area left for the establishment of other potential service activity centre uses such as those potential examples listed on Page 4 of this report.

APPENDIX 2

Traffic Impact Assessment Addendum

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**MUCHEA INDUSTRIAL
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TRANSPORT
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Muchea Industrial Park Transport Assessment Addendum

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A	10/12/20	Draft for client review
B	18/12/20	Final

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1 INTRODUCTION

1.1 CONTEXT

This Addendum provides an update to the *Lot 102, Muchea Local Structure Plan Transport Assessment Issue C* report dated 21/12/15 prepared by GTA consultants (the original report), in relation to the proposed Local Structure Plan LSP, at the now named Muchea Industrial Park.

The Addendum is provided to account for an update to the LSP land and transport network assumptions, updating only sections of the original report impacted by the changes, as such this Addendum should be read in conjunction with the original report.

The changes accounted for in this Addendum include:

- Access arrangements to the LSP, including a change already approved as part of the original LSP approval process
- A revision to both the proposed land uses
- The external transport network is also revised, with the completion of the Northlink project in April 2020 extending the Tonkin Highway from Morley to Muchea.

The revised assessment follows the same methodology as utilised in the initial assessment where practical. This Addendum is therefore structured as follows following this Section:

Table 1.1 Addendum Structure and Content

ORIGINAL REPORT CHAPTER	UPADTED IN THIS ADDENDUM	EXTENT OF UPDATE
2. Existing Situation	Yes	Existing transport networks and traffic volumes updated to reflect opening of Northlink.
3. Development Proposal	Yes	Updated to reflect revised proposal including land uses and access.
4. Traffic Impact Assessment	Yes	Net change trip generation completed for revised proposal.
5. Conclusion	Yes	Updated to reflect analysis now being undertaken.

2 EXISTING SITUATION

2.1 LSP AREA USE AND LOCATION

There are no changes required to this section, please refer to the original report.

2.2 EXISTING TRANSPORT NETWORKS

WALKING AND CYCLING

There are no changes required to this section, please refer to the original report.

PUBLIC TRANSPORT

There are no changes required to this section, please refer to the original report.

VEHICULAR ACCESS

There are no changes required to this section other than to note Northlink is now operational and Great Northern Highway (south of Brand Highway) carries significantly less traffic than previously. Please refer to the original report.

2.3 EXISTING TRAFFIC VOLUMES

INTERSECTION VOLUMES

In addition to the turning movement count data included in the original report, WSP obtained SCATS traffic volume data for the Great Northern Highway / Brand Highway / Muchea East Road signalised intersection from MRWA to inform this addendum.

Data was obtained for the week of 22-29 September 2020. The analysis identified the following peak hours:

- AM Peak Hour (Tuesday 22nd September 2020): 7:30am to 8:30am
- PM Peak Hour (Friday 25th September 2020): 4:15pm to 5:15pm.

This demonstrates a slight change in the AM peak hour, which has moved forward by 30 minutes. The PM peak remains the same as identified in the original report.

The 2020 AM and PM peak hour volumes are shown in Figure 2.1 and Figure 2.2.

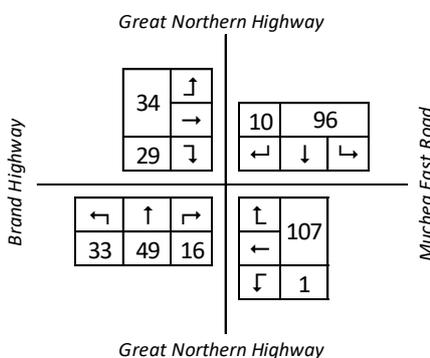


Figure 2.1: AM Peak Hour Volumes (from SCATS data)

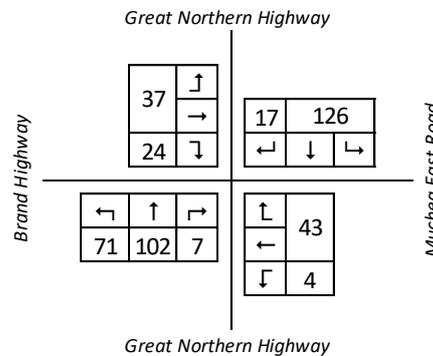


Figure 2.2: PM Peak Hour Volumes (from SCATS data)

Demands at this intersection have changed since 2013 due to the opening of Northlink. Comparing the two sets of turning count data from 2013 and 2020 illustrates that:

- In the AM peak there is a reduction in traffic on most approaches, with an increase in traffic on the east approach (with an additional 67 movements). Overall AM Peak hour movements at the intersection decrease by 220 vehicles.
- The PM peak has decreased in traffic on the south and west approaches, and smaller increases in traffic on the north and east approaches. Overall traffic is decreased by 139 vehicles in the PM peak.

Overall it is considered that the 2013 conditions provide a conservative basis for existing conditions volumes. Since the original analysis determined the intersection has acceptable operation, re-analysis lesser volumes is not required. While there is a change in overall traffic patterns, the opening of Northlink results in a reduction in traffic on the Great Northern Highway at this intersection.

LINK VOLUMES

Link count information on the road network around the LSP was previously collated for 2014. This is tabulated below with comparative, more recent information.

Table 2.1 Link count information, original report

ROAD NAME	LOCATION	ORIGINAL REPORT AVERAGE TWO-WAY WEEKDAY VOLUME (DATE)	UPDATED AVERAGE TWO- WAY WEEKDAY VOLUME (DATE)
Great Northern Highway	North of Muccha East Road	4,309 (2014) 32% Heavy vehicle	3,064 (2020/21) 20% Heavy vehicle
Great Northern Highway	North of Wandena Road (south of Muccha East Road)	7,155 (2014) 22% Heavy vehicle	2,309 (2020/21) 27% Heavy vehicle
Brand Highway	West of Great Northern Highway	4,245 (2014) 22% Heavy vehicle	1,592 (2020/21) 23% Heavy vehicle
Muccha East Road	East of Great Northern Highway	961 (2014) 22% Heavy vehicle	794 (2018/19) 19% Heavy vehicle

It is acknowledged that the link count information collected as part of the original report is now not directly comparable to the current situation with the opening of Northlink, and the reconfigured road network.

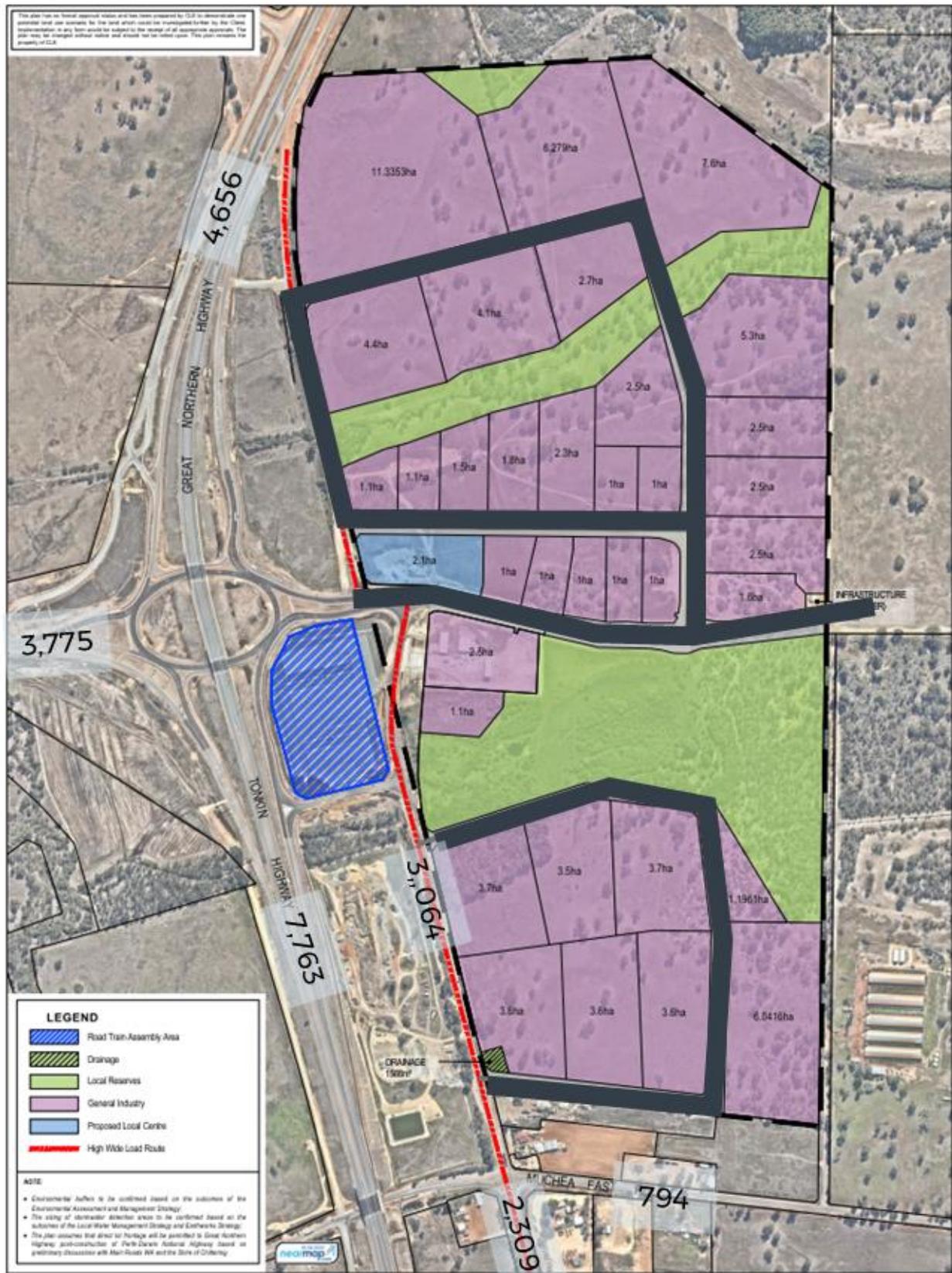
As such, to provide further context, the above has been elaborated upon to document more relevant information as provided in Table 2.2.

Table 2.2 Updated link count information

ROAD NAME	LOCATION	YEAR	AVERAGE TWO-WAY WEEKDAY VOLUME
Tonkin Highway (Northlink)	North of Neaves Road	2020/21	7,763 28% Heavy vehicle
Brand Highway	West of Tonkin Highway	2020/21	3,775 38% Heavy vehicle
Great Northern Highway	North of Brand Highway	2020/21	4,656 33% Heavy vehicle

These external traffic volumes are represented in Figure 2.3.

Figure 2.3 External Traffic Volumes (2020)



To provide context to the future year traffic generation for the LSP area, 2031 external traffic volumes have also been considered. An in-depth desktop research exercise was undertaken to obtain 2031 traffic flow information, but there was limited meaningful information available. As an alternate approach, a 3% per annum growth rate has been applied to Tonkin Highway, Brand Highway and Great Northern Highway (north of Brand Highway) to provide an estimate of what future volumes could be.

Table 2.3 2031 External Traffic Estimates

ROAD NAME	LOCATION	AVERAGE 2020 TWO-WAY WEEKDAY VOLUME	AVERAGE 2031 TWO-WAY WEEKDAY VOLUME
Tonkin Highway (Northlink)	North of Neaves Road	7,763	10,746
Brand Highway	West of Tonkin Highway	3,775	5,225
Great Northern Highway	North of Brand Highway	4,656	6,445

3 DEVELOPMENT PROPOSAL

3.1 CONTEXT

There are no changes required to this section, refer to the original report.

3.2 DEVELOPMENT PROPOSAL

The reference to the Interim Proposal in the original report is no longer relevant, and did not transpire in any case.

The LSP is to ultimately incorporate the land uses detailed in Table 3.1, and compared with those proposed in the original report.

Table 3.1 Development proposal

LAND USE	ORIGINAL REPORT		UPDATE	
	NUMBER OF LOTS	LAND AREA (HA)	NUMBER OF LOTS	LAND AREA (HA)
Transport & Logistics	6	57.6	7	31.5
Manufacturing / Processing	4	22	7	21.4
Services	5	8	3	3.2
Retail / Service Commercial	1	7.5	1	2.1
Engineering & Mechanical	2	3.9	8	14.8
Truckwash	1	1.0	1	1.0
Laydown / Auctioneer / Saleyards	3	10.9	5	21.7
Hire	1	3.6	1	3.6
Service Station	1	2.5	2	3.5
TOTAL	24	110.8	35	102.7

As demonstrated, the proposed land uses remain the same, with a different mix now proposed. The overall land area being utilised for lots has reduced by 8.1 hectares.

LSP PROPOSAL ACCESS AND ROAD NETWORK

The proposed layout of the ultimate LSP road network is shown in Figure 3.1. As compared to the original report, 'Intersection A' no longer provides direct access to the development. Intersection A will continue to provide access for High-Wide-Loads to the Great Northern Highway (north), however this falls outside the traffic generation and impact assessment considered in this analysis as it is not part of the LSP proposal.

It was determined during the original approval process that Intersection A would not be utilised for access to the LSP area at the instruction of Main Roads WA. The traffic analysis was not changed in the original report however to reflect this change. The subsequent impact of the prior decision to remove Intersection A, upon the revised performance of Intersection B, is taken into account within this proposal.

As part of the revised proposal, it is also intended to account for the existing first stage subdivision approval (WAPC 155948) underpinning the recently constructed Mercury Rise (Road 1) and adjoining lots. This proposal will reflect the

provision of one-way driveway entries (left-in) to the LSP area from Mercury Rise via those dual-frontage lots positioned between Mercury Rise (Road 1) and Canaveral Way (Road 5), as permitted under the existing subdivision approval. Note, the Mercury Rise road reserve does not commence until the easting of the north-west corner of Lot 12 (BP Site), and as such the minimum requisite driveway separation from Main Roads WA’s Tonkin Highway interchange is observed by the proposed local service centre maintaining access from Mercury Rise, whilst managing the aforementioned MRWA decision to remove Intersection A.

This means that all traffic generation related to the land uses to the north of Mercury Rise (Road 1) will now use ‘Intersection B’ or the driveway accesses.

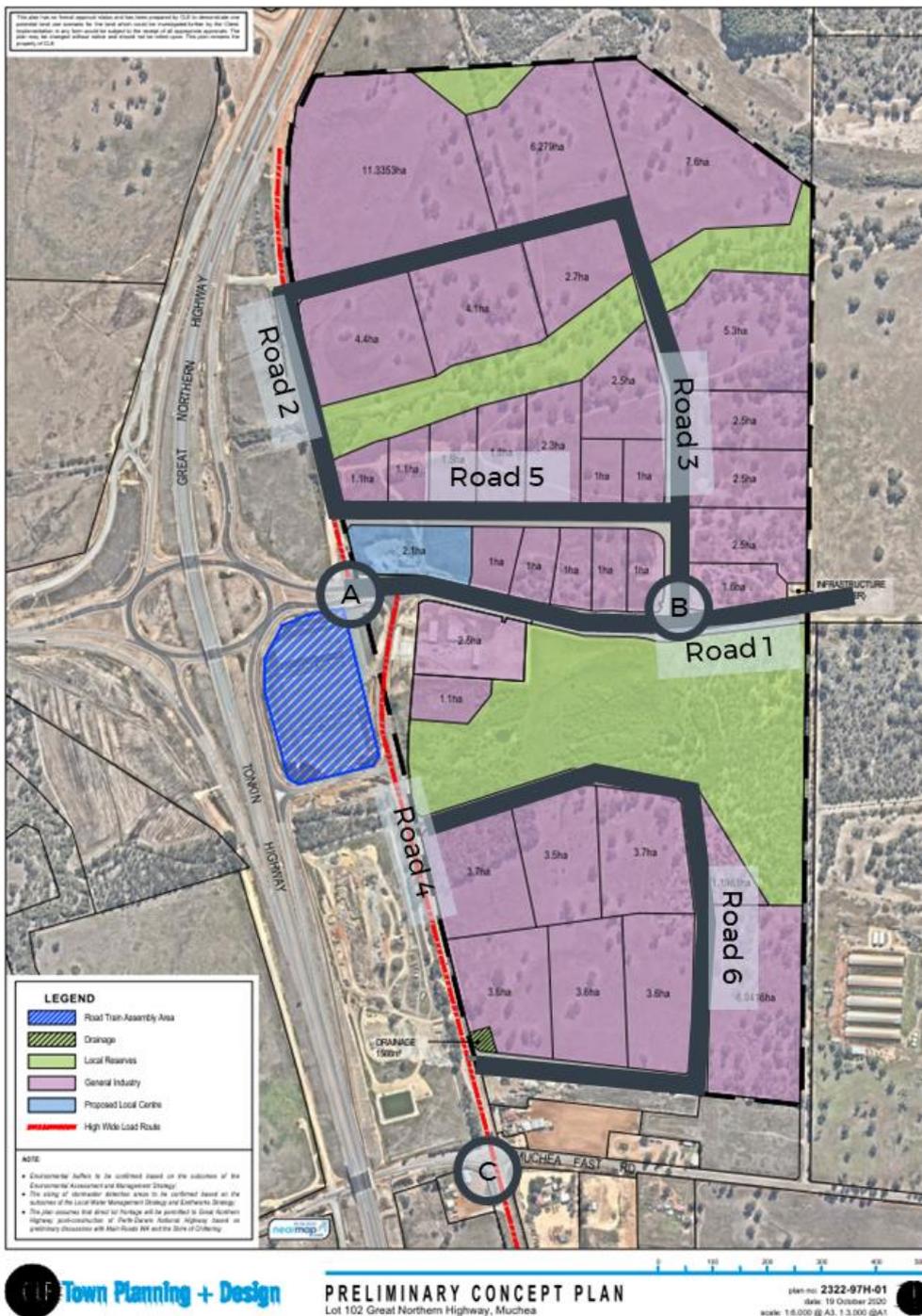


Figure 3.1 Updated Master Plan Road Network and Key Intersections

4 TRAFFIC IMPACT ASSESSMENT

4.1 ASSESSMENT SCENARIOS

The reference to the Interim Proposal in the original report is no longer relevant, and did not transpire.

Consistent with the previous analysis, 2031 has been taken to be the ultimate design horizon at which full development is assumed.

4.2 ASSUMPTIONS

MUCHEA EMPLOYMENT NODE BACKGROUND TRAFFIC

There are no changes required to this section, please refer to the original report.

PROPOSED LAND USES WITHIN THE LSP

Table 4.1 provides an update of the individual land areas and floor areas within each lot to inform the revised traffic generation for the LSP.

Table 4.1 Adopted Land Area and Building Area Proportion Estimates

LAND USE	LAND AREA (HA)	% BUILDING AREA FOR LAND USE	GLFA FOR TRAFFIC ESTIMATES (SQ.M)
Transport & Logistics	31.5	15%	47,175
Manufacturing / Processing	21.4	45%	96,345
Services	3.2	64%	20,224
Retail / Service Commercial	2.1	35%	7,350
Engineering & Mechanical	14.8	40%	59,240
Truckwash	1.0	40%	4,000
Laydown / Auctioneer / Saleyards	21.7	22%	47,762
Hire	3.6	30%	10,800
Service Station	3.5	N/A	N/A
TOTAL	102.7	-	292,896

*Service station traffic estimates not based on floor area but on passing traffic volumes, as per original report.

Note the “Retail / Service Commercial” land use consists of the following:

- 600sqm supermarket
- 650sqm fast food (two outlets)
- 1,900sqm non-food retail
- 4,200sqm service commercial.

TRIP GENERATION RATE

A key change to the LSP proposal is the inclusion of the retail / service commercial land use offering consolidated at one location in the land immediately north-east of the Brand Highway / Northlink roundabout, as highlighted blue in Figure 4.1.



Figure 4.1 Proposed retail / service commercial lot

This lot will include a range of uses including fast food, supermarket, and a mix of non-food retail and service commercial offerings. As such, the previously adopted trip generation methodology has been modified to include these land uses. Trip rates for these land uses have been taken from the WAPC 'Transport Impact Assessment' and *Institute of Transportation Engineers (ITE) Trip Generation* guidelines.

Table 4.2 provides the updated set of trip generation rates utilised for the analysis. Daily volumes have been derived by multiplying the AM and PM peak values by 4, which is comparable to the peak to daily factor applied for the original report.

In determining trip rates, it is acknowledged that the proposed site will not generate the same level of traffic for the same land uses as in a fully urbanised environment within Perth Metropolitan area. In addition, a number of the patrons to the retail / service commercial offering will be those already travelling to and from the LSP area. Some discounts have therefore been applied in line with *Institute of Transportation Engineers (ITE) Trip Generation* guidelines, including:

- a 56% trip rate discount for fast-food outlets accounting for pass-by trips, linked trips and the remote location
- a 50% discount to the service commercial land uses accounting for linked trips and the remote location
- any non-burger fast food type outlets will not be operational in the AM peak.

Note that no reduction has been made to the supermarket land use as it is assumed the scale of the supermarket itself will be such that it self-limits the trip generation and will not lead to an overestimate.

Table 4.2 Vehicle trip rates

LAND USE	AM PEAK			PM PEAK			DAILY		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Service / Light Industry per 100sqm GFA	0.41	0.05	0.46	0.17	0.34	0.51	4	4	8
Food retail (supermarket) per 100sqm GFA	2	0.5	2.5	5.0	5.0	10.0	25	25	50
Non-food retail (service commercial) per 100sqm GFA	0.5	0.13	0.63	1	1	2	5	5	10
Fast Food (non-burger) per 100sqm GFA	0	0	0	6.6	6.6	13.2	26	26	52
Fast Food (burger) per 100sqm GFA	4.4	4.4	8.8	6.6	6.6	13.2	44	44	88

The development considered in the original report included a service station on a 2.5ha lot. Trips to this lot were derived based on the amount of traffic passing on the road network. A second service station is now proposed in the LSP, with a 1ha lot. Trips to the 1ha site have been pro-rated from the total trip generation of the 2.5ha site based on the lot size and the trip generation utilised in the previous analysis, as detailed in Table 4.3.

Table 4.3 Vehicle trip rates – Service stations

LAND USE	AM PEAK			PM PEAK			DAILY		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
2.5ha service station	39	39	78	29	29	58	365	365	730
1.0ha service station	15.6	15.6	31.2	11.6	11.6	23.2	146	146	292

TRIP GENERATION ZONES

There are no changes required to this section, please refer to the original report.

4.3 TRAFFIC GENERATION

Traffic generated for the LSP proposal in each zone (as defined in the original report, and adopted in this analysis as shown in Figure 4.2) are detailed in Table 4.4. These are derived from the previously documented land uses and trip rates.

Figure 4.2 Original report trip generation zones (extracted from Original Report)

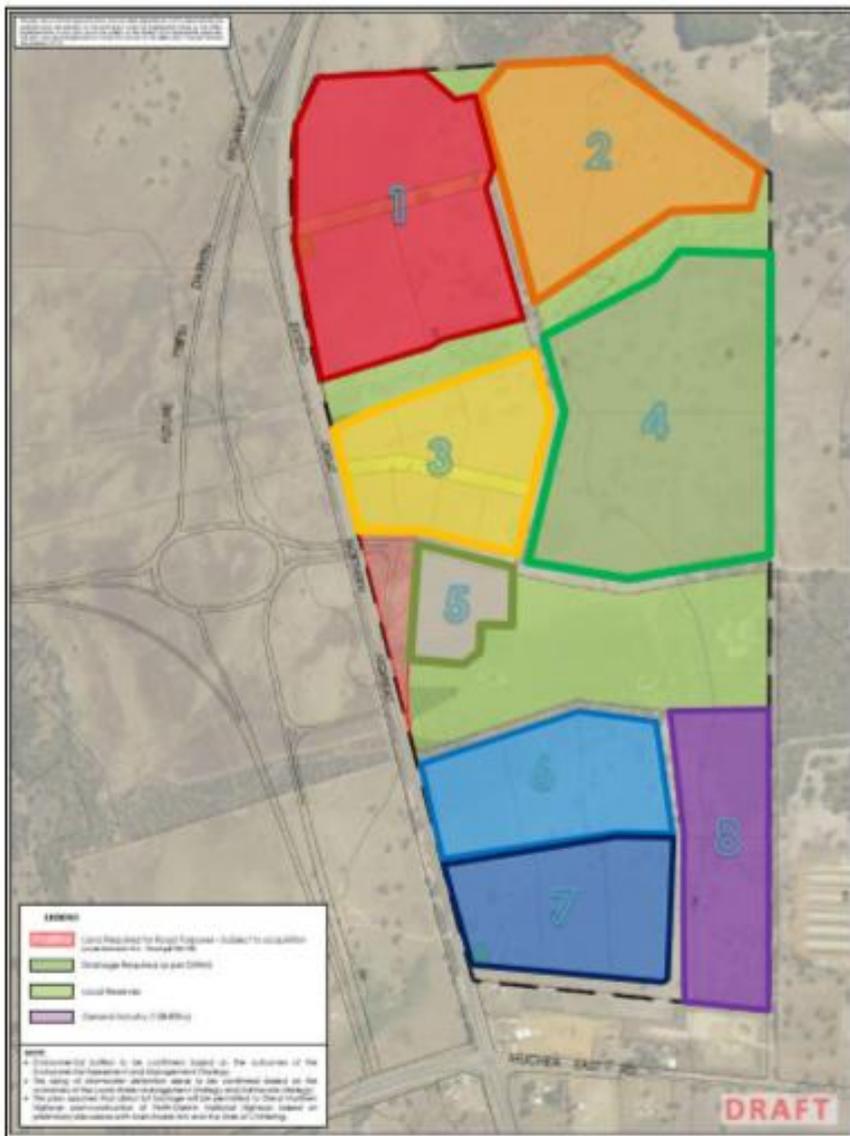


Table 4.4 Estimated Total Traffic Generation for LSP Proposal

TRIP GENERATION ZONE	AM PEAK TRIPS (TO+FROM)	PM PEAK TRIPS (TO+FROM)	DAILY TRIPS (TO+FROM)
Zone 1	318	352	2762
Zone 2	96	106	834
Zone 3	415	628	1389
Zone 4	157	175	4323
Zone 5	98	81	1369
Zone 6	87	97	908
Zone 7	182	202	758

TRIP GENERATION ZONE	AM PEAK TRIPS (TO+FROM)	PM PEAK TRIPS (TO+FROM)	DAILY TRIPS (TO+FROM)
Zone 8	149	165	1584
TOTAL	1,502	1,805	13,833

Table 4.5 demonstrates a comparison between traffic generated for the proposed land uses and the original report.

Table 4.5 Trip generation comparison

	AM PEAK TRIPS (TO+FROM)	PM PEAK TRIPS (TO+FROM)	DAILY TRIPS (TO+FROM)
Original Report	1,384	1,516	11,973
Revised Proposal	1,502	1,805	13,833
Net Change	118	289	1,860
Net Change %	9%	19%	16%

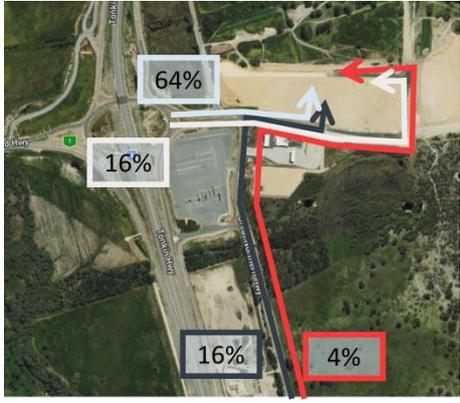
4.4 DISTRIBUTION AND ASSIGNMENT

Building on the assumptions previously developed, access to the site is as follows

- For all zones except Zone 5, 80% of traffic approaches from the Tonkin Highway / Great Northern Highway interchange, with the remaining 20% of traffic approaching/departing from the Great Northern Highway (south)
- For Zone 5, all trips are to/from the Tonkin Highway / Great Northern Highway interchange
- 80% of trips accessing Zone 3 will access the lots directly from Road 1 (Mercury Rise), with the remainder accessing the lots via ‘Intersection B’ and Road 5 (Canaveral Way). However right turn egress onto Mercury Rise may not be possible from these lots, so 100% of the egress is assumed via Canaveral Way and ‘Intersection B’
- Trips travelling to Zones 6-8 from the Tonkin Highway / Great Northern Highway interchange travel via Mercury Rise
- 40% of trips departing Zones 6-8 travel to Tonkin Highway southbound via the Road Train Assembly Area access road.

These assumptions are summarised in Table 4.6.

Table 4.6 Trip distribution paths

TRIP GENERATION ZONE	DISTRIBUTION TO ZONE	DISTRIBUTION FROM ZONE
Zone 1, 2, 4		
Zone 3		
Zone 5		
Zone 6, 7, 8		

Assigning the traffic generation from Table 4.4 to the distribution paths from Table 4.6 results in development traffic generation for the key intersections as detailed in Figure 4.3 in the AM peak and Figure 4.4 for the PM peak.

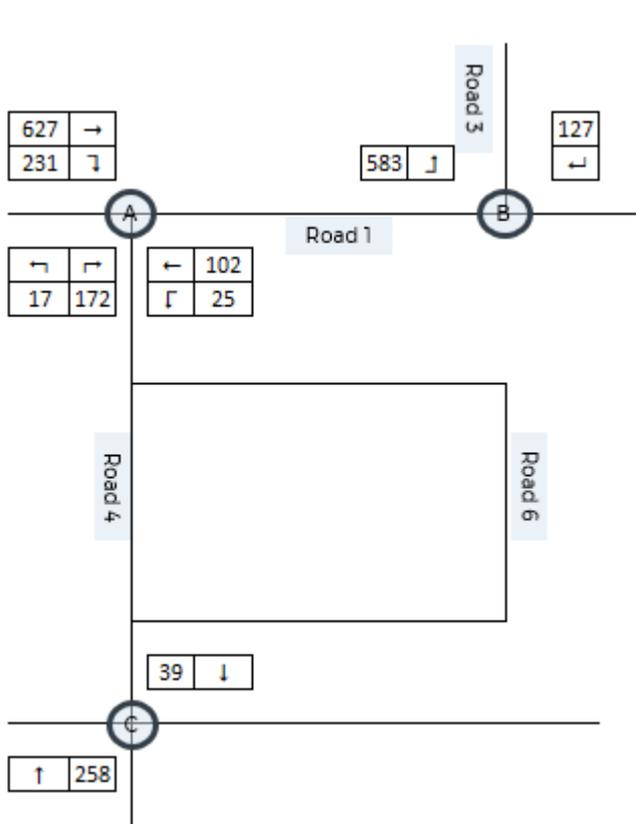


Figure 4.3: AM Peak development traffic

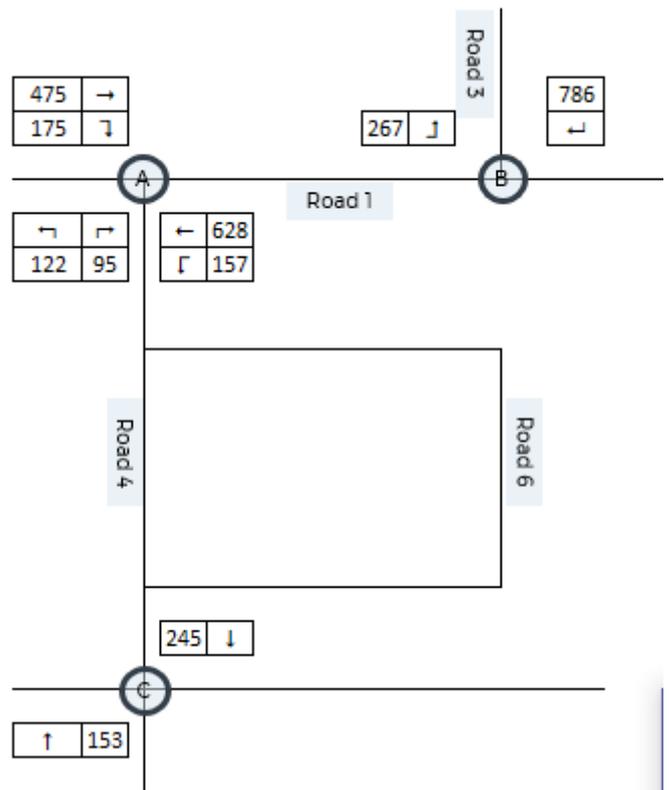


Figure 4.4: PM Peak development traffic

4.5 TRAFFIC IMPACT ASSESSMENT

The original report considered three key intersection for traffic impact. These are set out below, with commentary provided for each in the context of the new proposal.

INTERSECTION A

Intersection A is no longer intended to be utilised as proposed in the original report, and access to it will be restricted for High-Wide-Load movements only. As such, it no longer needs to be considered, since it is not actually utilised for general traffic. The restricted movements at this intersection do not cause any other traffic changes than to consolidate LSP traffic to Intersection B, and as such no adverse impacts are caused by this change.

INTERSECTION B

In the original report it was assumed that Intersection B would be constructed and operate as a priority controlled intersection, even though it was not anticipated any demand will be travelling beyond the intersection on Mercury Rise (Road 1). When tested for capacity as a priority intersection in the original report, it was also assumed Mercury Rise would be single carriageway in its ultimate form.

As part of the commencement of development at the LSP it was agreed to not construct an intersection at this location, and instead create a continuous road into the LSP area. This means no vehicles need to stop to give-way and Intersection B will not actually be an intersection until such time that Mercury Rise needs to be constructed further to the east to

accommodate future access to the Muchea Employment Node Structure Plan area. In its current form therefore, there will be no operational issues at Intersection B.

In the future when Mercury Rise is constructed further east, it is intended to be done so as a dual carriageway.. As per the original approved LSP, the impact of future development and resultant traffic volumes on Mercury Rise not associated with this LSP would need to be determined by way of an operational assessment, with any upgrades required triggered by other development and not the LSP.

INTERSECTION C

Since the opening of Northlink, traffic volumes at this intersection have reduced significantly, particularly for heavy vehicles. The original report showed this intersection to operate with acceptable limits, given the majority of traffic (and any increases as a result of the revised proposal) travel to / from Northlink, it is considered this intersection will continue to operate within acceptable limits.

4.6 ROAD HIERARCHY AND CROSS-SECTIONS

The revised trip generation estimates have been distributed throughout the LSP area to generate daily traffic volumes on each of the proposed roads.

Figure 4.4 demonstrates the traffic volumes by road on a daily basis.

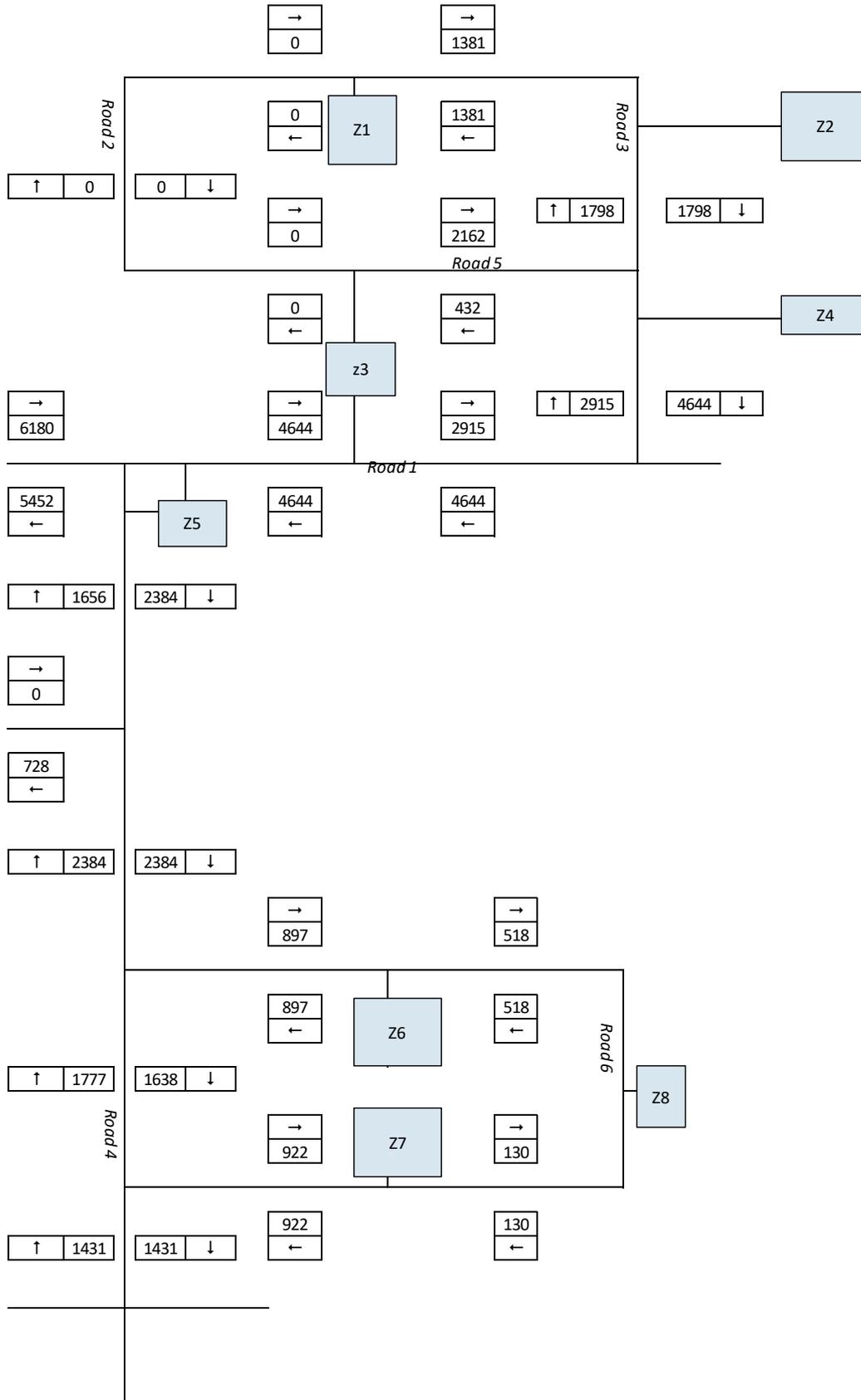


Figure 4.5: Daily traffic generation (at 2031)

These volumes are summarised over the proposed LSP layout in Figure 4.6, and provided alongside external traffic volumes in Figure 4.7.

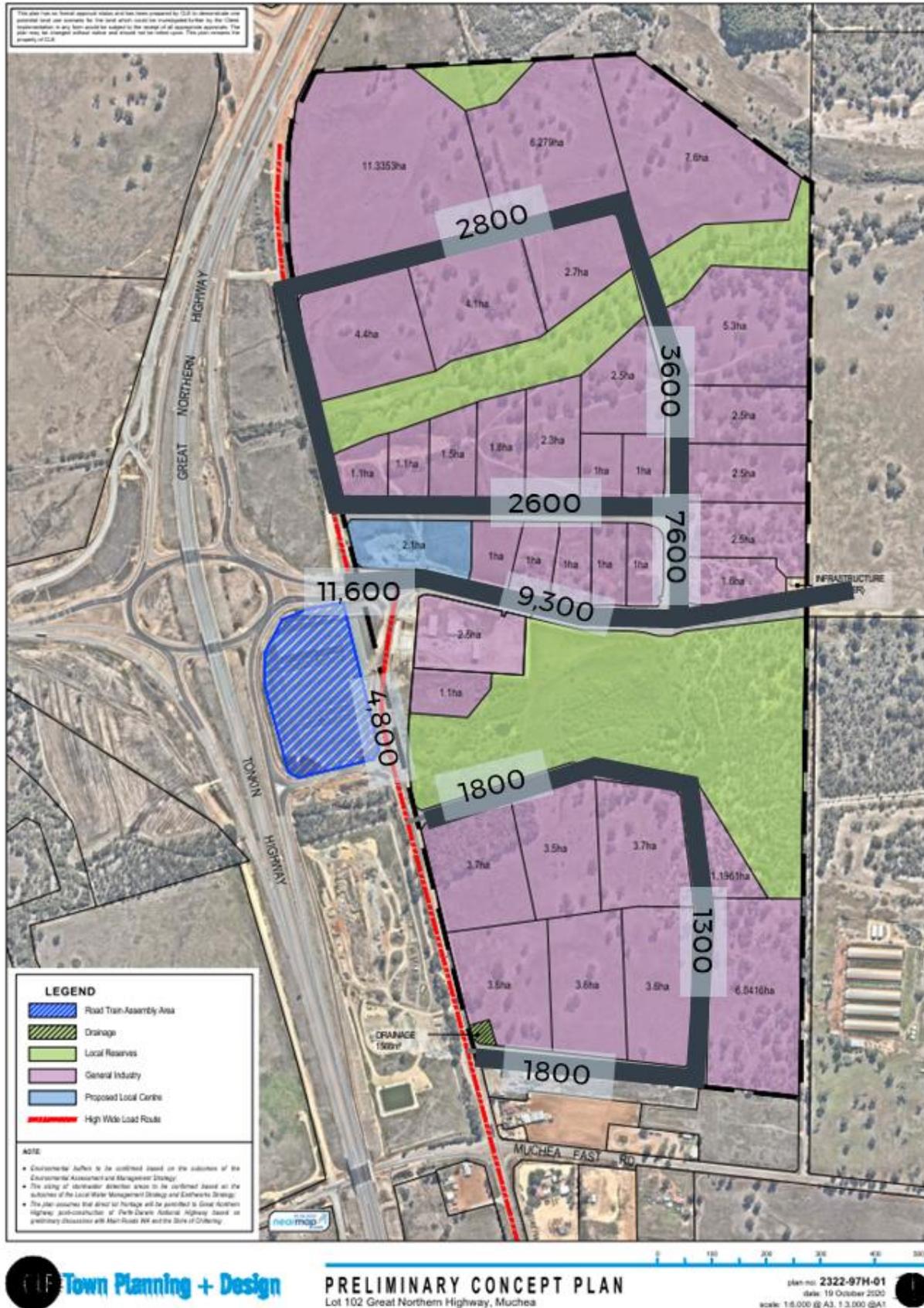


Figure 4.6: Daily Volumes on Key Roads in LSP at full build out (2031)

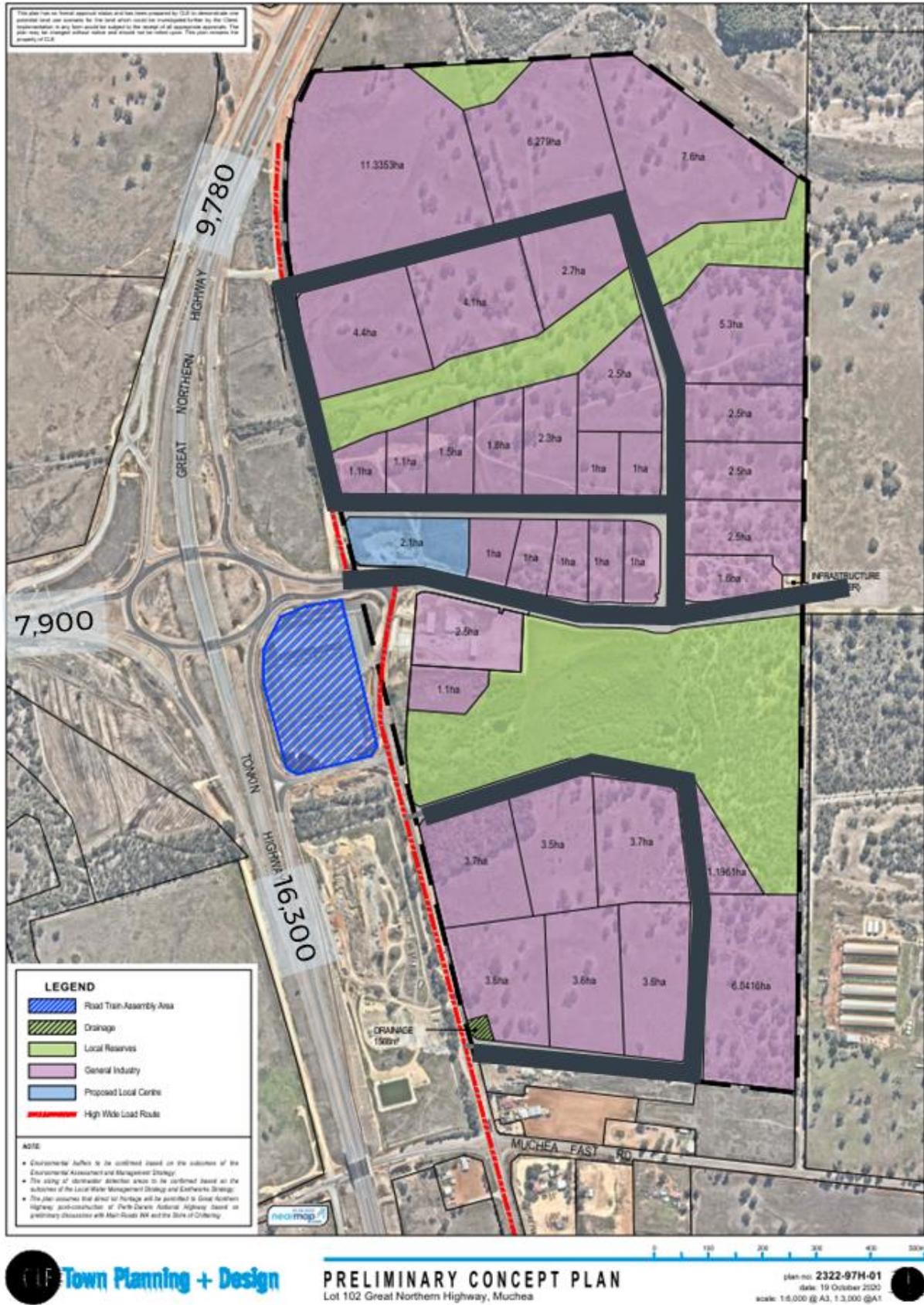


Figure 4.7 2031 External and LSP Traffic Flows (estimated)

These volumes are comparable to those in the original report, and as such no changes to the proposed road hierarchy are required.

Similarly, the revised proposal will not materially change the vehicle types accessing the LSP area, given this and the limited change in daily traffic volumes, no changes are required to the previously proposed cross-sections.

5 CONCLUSION

WSP have prepared this Addendum to update and supplement the original Transport Assessment prepared as part of the original application for the now approved Local Structure Plan (LSP) at Muchea Industrial Park.

The Addendum revisited all areas of the original report, and provided updates where required.

Key changes to the development proposal assessed include:

- Access arrangements to the LSP, including a change already approved as part of the original LSP approval process
- A revision to both the proposed land uses
- The external transport network is also revised, with the completion of the Northlink project in April 2020 extending the Tonkin Highway from Morley to Muchea.

It was determined that the revised proposal will result in some additional traffic generation from the LSP area, as per the Table 5.1.

Table 5.1 Trip Generation Comparison

	AM PEAK TRIPS (TO+FROM)	PM PEAK TRIPS (TO+FROM)	DAILY TRIPS (TO+FROM)
Original Report	1,384	1,516	11,973
Revised Proposal	1,502	1,805	13,833
Net Change	118	289	1,860
Net Change %	9%	19%	16%

Despite the increase in traffic it was concluded the outcomes of the previous assessment were still relevant in terms of:

- Intersection capacity, mainly due to changes in the operation and permitted intersection use
- Road hierarchy
- Road cross-section.

APPENDIX 3

Original Traffic Impact Assessment (2015)

Lot 102, Muchea
Local Structure Plan
Transport Assessment

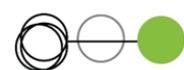
Issue: C 21/12/15

Client: Sirona Capital
Reference: 16P1004000
GTA Consultants Office: WA

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
C	21/12/15	Final	Lucas Stewart	Mark Fowler Tanya Moran	Tanya Moran	

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Lot 102, Muchea Local Structure Plan Transport Assessment

Client // Sirona Capital
Office // WA
Reference // 16P1004000
Date // 21/12/15

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1. Introduction

1.1 Background & Proposal

A Local Structure Plan (LSP) is being prepared for a proposed industrial development at Lot 102, Muchea, in the Shire of Chittering. The planning proposal incorporates some 149 hectares of land incorporating primarily general industry land uses. GTA Consultants (GTA) has been commissioned by Sirona Capital to prepare a Transport Assessment (TA) to support the LSP.

This report details the methodology and findings of the TA, which was prepared in line with the guidelines set out in the Western Australian Planning Commission publication '*Transport Assessment Guidelines for Development*' (WAPC Guidelines) and takes account of the Shire of Chittering (SoC) planning policies. This TA considers the sites integration with the existing transport networks including walking, cycling, public transport and vehicular travel and considers the potential impact of the proposed development on these, including consideration of the following:

- i existing traffic conditions proximate to the site
- ii future (non-development related) transport network upgrades proposed in the region
- iii the high-level assessment of the adequacy of the proposed internal road network layout and intersection configuration
- iv the traffic generating characteristics of the proposal
- v the anticipated impact of the proposal on the surrounding road network.

1.2 References

In preparing this report, reference has been made to the following:

- o an inspection of the site undertaken by GTA on 21st October 2015
- o Shire of Chittering *Town Planning Scheme No. 6*
- o the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines for Developments*, dated August 2006
- o *Traffic Impact Assessment for Hardstand for DA* report prepared by GHD, dated February 2014
- o *South Bullsbrook Industrial Precinct – Transport Assessment and Staging Report* prepared by Arup, dated 03 September 2014
- o traffic count data provided by MRWA as referenced in the context of this report
- o NorthLink WA presentation by Rob Arnott (Senior Project Director) to Engineers Australia on Thursday 17th September 2015
- o LSP layout plans prepared by CLE as provided at Appendix A
- o other documents as referenced in this report.

1.3 Scoping Discussion

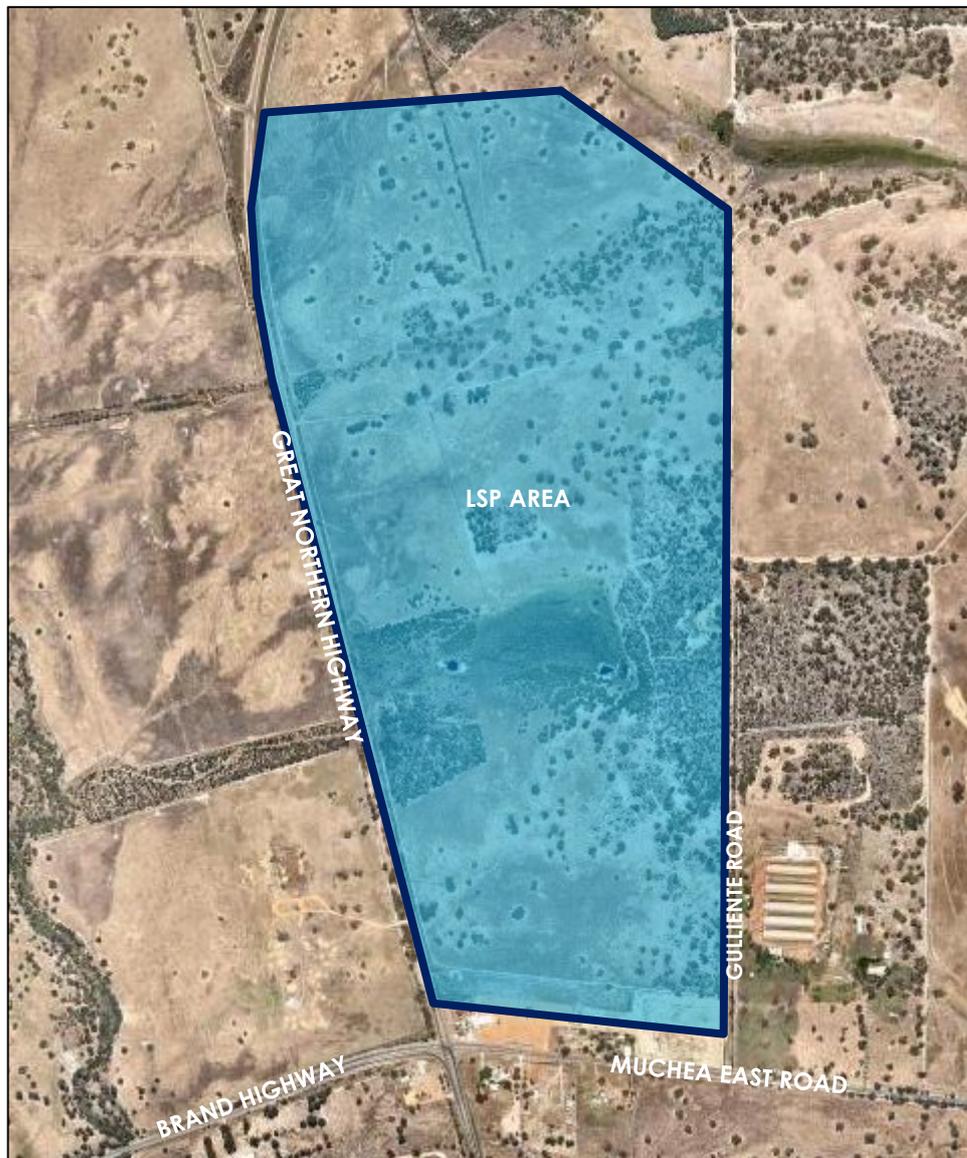
The scope of this TA, including the technical parameters, was discussed and agreed during scoping discussions with SoC, Main Roads WA (MRWA) Wheatbelt regional office and the MRWA Metro region/NorthLink WA project team. Correspondence and Technical Notes associated with these discussions are provided at Appendix B.

2. Existing Situation

2.1 LSP Area Use and Location

The LSP covers a 149 ha area in Muchea East, as shown in Figure 2.1. Muchea East is located approximately 45km north of Perth. The LSP area has a frontage of approximately 1.9km to Great Northern Highway and a small frontage to Gulliente Road on the eastern boundary of the area.

Figure 2.1: LSP Area and its Existing Environs



(Base Image Source: Nearmap)

The land in and surrounding the LSP area is predominantly agricultural, with some local light and general industry uses.

2.2 Existing Transport Networks

Walking and Cycling

There are no specific pedestrian or cycle infrastructure present within a reasonable distance (by each mode) of the LSP area.

Given the rural nature of the LSP area and the long distances to nearest residencies (in excess of 3km to Muchea and Lower Chittering), it is anticipated that walking demand will be negligible from the LSP area to other walking generators outside of the LSP.

Any cyclists in the area local to the LSP currently travel on the established road networks.

The proposed walking and cycling infrastructure within the LSP is discussed in Section 3.2 – Development Proposal.

Public Transport

Public transport bus services currently operate on Great Northern Highway in the form of long distance regional services. No bus stops currently exist on Great Northern Highway along the LSP frontage.

As identified in the *Muchea Employment Node Structure Plan*, the land uses proposed for the area mean feasible provision of public transport services is difficult to achieve. Notwithstanding this, if the provision of services is deemed necessary in the future there exists an opportunity to provide a bus stop on the upgraded section of the Perth Darwin National Highway (Northlink WA) for existing bus services which operate on this route, adjacent to the site. It is likely that any bus stop on NorthLink WA would cater for the already operating regional services as opposed to any new local services, which may not be sustainable from a demand perspective in the short to medium term.

Vehicular Access

The existing primary vehicle access routes for the LSP are highlighted in Figure 2.1 and discussed below.

Great Northern Highway

The Great Northern Highway is under the control of MRWA and classified as a Primary Distributor in the MRWA Road Hierarchy. The Great Northern Highway is listed as a Network 7 Restricted Access Vehicle (RAV) road for its entire 230km length between Perth and Wubin, including its length proximate to the subject site.

The Great Northern Highway plays a strategic role in the movement of freight between Perth and northern WA. It is a two-lane, two-way undivided road set with a generally 9m wide carriageway set within a 40m (or greater) wide road reserve (approx.) as it passes the LSP area. It has a 110km/h posted north of the Brand Highway intersection as it passes the site, with this speed limit dropping to 80km/h through the intersection.

The Great Northern Highway is currently subject to an upgrade programme which will enable the movement of Network 10 RAV vehicles to travel on the route from north of the Brand Highway.

Brand Highway

The Brand Highway is under the control of MRWA and classified as a Primary Distributor in the MRWA Road Hierarchy. The Brand Highway is listed as a Network 7 RAV road for its entire length between Perth and south of Geraldton, including the section through the Muchea townsite.

The Brand Highway is a two-lane, two-way undivided road with a 9m wide carriageway set within a 30m wide road reserve (approx). It has a 110km/h posted speed limit to the north of Muchea, with this speed limit dropping to 80km/h through Muchea and on its approach to the intersection at the Great Northern Highway.

Muchea East Road

Muchea East Road is under the control of the Shire of Chittering and classified as a Regional Distributor in the MRWA Road Hierarchy. It is listed as a Network 7 RAV road for approximately 1.2km of its length immediately east of the Great Northern Highway.

Muchea East Road is a two-lane two-way undivided road with an 8m wide carriageway set within a 20m wide road reserve (approx). It has a 100km/h posted speed limit to the east of the Great Northern Highway, slowing to 80km/h on the approach to the intersection.

Gulliente Road

Gulliente Road is under the control of the Shire of Chittering and classified as an Access Road in the MRWA Road Hierarchy. It is listed as a Network 2 RAV road with conditions that a written approval from the Shire of Chittering permitting the use of this road must be carried by drivers and produced on demand. For the first 310m from Muchea East Road, Gulliente Road is sealed but is narrow at approximately 6.5m to 7m wide, beyond this it becomes an unsealed access track.

Gulliente Road is a two-lane two-way undivided road set within a 20m wide road reserve (approx). There is no posted speed limit on Gulliente Road, with a default 50km/h speed limit therefore applying.

2.3 Existing Traffic Volumes

In order to inform the assessment of the impact of the LSP on the existing road network in the area, a number of sources have been exhausted to collate traffic data information, as set out below.

Intersection Volumes

Manual Turning Movement Counts

Turning movement counts were recorded at the following intersections on Tuesday 19 November 2013:

- Great Northern Highway / Brand Highway / Muchea East Road
- Muchea East Road / Gulliente Road.

The turning movement count data identified the following peak hours:

- Great Northern Highway / Brand Highway / Muchea East Road
 - AM Peak Hour: 7:00am to 8:00am
 - PM Peak Hour: 4:15pm to 5:15pm
- Muchea East Road / Gulliente Road
 - AM Peak Hour: 7:15am to 8:15am
 - PM Peak Hour: 4:45pm to 5:45pm.

The AM and PM peak hour traffic volumes as identified in these counts are shown in Figure 2.2 and Figure 2.3.

Figure 2.2: AM Peak Hour Turning Movement Volumes (from 2013 counts)

		Great Northern Hwy			Gulliente Road					
Brand Hwy		16	↑							
		16	→	14	144	15	4	↑	1	0
		95	↓	←	↓	↘	56	→	←	↘
		←	↑	↘	↙	13		↙	0	
		71	116	28	←	13		←	36	
		Great Northern Hwy								

Source: Mucchea Traffic Impact Assessment for Hardstand for DA, GHD, dated February 2014

Figure 2.3: PM Peak Hour Turning Movement Volumes (from 2013 counts)

		Great Northern Hwy			Gulliente Road					
Brand Hwy		25	↑							
		22	→	20	99	4	0	↑	2	0
		108	↓	←	↓	↘	28	→	←	↘
		←	↑	↘	↙	5		↙	0	
		95	153	5	←	10		←	21	
		Great Northern Hwy								

Source: Mucchea Traffic Impact Assessment for Hardstand for DA, GHD, dated February 2014

MRWA SCATS Traffic Volume Data

In addition to the previous turning movement count data, GTA obtained SCATS traffic volume data for the Great Northern Highway / Brand Highway / Mucchea East Road signalised intersection from MRWA. Data was obtained for the week of 12-18 October 2015, with the volumes from the Tuesday (13 October) extracted to compare directly to the turning movement count data detailed above. The analysis identified the following peak hours:

- AM Peak Hour: 7:00am to 8:00am
- PM Peak Hour: 4:15pm to 5:15pm.

The AM and PM peak hour volumes are shown in Figure 2.4 and Figure 2.5.

Figure 2.4: AM Peak Hour Volumes (from SCATS data)

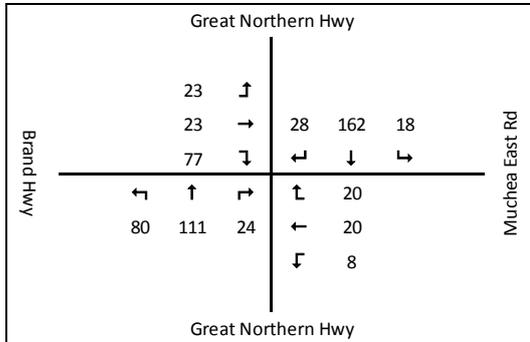
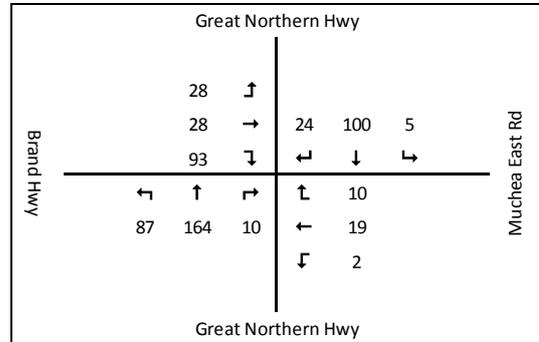


Figure 2.5: PM Peak Hour Volumes (from SCATS data)



Comparing the two sets of turning count data from 2013 and 2015 illustrates that traffic at the intersection has largely remained at similar volumes over the two year period.

Link Volumes

In addition to the intersection volume data as detailed above, daily traffic volume data was obtained from MRWA for the Great Northern Highway, Brand Highway, and Muchea East Road. This data is presented in Table 2.1.

Table 2.1: Existing Traffic Volumes on Key Roads

Road Name	Location of Count	Year of Count	Average Two-Way Weekday Volume (% Heavy Vehicles)	Data Source
Great Northern Highway	North of Muchea East Road	2014	4,309 (32.6%)	MRWA
Great Northern Highway	North of Wandena Road (south of Muchea East Road)	2014	7,155 (30.7%)	MRWA
Brand Highway	West of Great Northern Highway	2014	4,245 (22.5%)	MRWA
Muchea East Road	East of Great Northern Highway	2014	961 (22.0%)	MRWA

3. Development Proposal

3.1 Context

The subject site is located adjacent to the Great Northern Highway, and just north of the Brand Highway. These routes will be the subject to significant changes in the near future as a result of the NorthLink WA project that is currently being delivered by MRWA. The NorthLink WA project involves the two key elements of:

- Southern Section: Tonkin Highway grade separations
- Perth Darwin National Highway: a 37km link between the Southern Section and Great Northern Highway / Brand Highway in Muchea.

A key element of the Perth Darwin National Highway is the delivery of a large-scale interchange between Great Northern Highway and Brand Highway, which will be located adjacent to the LSP area. The delivery of this is yet unconfirmed but it is understood there is a desire to deliver the project in its entirety by the end of 2019¹.

In coordination with the NorthLink WA project, the Great Northern Highway – Muchea to Wubin Stage 2 Upgrade project is also currently being delivered by MRWA. The intent of this project is to improve safety and efficiency on the highway between Muchea and Wubin and also upgrade the road to a standard that allows the movement of RAV 10 from the current RAV 7. RAV classes allow the movement of vehicles of particular dimensions and weight on specific routes. The RAV 10 classification would terminate at Muchea and so at this location vehicles would be required to 'de-couple' and convert into smaller RAV 7 vehicles for travel south into Perth or north via the Brand Highway. In order to enable this, MRWA propose to construct a Road Train Assembly Area (RTAA) directly adjacent to the LSP which is accessed directly from the Perth Darwin National Highway.

3.2 Development Proposal

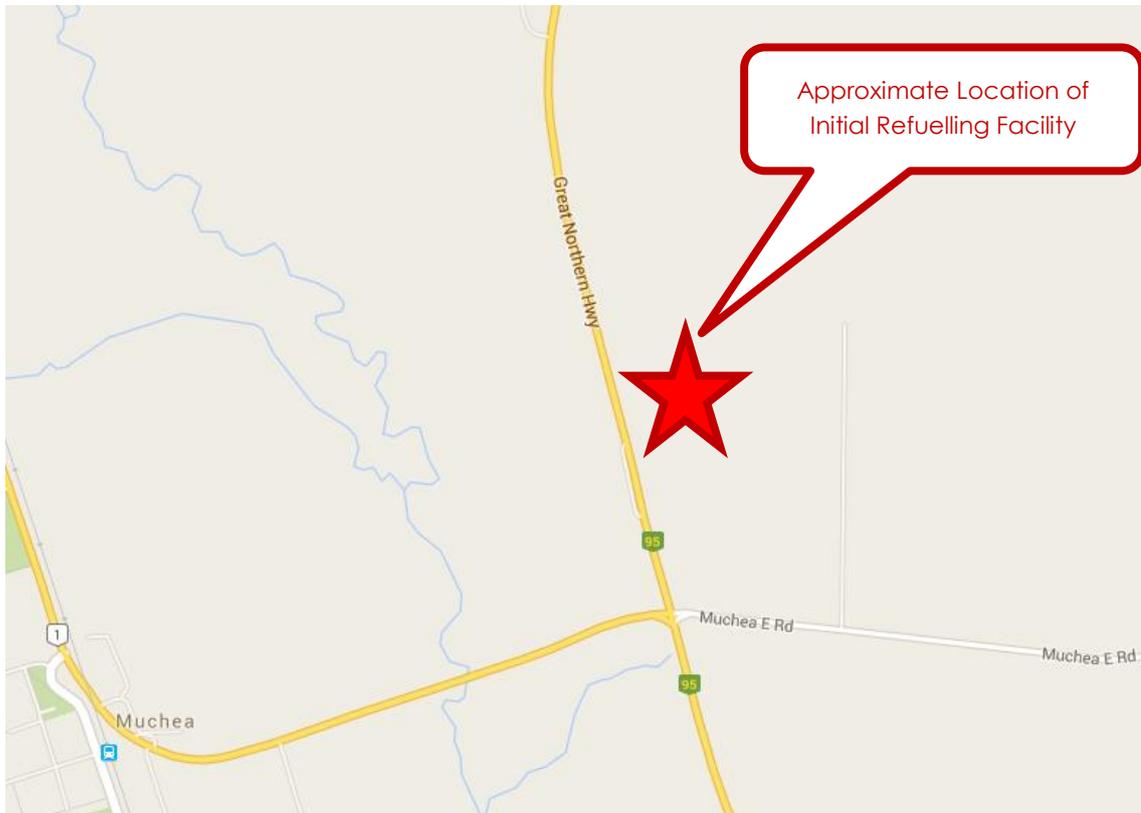
As a result of the major infrastructure works in the area, it is proposed to defer the opening of the LSP proposals until the NorthLink WA infrastructure upgrades are complete. In the meantime, it is proposed to provide an interim development scenario which will allow the operation of an unmanned fuel station. Further information on the interim and LSP proposals are provided below.

Interim Proposal

It is proposed to operate an unmanned re-fuelling facility within the LSP area prior to the implementation of the LSP proposals. The re-fuelling facility will be located on the Great Northern Highway frontage of the LSP area, as conceptually shown in Figure 3.1.

¹ NorthLink WA presentation by Rob Arnott (Senior Project Director) to Engineers Australia on Thursday 17th September 2015.

Figure 3.1: Proposed Interim Proposal Location



Interim Proposal Access

The re-fuelling facility will be accessed via a formal intersection which caters for the vehicles which are expected to use it. The exact location has yet to be determined but will be identified once MRWA proposals for this interchange is finalised.

This arrangement has been discussed with the MRWA Wheatbelt region (refer the scoping discussions provided at Appendix B). MRWA has acknowledged that any investment in this access will ultimately be made abortive works through the delivery of NorthLink WA and so a pragmatic approach will be taken when considering the type and form of the intersection. Notwithstanding this, the intersection should maintain (and improve, if possible) safety on this section of road.

The existing alignment of Great Northern Highway as it passes the LSP area is typically straight and flat, such that an access solution can be easily determined which will satisfy safety and capacity requirements. The exact location and form of the intersection will be determined during a Development Application process for the re-fuelling facility.

LSP Proposal

The LSP is to ultimately incorporate the following land uses as detailed in Table 3.1.

Table 3.1: Development Proposal

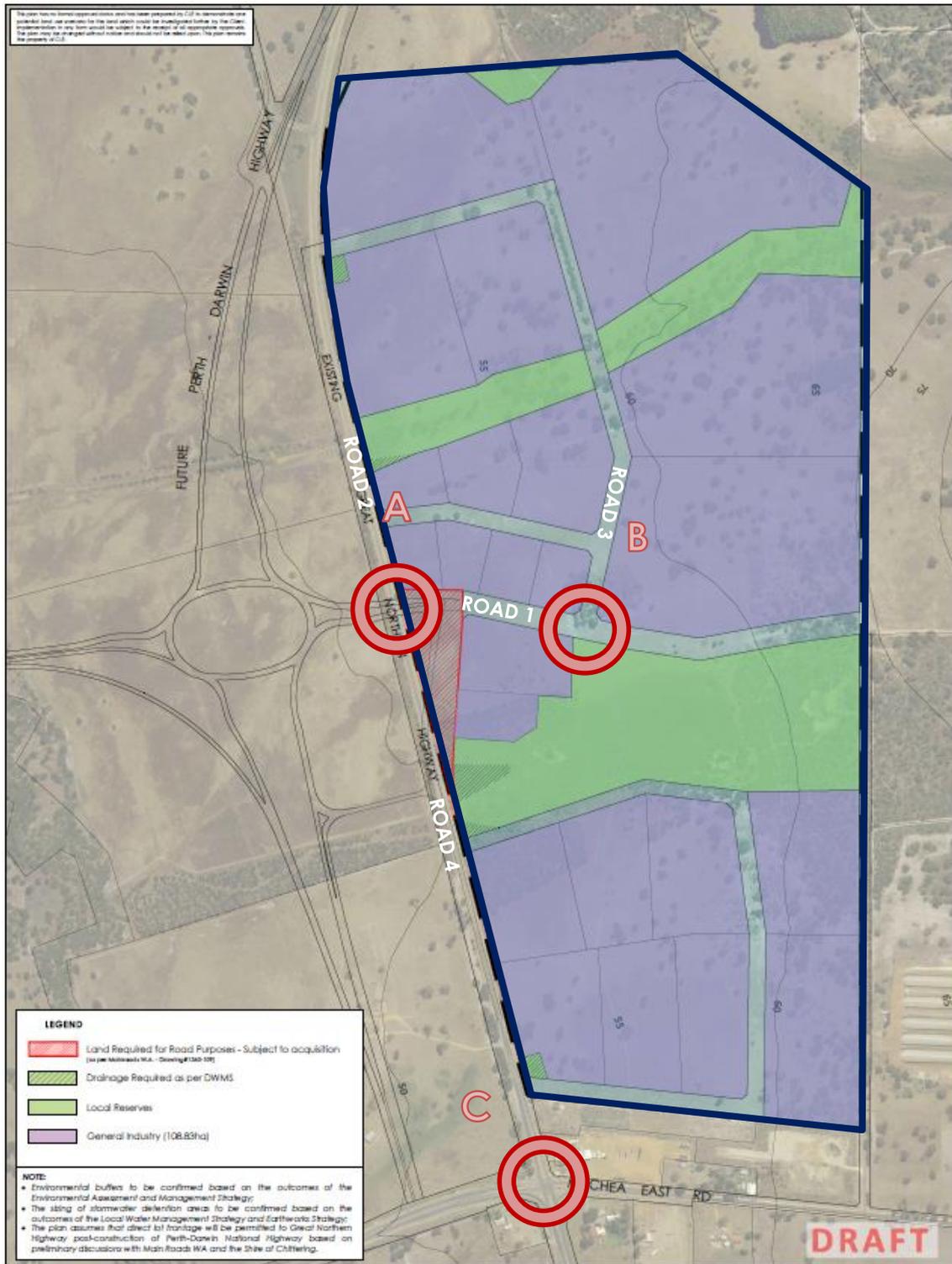
Land Use	Number of Lots	Total Ha
Transport & Logistics	6	57.6
Manufacturing/Processing	4	22.8
Services	5	7.5
Retail	1	1.0
Engineering & Mechanical	2	3.9
Truckwash	1	1.0
Service station	1	2.5
Laydown/Auctioneer/Saleyards	3	10.9
Hire	1	3.6
TOTAL	24	110.8

These land uses will be spread throughout the LSP area, with all prospective land users seeing great benefit from being provided with immediate access to the strategic road network, and so it is likely the end users may operate some regional distribution from the LSP area also.

LSP Proposal Access and Road Network

The anticipated layout of the ultimate LSP road network is shown in Figure 3.2. Primary access will be gained to the LSP area from the NorthLink WA interchange, with secondary access from the existing Great Northern Highway (and in turn Muchea East Road) with driveway access to individual lots provided throughout the LSP area. The internal road network and intersections will be developed to consider the wider aims of the *Muchea Employment Node Structure Plan* and the ability to accommodate access to particular lots by large, heavy vehicles.

Figure 3.2: Proposed Ultimate Structure Plan Concept, Road Network and Key Intersections



Primary Access – Road 1

The layout of the primary access to the LSP (Road 1) is largely dictated by the NorthLink WA project and their interchange design. The current layout, as proposed, is shown in Figure 3.2. As such, Road 1 is subject to further refinement as the NorthLink WA layout and RTAA proposals are finalised.

In the *Muchea Employment Node Structure Plan (2011)*, Road 1 is depicted as a ‘loop road’ as illustrated in Figure 3.3. The loop road runs through the LSP area from the Great Northern Highway and ultimately heads south east. Delivery for the construction of this ‘loop road’ beyond the LSP area will be subject to further development of the *Muchea Employment Node Structure Plan*.

Figure 3.3: Muchea Employment Node Transport Network



Secondary Access – Road 4

It is expected that the existing Great Northern Highway will be downgraded and handed over to SoC to maintain and operate (refer Appendix B scoping discussions). The LSP proposes to use this route for secondary access to the LSP area, via the existing Muchea East Road intersection (Intersection C). No physical changes are proposed to Road 4, other than those proposed as part of NorthLink WA. The majority of demand to and from the LSP area will be generated via NorthLink WA and so the volume of vehicles using Road 4 will be relatively low.

Internal Road Network (including Roads 2 & 3)

The internal road network will largely be focussed around Road 1 from the NorthLink WA interchange. The development of the internal road network will be dependent upon the development staging and vehicular access requirements.

Walking and Cycling

Walking and cycling will play limited roles within the LSP area. As such, the network of internal roads as described above, provides for a legible traffic hierarchy and will assist off road pedestrian and cyclist movements. Generally, a shared path along one side of the internal roads would reasonably serve the needs of the occasional walking and cycling demand.

4. Traffic Impact Assessment

4.1 Assessment Scenarios

Two key scenarios have been determined for consideration as part of this assessment, in line with the development proposals set out in Section 3.2.

Interim Proposal (2016)

Given likely planning and construction timeframes, it is expected that the proposed re-fuelling facility would be operational by the end of 2016. As such, this has been assumed to be the base year for the interim proposal traffic impact assessment. A 2% per annum traffic growth rate has been applied to determine the 2016 base volumes from existing volumes, on the basis of historic traffic growth identified on Great Northern Highway as it passes the site.

LSP Proposal (2031)

The LSP Proposal scenario assumes that the entire subject site is fully developed, and that the proposed NorthLink WA road upgrades (including future intersections and interchanges) are all complete and operational.

In this scenario, the re-fuelling facility delivered as part of the Interim Proposal will be removed from the site and replaced as a full roadside service station (with convenience store and associated facilities) in a location proximate to the proposed RTAA.

In accordance with MRWA traffic modelling for the NorthLink WA project, 2031 has been taken to be the ultimate design horizon at which full development is assumed.

4.2 Assumptions

Muchea Employment Node (Background Traffic)

All land beyond the LSP to the east is currently zoned 'Agricultural Resource' and at the time of writing this report, there are no known scheme amendments proposed within the *Muchea Employment Node Structure Plan* area to rezone land to facilitate industrial development. Further, the project team is not aware of any proposed developments that will generate additional traffic on the road network, specifically on the loop road (Road 1).

Assumption 1: On the basis of the above, it would be reasonable to assume that at LSP's full development around 2031, there would be no or very little traffic demand accessing the loop road through the LSP area from the east.

There is therefore no requirement, for the purposes of operating the LSP area, to provide any road link to the east of 'Intersection B'. This means that the intersection does not need to be an intersection as there is no real purpose for the road to the east for the operations of the LSP.

Assuming an eastern approach to form 'Intersection B' is constructed, it will initially be adequate to provide a priority controlled intersection. The intersection operational assessment detailed in Section 4.5 demonstrates a priority control will have some surplus traffic capacity during peak periods.

Sensitivity tests have also been run by GTA, which indicate that the intersection could accommodate additional traffic to/from the east in the event that further development does occur prior to around 2031. It is however noted that the extent of development to the east, and its subsequent traffic generation on Road 1 would impact the performance of this intersection into the future, and as such the operations of this should be assessed by other Applicants at the time of any proposal being considered on the land parcels to the east.

Assumption 2: 'Intersection B' is constructed as a priority controlled intersection to assist the loop road proposal in the *Muchea Employment Node Structure Plan*, even though there is no requirement to provide a road link to the east of 'Intersection B' for the purposes of operating the LSP area.

Proposed Land Uses within LSP

In order to accurately estimate the traffic generation of the individual specialised industrial land uses within the LSP, GTA was provided with data by Sirona Capital of their other similar industrial estates. The data provided breakdowns of the individual land areas and floor areas within the estates, thus providing ratios of total land area to Gross Leasable Floor Area (GLFA). The ratios were then used to derive the expected traffic generation for the LSP.

Based upon the information provided by Sirona Capital, the following assumptions with respect to individual uses and floor area ratios were adopted in GTA's analysis, as detailed in Table 4.1.

Table 4.1: Land Area and Building Area Proportion Estimates as adopted in GTA's analysis

Specific Land Use	Land Area (ha)	% of building area for land use	GLFA for Traffic Estimates (sq.m)
Transport & Logistics	57.6	15%	86,400
Manufacturing / Processing	22.8	45%	99,750
Services	7.5	64%	47,760
Retail	1.0	66%	6,600
Engineering & Mechanical	3.9	40%	15,600
Truckwash	1.0	40%	4,000
Laydown / Auctioneer / Saleyards	10.9	20-25%	23,650
Hire	3.6	30%	10,800
Service Station	2.5	N/A - refer note [1]	N/A - refer note [1]
Total	110.8 ha	-	294,560 sq.m

[1] Service station traffic estimates not based on floor area but on passing traffic volumes. Further details provided in Table 4.6.

Assumption 3: GTA's traffic generation has been based on the GLFA of each specific land use proposed within the LSP. The GLFA has been derived from other existing industrial estates. On average, the percentage of building area to land area in the LSP is about 27%, which is considered appropriate for general industry.

Trip Generation Rate

In determining trip generation for the LSP, consideration was given to other similar Transport Assessments prepared for similar developments on behalf of Sirona Capital, most notably the *South Bullsbrook Industrial Precinct – Transport Assessment and Staging Report* prepared by Arup in 2014. The trip generation rates for the AM and PM peak periods, as used and agreed by approving agencies are presented in Table 4.2.

Table 4.2: Traffic Generation Rates for LSP Proposal

Land Use	Trip Generation Rate	
	AM Peak Hour	PM Peak Hour
Service/Light Industry	0.46 trips / 100sq.m GLA	0.51 trips / 100sq.m GLA

With respect to determining an appropriate **daily** trip generation rate, reference has been made to the NSW RMS (formerly RTA) *Guide to Traffic Generating Developments*, which specifies a traffic generation rate for 'warehouse' use of **4 trips / 100sq.m** floor area over a typical weekday.

This rate was adopted within this analysis given the 'warehouse' use described in the Guide, and the proposed mixed of industrial-based uses within the LSP are directly comparable. It is also noted that the warehouse rate specified in the Guide for peak hour traffic generation is 0.5 trips / 100sq.m floor area, which correlates to the peak hour traffic generation rates adopted in the *South Bullsbrook Industrial Precinct – Transport Assessment and Staging Report* and subsequently also used for this assessment.

To further support this daily rate, GTA has compiled the following summary of relevant trip generation rates from a number of sources around Australia and New Zealand. These include:

- NSW Roads and Maritime Services (RMS) *Guide to Traffic Generating Developments*
- Queensland Department of Transport and Main Roads (TMR) *Road Planning and Design Manual*
- New Zealand Trips and Parking Database Bureau (NZTPDB) *Trips Database Bureau Database* (TDB Database) entries for Australia
- GTA's Generation Database of trip generation from a range of land uses across Australia, including surveys of six industrial sites in Victoria
- *Ipswich Car Parking Rates Benchmarking Study – Business Park Traffic Generation Rates* comprehensive study prepared by GTA for Ipswich City Council for an industrial site in Carole Park, Queensland.

The peak hour and daily trip generation rates for industrial land uses as specified in these data sources are summarised in Table 4.3.

Table 4.3: Summary of Trip Generation Rates

Data Source	Data Origin	Specified Land Use Category	Peak Hour Trip Generation Rate (trips / 100sq.m floor area)	Daily Trip Generation Rate (trips / 100sq.m floor area)
NSW RMS	New South Wales	Warehouse	0.5 trips / hour	4 trips / day
		Factory	1 trip / hour	5 trips / day
Qld TMR	Queensland	Factory	-	4-5 trips / day
NZTPDB	Erskine Park, New South Wales	Industrial Park	0.15-0.16 trips / hour	1.89 trips / day
	Eastern Creek, New South Wales	Industrial Park	0.19-0.20 trips / hour	2.31 trips / day
	Port Stephens, New South Wales	Industrial Park	0.32-0.39 trips / hour	3.78 trips / day
GTA Database (derived from our own Traffic Surveys)	Victoria	3 industrial parks, 2 factories and 1 distribution centre	0.5 trips / hour	4.5 trips / day
	Carole Park, Queensland	Industrial Park	0.3 trips / hour	3.7 trips / day
Average of All Data Sources			0.44 trips / hour	3.8 trips / day

The data indicates that **average peak hour** trip generation of these industrial sites is in the order of **0.44 vehicle trips / 100sq.m** per hour. This concludes that the adopted rates of 0.46 and 0.51 vehicle trips / 100sq.m floor area are sufficiently conservative in estimating the traffic generated by the proposed LSP.

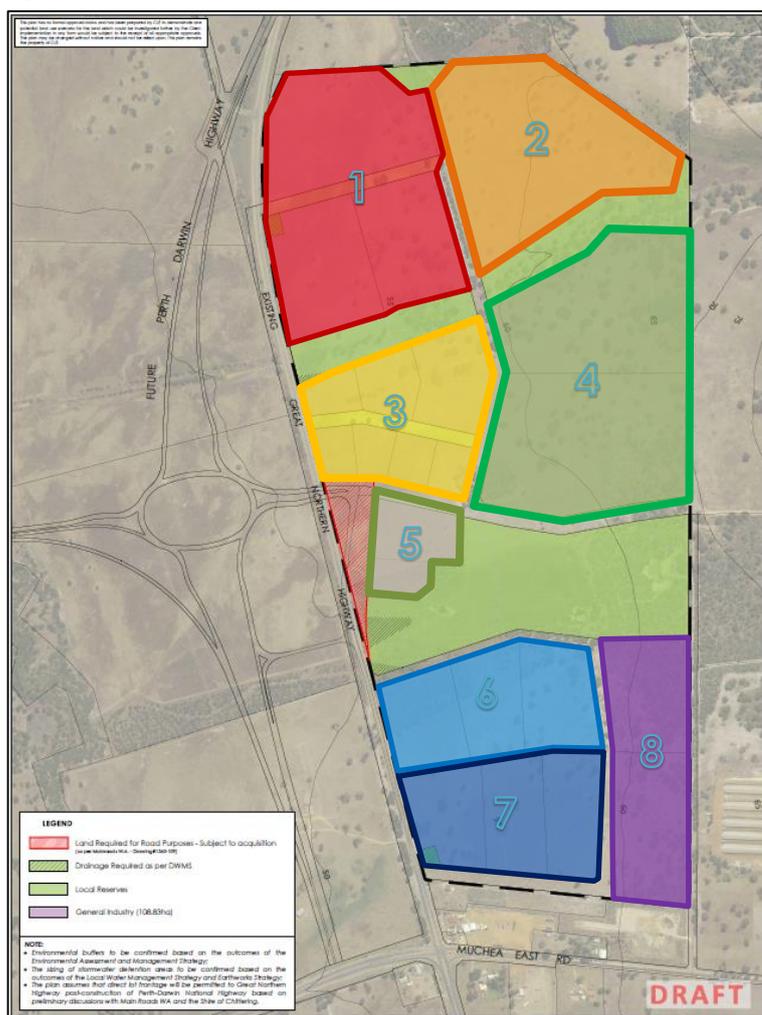
With respect to **daily rates**, Table 4.3 indicates that a trip generation rate of **4 vehicle trips / 100sq.m** per day is consistent with the NSW RMS rate for 'warehouses', the lower end of the Queensland TMR rate for 'factories', and is greater than a number of empirical data sources obtained through GTA's surveys. Accordingly, this rate is considered to be appropriate and provide for a sufficiently conservative estimate of traffic generated by the proposed LSP.

Assumption 4: A daily trip generation rate of 4 trips / 100sq.m GLFA has been used for the LSP Proposal.

Trip Generation Zones

To accurately represent localised traffic generation and distribution, the LSP has been divided into eight trip generation 'zones'. These zones represent a portion of the total traffic generated by the LSP and each have their own distribution across the local road network. These zones are shown in Figure 4.1.

Figure 4.1: Trip Generation Zones



4.3 Traffic Generation

The traffic generating characteristics of each scenario are considered in the following sections.

Interim Proposal (2016)

Given that the re-fuelling facility is to be an unmanned development providing only fuel with no ancillary on-site uses, it is expected that trips to the site would be almost exclusively drop-in trips (i.e. trips already on the road network). As such, traffic generation for the interim proposal has been estimated based on a proportion of passing vehicles on the Great Northern Highway.

Information provided by the potential service station operator for the interim development proposal suggests the following with respect to anticipated drop-in traffic proportions:

- 3% of passing light vehicles will drop-in at the re-fuelling facility
- 5% of passing heavy vehicles will drop-in at the re-fuelling facility
- 7% of passing road trains will drop-in at the re-fuelling facility.

It is noted that these rates provide for the number of vehicles passing the site that drop-in to the re-fuelling facility, each of which would generate one inbound and one outbound movement. The definition of road trains in the above respect is RAV 10 vehicles, and as they are not permitted to

travel on the existing Great Northern Highway they have been excluded in the Interim Proposal scenario.

The drop-in trip proportions for light and heavy vehicles have been adopted as the basis for traffic generation assumptions of the proposed re-fuelling facility. It is noted that these traffic generation assumptions in Table 4.4 apply to service stations with convenience stores, and as such are to be considered a conservative estimate of traffic generation for the proposed unmanned re-fuelling facility.

With this conservative estimate in mind, the total anticipated traffic generation for the Interim Proposal is provided in Table 4.4.

Table 4.4: Estimated Traffic Generation for Interim Proposal

Land Use	Period	Passing LVs (2016)	Passing HVs (2016)	LV Drop-Ins	HV Drop-Ins	Total Drop-Ins
Service Station	AM Peak	258	111	8 vehicles (16 vehicle movements)	6 vehicles (12 vehicle movements)	14 vehicles (28 vehicle movements)
	PM Peak	236	101	7 vehicles (14 vehicle movements)	5 vehicles (10 vehicle movements)	12 vehicles (24 vehicle movements)
	Daily	3,200	1,371	96 vehicles (192 vehicle movements)	69 vehicles (138 vehicle movements)	165 vehicles (330 vehicle movements)

Table 4.4 indicates that the Interim Proposal is expected to generate some 28 and 24 vehicle movements in and out of the site in the AM and PM peak hours respectively, with some 330 vehicle movements in and out of the site over a typical day.

LSP Proposal (2031)

The trip generation rates have been applied to the trip generation "zones" developed by GTA over the LSP area.

The traffic generated in the morning and evening peak periods are set out below in Table 4.5.

Table 4.5: Traffic Generation for LSP Proposal

Trip Generation Zone	AM Peak Hour		PM Peak Hour	
	Arrivals	Departures	Arrivals	Departures
1	273	30	114	222
2	172	19	72	140
3	258	29	108	210
4	84	9	35	68
5	See below			
6	85	9	36	69
7	104	12	44	85
8	195	22	82	159

With respect to the proposed ultimate service station (Trip Generation Zone 5), estimates of its traffic generation have been assumed to be proportional to the anticipated scale of future passing volumes on Northlink WA around 2031 (as provided by MRWA in their email attached at Appendix B). These proportions and resultant traffic generation estimates are detailed in Table 4.6.

Table 4.6: Estimated Service Station Traffic Generation for LSP Proposal

Land Use	Period	Passing Traffic Volumes	Drop-In Proportions of Passing Vehicles	Trip Generation Estimate
Service Station	AM Peak	1,075 vehicles / hour	3% of light vehicles 5% of heavy vehicles	39 trips / hour
	PM Peak	800 vehicles / hour		29 trips / hour
	Daily	10,000 vehicles / day	7% of road trains	365 trips / day

On this basis, the estimated traffic generation associated with the total LSP proposal is detailed in Table 4.7.

Table 4.7: Estimated Total Traffic Generation for LSP Proposal

Trip Generation Zone	Assumed GLFA (sq.m)	Trip Generation Rate			Trip Generation Estimate		
		AM Peak	PM Peak	Daily	AM Peak (trips/hour)	PM Peak (trips/hour)	Daily (trips/day)
1	66,000	0.46 trips / 100sq.m GLA	0.51 trips / 100sq.m GLA	4 trips / 100sq.m GLA	304	337	2,640
2	41,550				191	212	1,662
3	62,360				287	318	2,494
4	20,250				93	103	810
5	N/A (5.4 ha site)	As per above plus Table 4.6 for service station component			82	72	655
6	20,500	0.46 trips / 100sq.m GLA	0.51 trips / 100sq.m GLA	4 trips / 100sq.m GLA	94	105	820
7	25,200				116	129	1,008
8	47,100				217	240	1,884
Total					1,384	1,516	11,973

Table 4.7 indicates that the proposal is expected to generate in the order of 1,400 vehicle movements in the AM peak, 1,500 vehicle movements in the PM peak and a total of 12,000 vehicle movements per typical weekday.

4.4 Distribution and Assignment

Interim Proposal (2016)

Given that the development traffic is expected to be entirely drop-in based in the Interim Proposal, directional distributions would correlate with existing traffic flows on the Great Northern Highway. As such, the following directional distributions have been assumed:

- AM Peak:
 - 60% of development traffic travels southbound (i.e. enters from the north and leaves to the south)
 - 40% of development traffic travels northbound (i.e. enters from the south and leaves to the north).
- PM Peak:
 - 40% of development traffic travels southbound (i.e. enters from the north and leaves to the south)
 - 60% of development traffic travels northbound (i.e. enters from the south and leaves to the north).

As noted above, the traffic generated by the re-fuelling facility is expected to be entirely drop-in based (i.e. trips already on the road network), and as such is not expected to have a net impact on traffic volumes at adjacent intersections.

On this basis, the anticipated traffic generation for the Interim Proposal is shown in Figure 4.2 and Figure 4.3.

Figure 4.2: AM Peak Hour Interim Traffic Generation

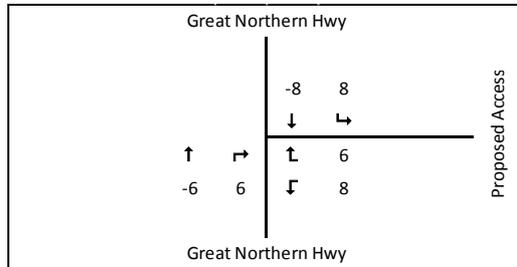
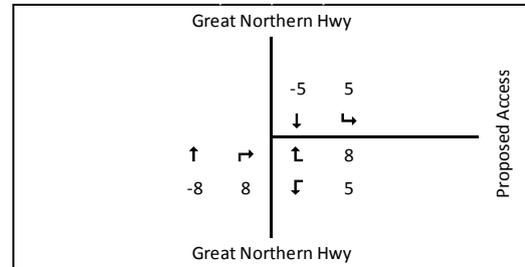


Figure 4.3: PM Peak Hour Interim Traffic Generation



LSP Proposal (2031)

Noting the future layout of the road network with Northlink WA rerouting the Great Northern and Brand Highways, and the future interchange with the east-west road through the LSP area, it is expected that the vast majority of traffic would utilise this major interchange in accessing the LSP area. In the case of the proposed service station, all traffic to this site is assumed to be drop-in trips from the new highway alignment.

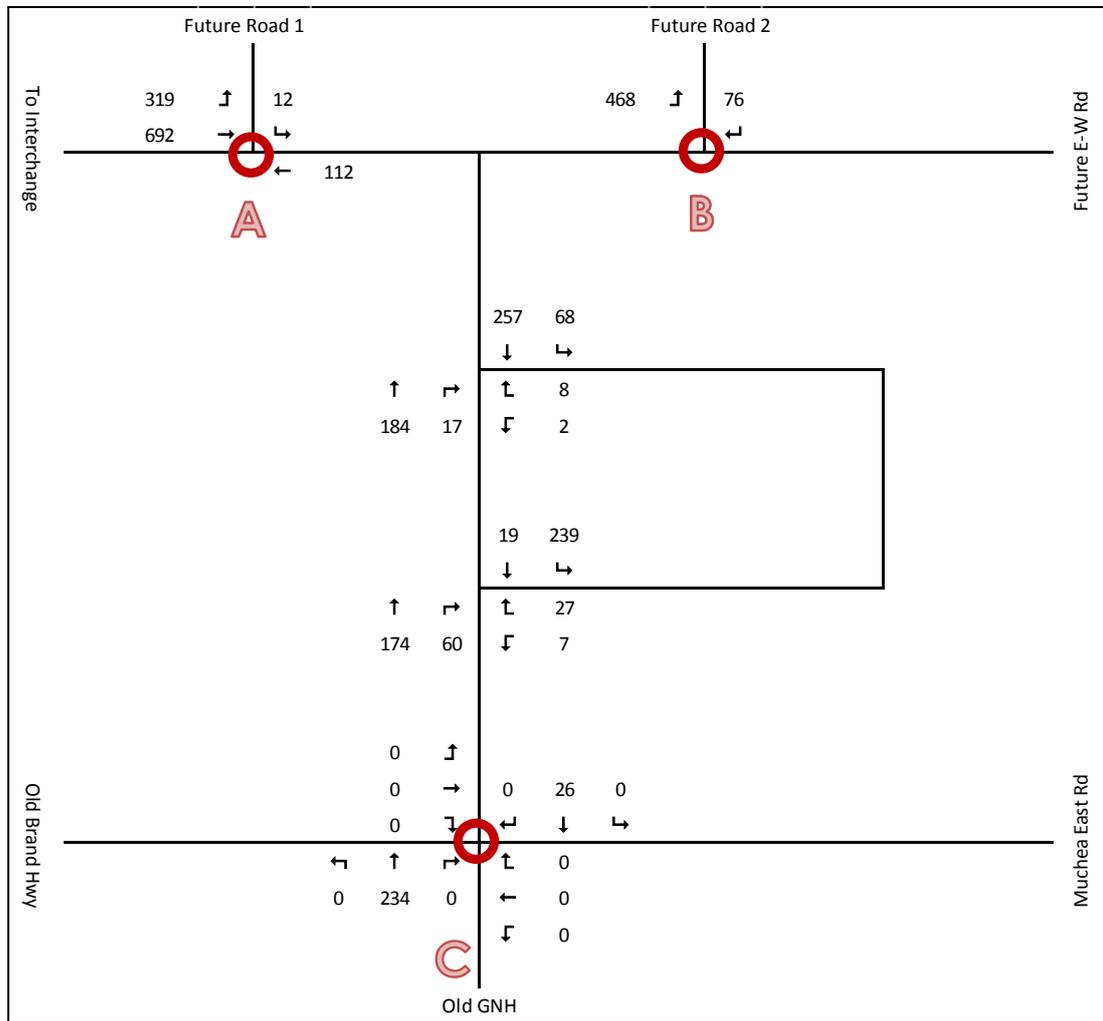
As such, the following assumptions with respect to traffic distribution have been made:

- All Trip Generation Zones except Zone 5 (service station):
 - 80% of traffic travels to/from the LSP area via Northlink WA and the east-west road
 - 20% travels to/from the south via the existing Great Northern Highway
- Trip Generation Zone 5:
 - 100% of traffic travels to/from the site via Northlink WA and the east-west road.

The individual turning movements at intersections internal to the LSP have been assumed in accordance with the location of the Trip Generation Zones, the internal road network layout, and the turning movements permitted at each intersection (i.e. left-in / left-out movements versus full turning movements).

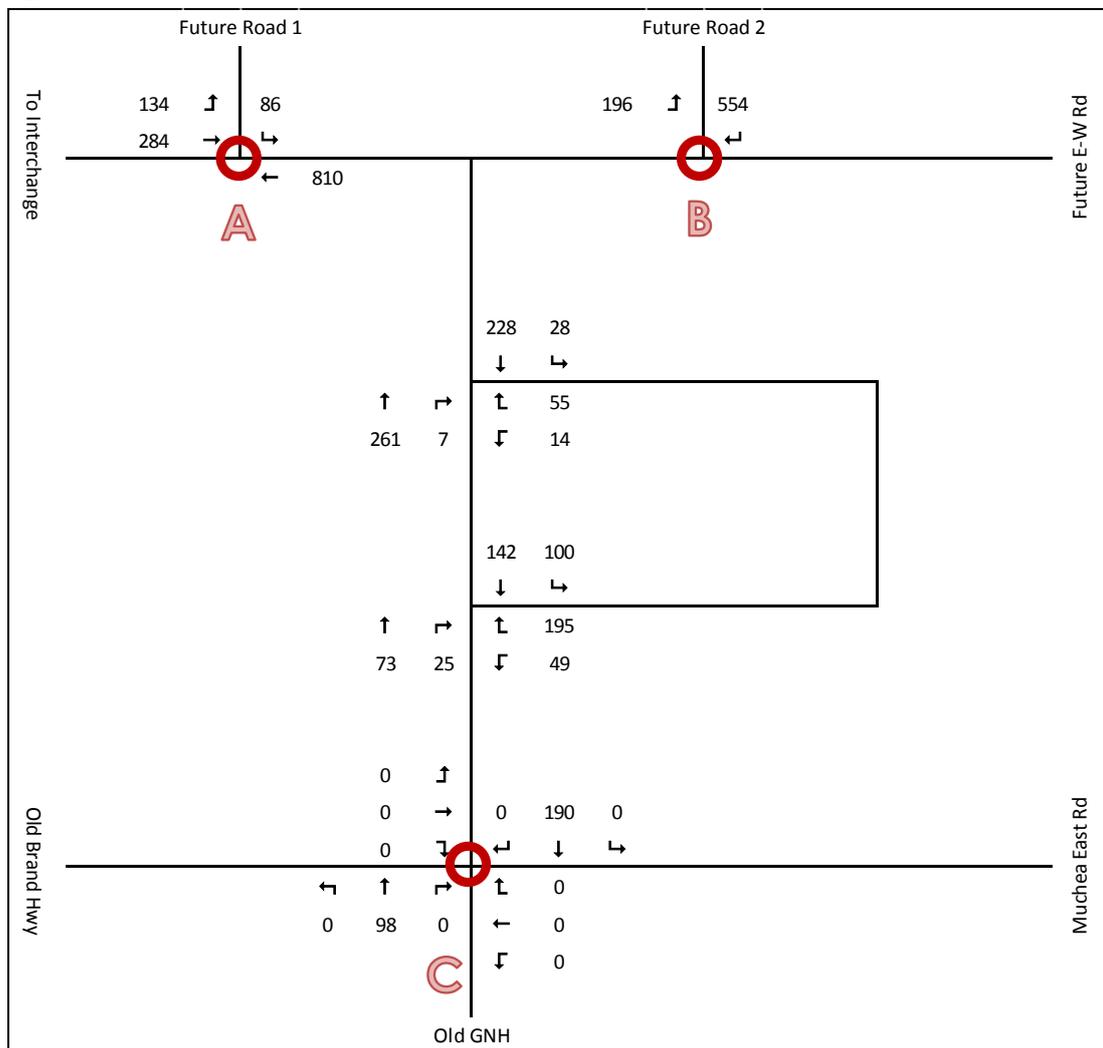
Based on these estimates and assumptions, the turning movements generated at the individual intersections within the LSP area during the AM and PM peak hours are shown in Figure 4.4 and Figure 4.5, respectively.

Figure 4.4: AM Peak Hour LSP Ultimate Traffic Generation



= Intersection Locations as per Figure 4.6

Figure 4.5: PM Peak Hour LSP Ultimate Traffic Generation



= Intersection Locations as per Figure 4.6

4.5 Traffic Impact Assessment

The traffic impact assessment approach and the results of each assessment scenario are considered in the following sections.

Methodology

The operation of the key intersections has been assessed using SIDRA Intersection² (SIDRA), a computer based modelling package which calculates intersection performance.

As detailed in the WAPC Guidelines, the critical measure of intersection performance is average delay per vehicle. Table 4.8 sets out the thresholds for intersection delays considered to provide an adequate Level of Service (LoS) within the WAPC Guidelines for priority-controlled and signalised intersections.

² Program used under licence from Akcelik & Associates Pty Ltd

Table 4.8: WAPC Guideline Thresholds for Intersection Operations

Delay Component	Priority-Controlled Intersection Threshold	Signalised Intersection Threshold
Average delay for all vehicles passing through the intersection	<35 seconds*	<55 seconds
Average delay for any individual vehicle, pedestrian or cyclist movement	<45 seconds	<65 seconds

* Only applicable to non-priority legs of intersection due to zero delays associated with priority movements

The following sections set out findings of SIDRA assessments of the key intersections within and proximate to the subject site for each proposal scenario.

Interim Proposal (2016)

The operation of an access to the proposed re-fuelling facility on the existing Great Northern Highway has been assessed in SIDRA for the 2016 design year. Detailed results of this expected operation are provided at Appendix C of this report.

The results of the assessment indicate that this intersection arrangement is expected to operate acceptably, with all delays well within acceptable limits.

LSP Proposal (2031)

In preparing this assessment, the following intersections have been assessed in SIDRA for the 2031 design horizon at ultimate development:

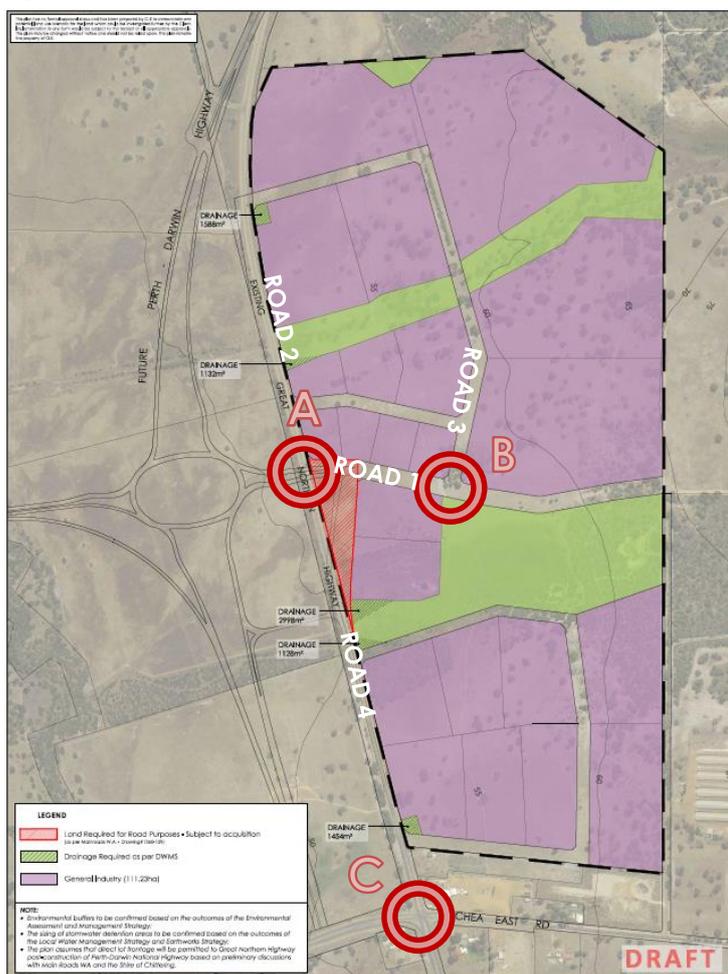
Intersection A: Road 1 / Road 2 (left-in / left-out intersection)

Intersection B: Road 1 / Road 3 (unsignalised full turning movement T-intersection)

Intersection C: Existing Great Northern Highway / Existing Brand Highway / Muchea East Road (signalised four-way intersection).

The locations of these intersections within the LSP are shown in Figure 4.6.

Figure 4.6: Intersections Assessed in Ultimate Scenario



The operations of each of these intersections are discussed below, with detailed SIDRA outputs provided at Appendix C.

Intersection A (Left-in / Left-out)

The results of the assessment indicate that 'Intersection A' is expected to operate within acceptable limits in the ultimate design horizon. Average delays of the northern approach do not exceed 9 seconds in either peak period, with a Level of Service A on all approaches.

Intersection B (unsignalised full turning movement T-intersection)

The operations 'Intersection B' have been modelled as a T-intersection, despite the fact that no traffic is expected to the east of this intersection at LSP's full development. Notwithstanding, the operational assessment indicates that delays remain within acceptable limits, with an average delay of 33 seconds expected during the PM peak hour.

As per the discussions earlier in this chapter, this assessment does not incorporate any traffic travelling further to the east, given that no development is currently planned to the east of the site at the time of writing this report. However, should this change, the impact of future development would need to be determined by way of an operational assessment, with any upgrades required triggered by other development and not the LSP.

Intersection C (Great Northern Highway / Brand Highway / Muchea East Road)

The operations of 'Intersection C' have been considered. The opening of Northlink WA will see both the Great Northern and Brand Highways rerouted away from this intersection to the new interchange, which will significantly reduce the traffic volumes at this existing signalised intersection in the ultimate design horizon.

As such, with the additional traffic generated by the LSP, the intersection is expected to operate within acceptable limits in the 2031 design year. All average delays remain below the 55 second threshold specified by WAPC as acceptable for signalised intersections. The detailed SIDRA outputs are provided at Appendix C.

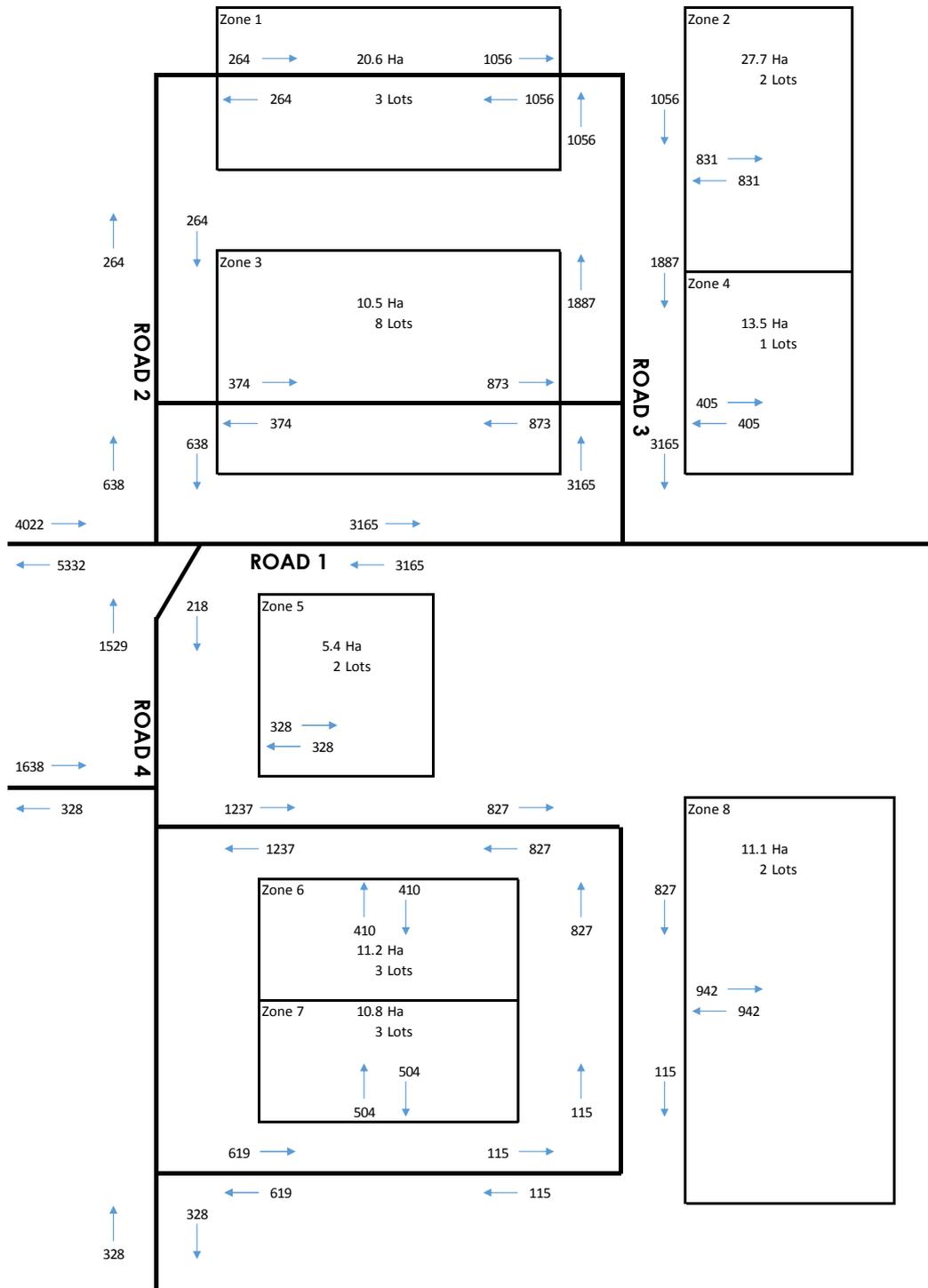
The intersection separation distance to the LSP's most southern intersection on the Great Northern Highway has also been checked. Currently, it is proposed that the two intersections are 150m (approx.) apart. The SoC's *Local Planning Policy No. 16 – Roads and Drainage* does not specify junction separation distances, however, the current *Liveable Neighbourhoods* has been referred which indicates the junction spacing (centreline to centreline) should be a minimum 40m for Neighbourhood Connectors / Local Distributors. As such, and having regard for the estimated traffic queue back from 'Intersection C' under the Northlink WA operating scenario, the proposed 150m junction spacing is adequate.

4.6 Road Hierarchy and Cross-Sections

The road hierarchy within the LSP area has been determined from the trip generation exercise which examined the daily vehicular activity at each of the lots within the LSP area. Individual lots were grouped to create trip generation "zones" and traffic assigned across the internal road network.

Figure 4.7 provides a summary of the distributed traffic through the proposed road network.

Figure 4.7: LSP Ultimate Daily Flows – simplified (vehicles per day)



The daily traffic volumes presented in Figure 4.7 indicate the following:

- Road 1 connecting the LSP area to the proposed Northlink WA interchange will be designated as a District Distributor A road, expected to carry around 9,400 vehicles per day upon full development. This is proposed to be a 40m wide road reserve, as discussed further in this section.

- Road 2 will be a District Distributor B type, based on the expected 6,300 vehicles per day upon full development. However, as the road runs through land use cells instead of between cells, the road could be downgraded in classification to a Local Distributor to match its actual function. The forecast 6,300 vehicles per day is a highly conservative estimate for Structure Planning purposes and the proposed 30m wide road reserve with a single carriageway will be sufficient to cater for the 'worst-case' link volume expected on this section.
- Road 4, the retired section of the Great Northern Highway south of the main east-west link will be designated as a Local Distributor, as it provides a link to access roads, expected to carry around 1,700 vehicles per day upon full development.
- The remaining internal roads within the LSP area fall within the daily volume limits and function for Access Roads, expected to carry below 3,000 vehicles per day upon full development.

The road hierarchy glossary of terms is provided in Table 4.9, the proposed road hierarchy is shown in Figure 4.8, and the 2031 daily link volumes (two-way) in Figure 4.9.

Table 4.9: Glossary of Road Hierarchy Terms

<i>Liveable Neighbourhoods Street Types</i>	<i>Conventional Road Hierarchy (from the Metropolitan Functional Road Hierarchy, Main Roads 1997)</i>
Primary Distributors. Those arterial routes that are highly connective, with service roads wherever possible, and limited intersections. They are often signal-controlled. Indicative maximum traffic capacity is 35,000 vpd for four lanes and 50,000 vpd for six lanes.	Primary Distributors. These provide for major regional and inter-regional traffic movement and carry large volumes of generally fast moving traffic. Some are strategic freight routes and all are National or State roads.
District Distributor Integrator 'A'. An arterial route that has frequent connections to local streets and development frontage along its length, it typically has service roads with on-street parking for mixed use, with direct vehicle access limited where there are no service roads. Indicative maximum traffic capacity is 35,000 vpd.	District Distributor A. These carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property.
District Distributor Integrator 'B'. An arterial route that has frequent connections to local streets and development frontage along its length, it typically has one clear lane for each direction with on-street parking. Indicative maximum traffic capacity is 20,000 vpd.	District Distributor B. These perform a similar function to type A district distributors but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with a traffic demand in excess of that originally intended. District Distributor A and B roads run between land use cells and generally not through them, forming a grid which would ideally space them around 1.5 kilometres apart.
Neighbourhood Connectors. These are local streets that provide the lower order sub-arterial network that services and links neighbourhoods and towns. They spread local traffic loads, act as a bus route, have a predominantly residential frontage, have frequent connection points to local streets, and are typically traffic calmed to limit noise and facilitate pedestrian use.	Local Distributors. Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks.
Access Streets. Streets providing predominantly residential access where the local environment is dominant, traffic speeds and volumes are low, and pedestrian and cycle movements are facilitated.	Access Roads. Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly.

Source: Liveable Neighbourhoods (2000) http://www.planning.wa.gov.au/dop_pub_pdf/LNTMG.pdf

Figure 4.8: Proposed LSP Road Hierarchy

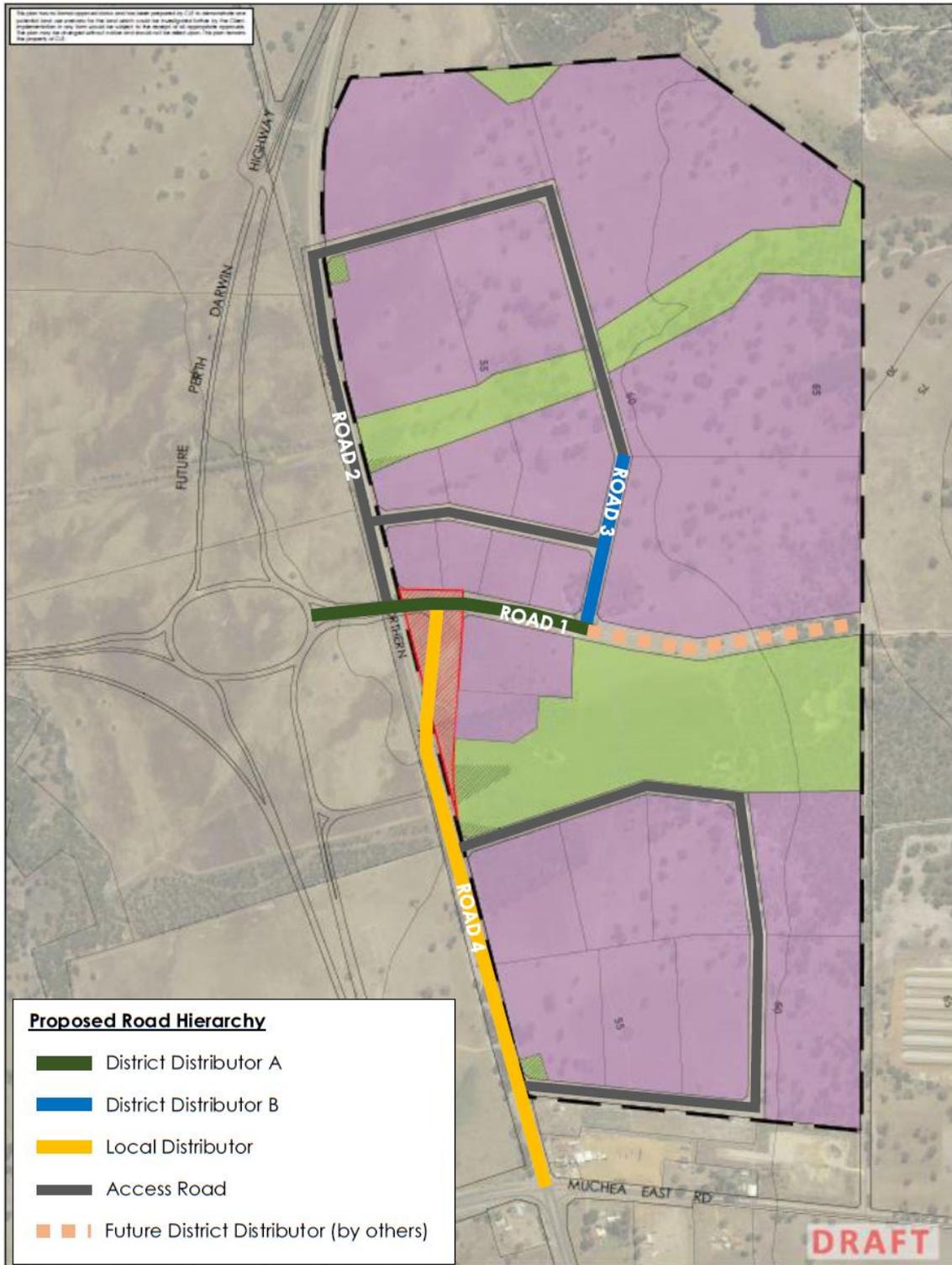
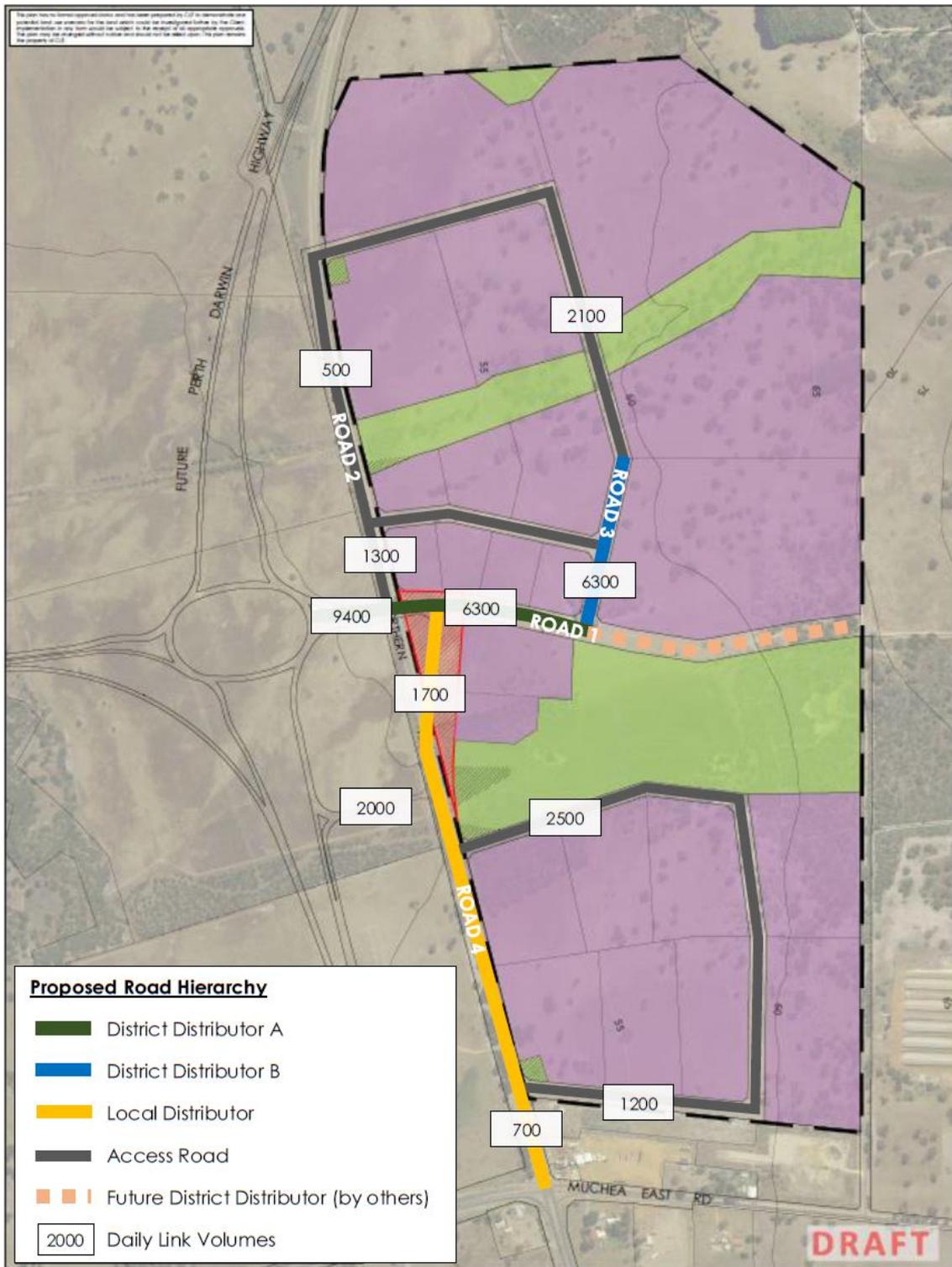


Figure 4.9: Daily Volumes on Key Roads in 2031



As the internal road network is developed within the LSP, it is crucial to determine what size of vehicles may use different areas of the development to inform the cross-sections and intersection layouts. Since the majority of vehicles expected to use the LSP will be large and require large areas to turn around to negotiate intersections, consideration should be given to grouping land

uses by vehicles sizes which would allow the larger intersections to be applied only in specific areas of the LSP.

In order to determine the appropriate road reserves for each of the roads within the LSP area, reference has also been made to the *Muchea Employment Node Structure Plan*, which correlates the main east-west road within the LSP as the 'loop road'. This is proposed to be a 40m wide road reserve, designed with provision for future use as a High Wide Load route and/or dualling.

The proposed LSP road reserve widths have also been cross-checked with the SoC's *Local Planning Policy No. 16 – Roads and Drainage*. This policy provides the following guidance with respect to road reserve widths for urban areas:

- Important Through Roads: 40m road reserve width
- Other Roads: 20m road reserve width.

Applying these requirements to the proposed LSP road network layout, it is considered that Road 4 and Road 1 would constitute 'important through roads' as per SoC's definition, given the distribution role they provide to the LSP area and beyond. These roads would therefore require a minimum reserve width of 40m.

The existing Great Northern Highway is set within a road reserve of 40m or greater, and as such meets the minimum requirement.

The Great Northern Highway is also a key Over Size Over Mass (OSOM) load route. In this respect, the design of the RTAA and access to it will need to allow access by these vehicles. OSOM routes typically apply a 10m x 10m clearance envelope to allow passage of these vehicles, and this will need to be considered when designing the internal roads.

The indicative cross-section for a 40m road reserve has been prepared as shown in Figure 4.10. This cross-section proposes a single carriageway road initially, with a 10m wide pavement and a combined 9.5m wide bench, swale and verge. This reserve width gives provision for future dualling when the traffic volumes warrant it in the longer term.

The remaining roads proposed within the LSP would be classed as 'other roads' and therefore require a minimum reserve width of 20m as per SoC's requirements. A width of 30m has been proposed for the 'other roads' to accommodate necessary swales and verge widths as shown in Figure 4.11.

On the above basis, the proposed road reserves are expected to be suitable to service the LSP and accord with the *Muchea Employment Node Structure Plan* and the SoC's design requirements.

Figure 4.10: Proposed East-West Road Cross-Section – 40m wide Road Reserve with Roadside Drain

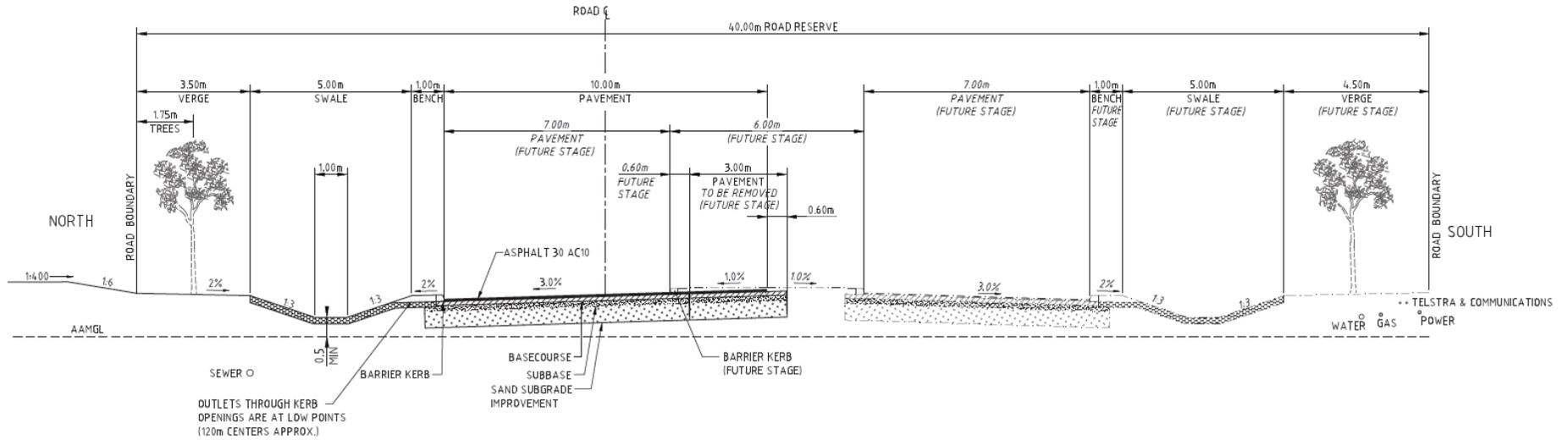
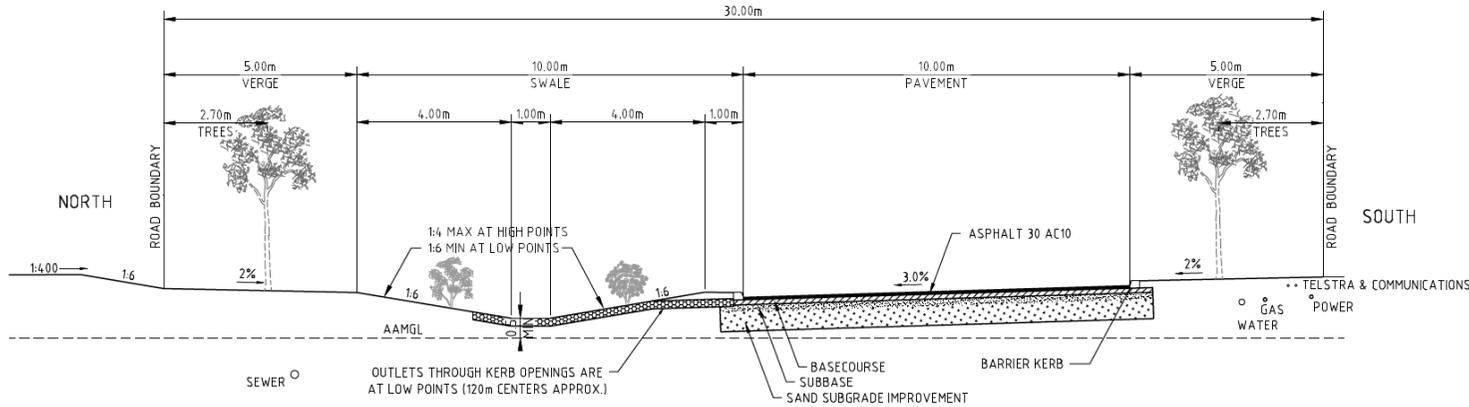


Figure 4.11: Proposed Other Roads Cross-Section – 30m wide Road Reserve with Roadside Drain



Source: Cossill & Webley (2015)

5. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i The Muchea East LSP is to include some 149 hectares of land with predominantly general industry uses.
- ii Access is to be facilitated by the proposed Perth Darwin National Highway (Northlink WA), a new east-west road (Road 1) and the existing Great Northern Highway.
 - o Road 1 is the primary access to the LSP and its layout is largely dictated by the NorthLink WA project and their interchange design.
 - o The internal road network will largely be focussed around Road 1. The development of the internal road network will be dependent upon the development staging and vehicular access requirements.
 - o It is expected that the existing Great Northern Highway will be downgraded and handed over to Shire of Chittering to maintain and operate when Northlink WA is operational. The LSP proposes to use the Great Northern Highway (Road 4) for secondary access to the LSP area, via the existing Muchea East Road intersection. No physical changes are proposed to Road 4, other than those proposed as part of NorthLink WA. The majority of demand to and from the LSP area will be generated via NorthLink WA and so the level of vehicles utilising Road 4 will be relatively low.
- iii As a result of the major infrastructure works in the area, it is proposed to develop the LSP in two key stages, an Interim Proposal (around 2016) and an LSP Proposal (full development, around 2031):
 - o The Interim Proposal is to operate an unmanned re-fuelling facility within the LSP area prior to the implementation of the LSP land use proposals. The re-fuelling facility will be located on the Great Northern Highway frontage of the LSP area. The existing alignment of Great Northern Highway as it passes the LSP area is typically straight and flat, such that an access solution can be easily determined which can satisfy safety and capacity requirements. The exact location and form of the intersection will be determined during a Development Application process for the re-fuelling facility.
 - o The LSP Proposal contains various land uses ranging from Transport and Logistics to Saleyards (refer Figure 4.1) and will be spread throughout the LSP area. All prospective land users will see great benefit from being provided with immediate access to the strategic road network via Northlink WA.
- iv The proposed road hierarchy within the LSP is consistent with Main Roads WA's road hierarchy requirements for the anticipated daily traffic volumes at full development. The daily traffic volumes as presented in this report indicate:
 - o Road 1, connecting the LSP area to the Northlink WA interchange will be designated as a District Distributor A road, expected to carry around 9,400 vehicles per day upon full development. This is proposed to be a 40m wide road reserve, designed with provision for future use as a High Wide Load route and/or dualling.
 - o Road 3, connecting to Road 1 will be a District Distributor B type, based on the expected 6,300 vehicles per day upon full development. As the road runs through land use cells instead of between cells, the road could be downgraded in classification to a Local Distributor to match its actual function. The forecast 6,300 vehicles per day is a highly conservative estimate for Structure Planning purposes and the proposed 30m

- wide road reserve with a single carriageway will be sufficient to cater for the traffic volumes expected on this section.
- Road 4, the retired section of the Great Northern Highway will be designated as a Local Distributor, as it provides a link to Access Roads and is expected to carry around 1,700 vehicles per day upon full development just south of Road 1.
 - The remaining internal roads within the LSP area fall within the daily volume limits and meet the function for Access Roads, expected to carry below 3,000 vehicles per day upon full development.
- v The proposed road reserve widths have been designed consistent with the *Muchea Employment Node Structure Plan* and the Shire of Chittering's design requirements and policies.
 - vi Walking and cycling will play limited roles within the LSP area. As such, the network of internal roads provide for a legible traffic hierarchy and will assist off road pedestrian and cyclist movements. Generally, a shared path along one side of the internal roads would reasonably serve the needs of the occasional walking and cycling demand.
 - vii The land uses proposed in the LSP mean feasible provision of public transport services is difficult to achieve. Notwithstanding, an opportunity to provide a bus stop on the upgraded section of Northlink WA adjacent the LSP exists as part of a wider operating regional service.
 - viii The existing Great Northern Highway is a key Over Size Over Mass (OSOM) load route. As such, the design of Main Road's Road Train Assembly Area and the access to it will need to allow for OSOM vehicles. OSOM routes typically apply a 10m x 10m clearance envelope to allow passage of these vehicles, and this will need to be considered at the next stages of designing the internal roads.
 - ix The Interim Proposal (refuelling facility, 2016) is expected to generate some 28 and 24 vehicle movements in and out of the site in the AM and PM peak hours respectively, with some 330 vehicle movements in and out of the site over a typical day.
 - x The LSP Proposal (full development, around 2031) is expected to generate in the order of 1,400 vehicle movements in the AM peak, 1,500 vehicle movements in the PM peak and some 12,000 vehicle movements per typical weekday.
 - xi The operational assessments conclude that the key internal intersections within the proposed LSP are expected to operate within acceptable limits as per the WAPC guidelines upon full development. Findings for the key intersections (refer Figure 4.6) are:
 - Intersection A: The proposed left-in / left-out intersection is expected to operate within acceptable limits in the ultimate design horizon. Average delays of the northern approach do not exceed 9 seconds in either peak period, with a Level of Service A on all approaches.
 - Intersection B: The operations of the eastern access road intersection have been modelled as a T-intersection, despite the fact that no traffic is expected to/from the east at full development. Notwithstanding, the operational assessment indicates that delays remain within acceptable limits, with an average delay of 33 seconds expected during the PM peak hour.
 - Intersection C: The operations of the existing signalised intersection on the current Great Northern Highway / Brand Highway / Muchea East Road intersection have been considered. The opening of Northlink WA will see both the Great Northern and Brand Highways rerouted away from this intersection to the new interchange, which will significantly reduce the traffic volumes at this existing signalised intersection in the ultimate scenario. With the additional traffic generated by the LSP, the intersection is expected to operate within acceptable limits in the 2031 design year. All average

delays remain below the 55 second threshold specified by WAPC as acceptable for signalised intersections.

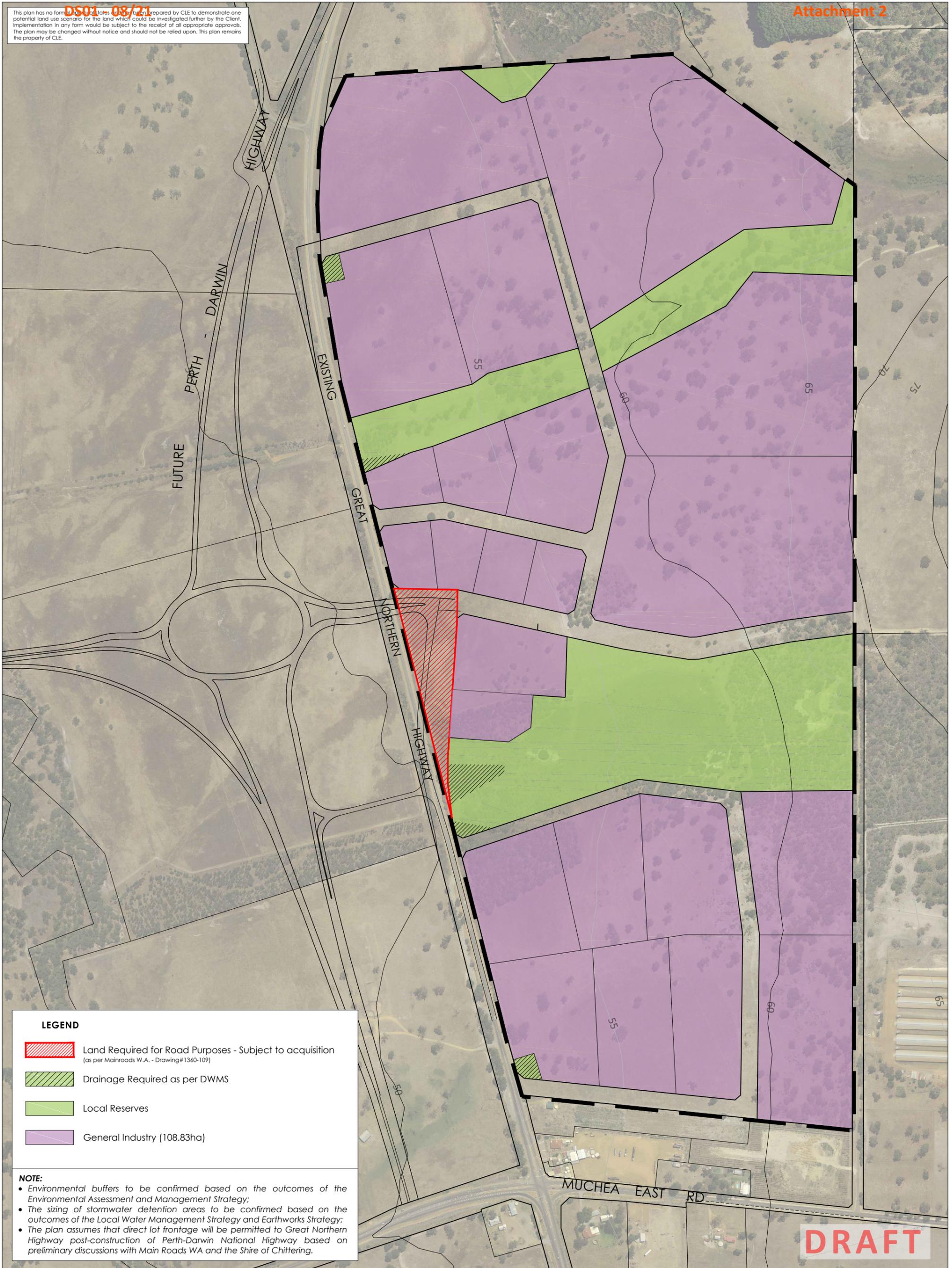
- The separation distance of 'Intersection C' to the LSP's most southern proposed intersection on the Great Northern Highway has also been checked. Currently, it is proposed the two intersections are 150m (approx.) apart. Based on the downgraded future function of the Great Northern Highway and having regard for the estimated traffic queue back under the Northlink WA operating scenario, the proposed 150m junction spacing is expected to be adequate.

Appendix A

Proposed Local Structure Plan

DS01_08/21

This plan has no formal status. It is prepared by CLE to demonstrate one potential land use scenario for the land which could be investigated further by the Client. Implementation in any form would be subject to the receipt of all appropriate approvals. The plan may be changed without notice and should not be relied upon. This plan remains the property of CLE.



LEGEND

-  Land Required for Road Purposes - Subject to acquisition (as per Mainroads W.A. - Drawing# 1360-109)
-  Drainage Required as per DWMS
-  Local Reserves
-  General Industry (108.83ha)

NOTE:

- Environmental buffers to be confirmed based on the outcomes of the Environmental Assessment and Management Strategy;
- The sizing of stormwater detention areas to be confirmed based on the outcomes of the Local Water Management Strategy and Earthworks Strategy;
- The plan assumes that direct lot frontage will be permitted to Great Northern Highway post-construction of Perth-Darwin National Highway based on preliminary discussions with Main Roads WA and the Shire of Chittering.

DRAFT



PRELIMINARY CONCEPT PLAN
 Lot 102 Great Northern Highway, Muchea
 Shire of Chittering



plan no: 2322-56H-01
 scale: 1:6000@A3, 1:3000@A1
 date: 16.12.2015



Appendix B

Scoping Correspondence with Authorities



Meeting Minutes

Job No:	16P1004000	GTA Rep:	Mark Fowler	Date:	21/10/15
Job Name:	Lot 102, Muchea			Time:	1030
Client:	Sirona Capital			Location:	Bindoon
Purpose:	Transport Assessment Scoping				

Attendees:	BS - Bronwyn Southee (Shire of Chittering) DM - Daniel Martinovich (CLE)	TM - Tanya Moran (GTA) MF - Mark Fowler (GTA)
Distribution:	All Attendees, Sirona Capital	

Item		Action
1	Introductions	
	<ul style="list-style-type: none"> BS advised that Jim Garrett from the Shire of Chittering will review the more technical elements of the DA 	Note
2	Brief Project Overview by CLE	
	<ul style="list-style-type: none"> DM provided a run through of project to date BS advised a mostly new council is on board, and is unsure as to how the proposal as a whole will be received DM / BS agreed it would be prudent to carry out a briefing session with the councillors. DM / BS to confirm format and timing 	DM / BS
3	Transport Assessment approach	
	<ul style="list-style-type: none"> GTA explained development will be considered in stages which have yet to be finalised, but are likely to be: <ul style="list-style-type: none"> Initial – unmanned fuel station, accessed from existing GNH Interim – full service station with some accompanying uses and some light industrial, accessed from existing GNH Ultimate – full LSP area operational, accessed primarily from Northlink TA will be prepared in line with WAPC guidelines, adopting trip rates used by Sirona Capital on other similar projects Access from existing GNH has been discussed and agreed with MRWA Northam, these will have limited impact on Shire roads. Assessment will be undertaken using SIDRA and existing traffic flow information in GNH Ultimate access arrangements will be imposed by Northlink project. Demands will be extracted and adopted from MRWA Northlink traffic model and local SCATS information from Muchea East Road signalised intersection. Intersections agreed to be considered include main internal intersections on spine road, Muchea East Road signals and Muchea East Road / Guiliente Road intersection BS confirmed that there are other development happening in the area local to the LSP, but none are significant enough to be considered within the initial, interim or ultimate assessments for traffic impact 	

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Item		Action
4	Consultation and work to date	
	<ul style="list-style-type: none"> GTA have been in frequent discussions with MRWA Northam office for the initial and interim scenarios and with the Northlink Project for the ultimate scenario All assumptions to be made in the analysis will be documented and agreed with relevant parties before proceeding with analysis 	GTA
5	RAV networks	
	<ul style="list-style-type: none"> GTA understand GNH will be upgraded to RAV 10 network for current RAV 7. RAV 10 network will only allow access to and from Road Train Assembly Area (RTAA) and GNH north of the site All other roads are understood to remain RAV 7 The RAV network within the development site will be determined on the basis of commercial needs and advised to Shire, This information will also be included within the Transport Assessment BS to speak to Jim Garrett to determine Shire intentions with RAV networks in the area Shire will process any necessary RAV network applications once the DA is approved before the roads are constructed 	GTA BS BS
6	Access scenarios and locations (including GNH ownership)	
	<ul style="list-style-type: none"> BS advised that existing GNH will be brought up to an appropriate standard and then handed over to the Shire once Northlink and GNH upgrades are complete On this basis, the extent of the existing GNH identified for re-use in the LSP should be identified Given it will be a Shire road, BS confirmed driveway access will be permitted from old GNH alignment BS will discuss intended speed limit for GNH with Jim Garrett and advise 	CLE BS
7	Any other business	
	<ul style="list-style-type: none"> All roads within the LSP area are to designed and built in accordance with the requirements set out in the Employment Node Structure Plan 	Note
8	Close	



MEMORANDUM

TO: Main Roads Western Australia(MRWA) / Shire of Chittering

CC: Sirona Capital / CLE

FROM: GTA Consultants

DATE: 23/10/2015

OUR REF: 16P1004000

PAGE 1 OF 2

RE: Lot 102, Muchea – Traffic and Transport Assumptions for Local Structure Plan (LSP)

GTA Consultants (GTA) has prepared this Memorandum to set out the technical parameters of the Transport Assessment for the LSP that have been discussed with MRWA and Shire of Chittering.

As previously communicated, the development will likely be staged as follows:

- **Initial** – unmanned fuel station, accessed from existing GNH
- **Interim** – full service station with some accompanying uses and some light industrial, accessed from existing GNH
- **Ultimate** – full Structure Plan area operational, accessed primarily from Northlink.

N/A as of
11/12/15

The assumptions are set out in Attachment 1, and are proposed to be adopted within the Transport Assessment for the LSP where appropriate.

It is respectfully requested that MRWA and Shire of Chittering confirm their respective acceptance of the assumptions herein by Wednesday 28th October 2015. This will enable the commencement of the Transport Assessment for the LSP reporting, and ensure project timelines are adhered to.

In light of this, if there are any items you would like to discuss in more detail, or require more clarity please contact me directly.

Yours sincerely

GTA CONSULTANTS

A handwritten signature in black ink, appearing to read "M. Fowler".

Mark Fowler

Senior Consultant

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Attachment 1 – Traffic and Transport Assumptions for LSP

Item	Assumption detail	Agreements to date	
Initial and interim vehicular access form	Gained via CHR / AUL intersection on existing Great Northern Highway.	Principle of this access agreed with MRWA , detailed design of layout to be determined post LSP approval.	
Ultimate vehicular access arrangements	Primary access gained via a new interchange delivered as part of Northlink. Secondary access gained via an AUL / AUR intersection on Muchea East Road at Guiliente Road. Driveways will also be provided on the existing GNH alignment, once retired by Northlink.	Principle of these arrangements agreed with MRWA and Shire of Chittering , detailed design of secondary accesses and driveways to be determined post LSP approval.	
External traffic demands for initial and interim capacity assessments	Traffic flow data extracted from MRWA IRIS database and SCATS will be adopted with growth factors applied where appropriate.	Discussed and agreed with MRWA and Shire of Chittering that: <ul style="list-style-type: none"> Data is appropriate for use Growth factors to be determined using historic local flows. 	
Traffic demands for ultimate scenario assessment	Traffic flow data will originate from available Northlink traffic modelling. Any local traffic data not provided can be extrapolated between existing flows and modelled flows.	Agreed as an appropriate approach with MRWA and Shire of Chittering .	
Initial and Interim traffic distribution	A different distribution will be applied to heavy and light vehicles accessing the Structure Plan area due to differing origins and destinations. Overall distribution will be based upon weighting of existing traffic flows on GNH, Brand Highway and Muchea East Road recorded in traffic data discussed above.	Agreed as an appropriate approach with MRWA and Shire of Chittering .	
Ultimate traffic distribution	Traffic distribution data will originate from available Northlink traffic modelling. Any local distribution not provided can be extrapolated between existing flows and modelled flows.	Agreed as an appropriate approach with MRWA and Shire of Chittering .	
Initial and Interim peak hours	Peak hours will be identified from existing traffic flows on GNH, Brand Highway and Muchea East Road recorded in traffic data discussed above.	Agreed as an appropriate approach with MRWA and Shire of Chittering .	
Ultimate peak hours	Peak hour data will originate from available Northlink traffic modelling.	Agreed as an appropriate approach with MRWA and Shire of Chittering .	
Initial and interim vehicle trip rates and heavy vehicle proportions	Initial scenario will not generate new trips, rather trips will be diverted from vehicles already travelling on GNH. Interim scenario trip rates have been extracted from other similar Sirona Capital projects. Trip rates adopted are as follows:	Initial scenario discussed and agreed with MRWA and Shire of Chittering .	
	Component	AM	PM
	Servo	7% of road trains on GNH	
		5% of heavy vehicles on GNH	
	3% of light vehicles on GNH		
	Light Industrial	0.46	0.51
Ultimate vehicle trip rates and heavy vehicle proportions	Trip generation for the ultimate scenario will be inherent in the Northlink modelling. A logic check against the above rates will be undertaken.	Approach to be agreed by MRWA and Shire of Chittering	
Over-size vehicle envelope	A 10m x 10m envelope is necessary on roads accessing the Road Train Assembly Area (RTAA) to facilitate access by Over-size vehicles	Agreed with MRWA as appropriate.	

Interim scenario rates require agreement from MRWA and Shire of Chittering.

N/A

Agreed for GTA to make interpretation of the scale of traffic volumes in 2031. Refer MRWA email attached (4/11/15).

From: MCKIRDY Justin (NPDM/A) <justin.mckirdy@mainroads.wa.gov.au>
Sent: Wednesday, 4 November 2015 6:07 PM
To: Tanya Moran
Cc: Mark Fowler; Cameron Leckey; nmatthew@urbsol.com.au
Subject: RE: Northlink Forecast Traffic Volumes - Muchea near RTAA
Attachments: 04112015142755-0001.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Tanya,

Have a good break.

I have tried a few times to find some relevant information. Today I have tracked down some figures which is the best I can do at this time. As discussed, these are very indicative numbers and are provided for information purposes only – they should not be relied upon for anything other than understanding the anticipated scale of traffic volume using the proposed intersection of PDNH/Brand Hwy/GNH around 2031. They should certainly not be used for making any commercial investment decisions.

Please note that the figures are peak period figures only. Clearly they rely on some assumed land use within the Muchea Employment node – which your team are likely to be better placed to estimate. I have also spoken to Nigel about the modelling in this area and he advised that there are certainly some assignment issues in the area when considering the daily outputs. He has done some reassignment for these peak volumes to account for some of those problems identified. I can't provide turning volumes but can advise that the predominant movements in and out of MEN are anticipated to be to and from the west and south, at approximately equal measure.

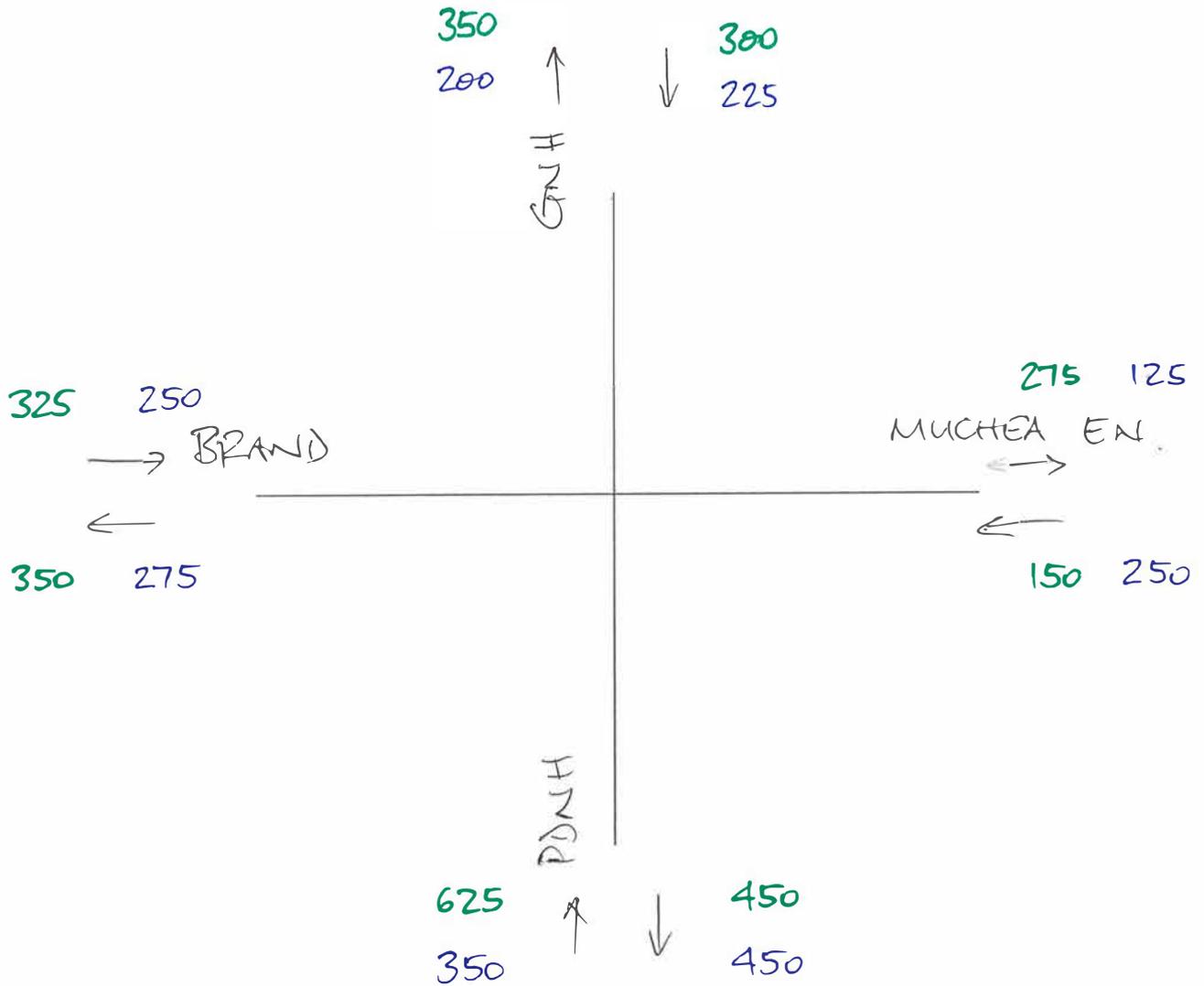
I trust this assists.

Regards

Justin

APPROXIMATE ESTIMATED TRAFFIC VOLUMES
AT 2031
DURING PEAK PERIODS.

↑
N.



AM

PM

Appendix C

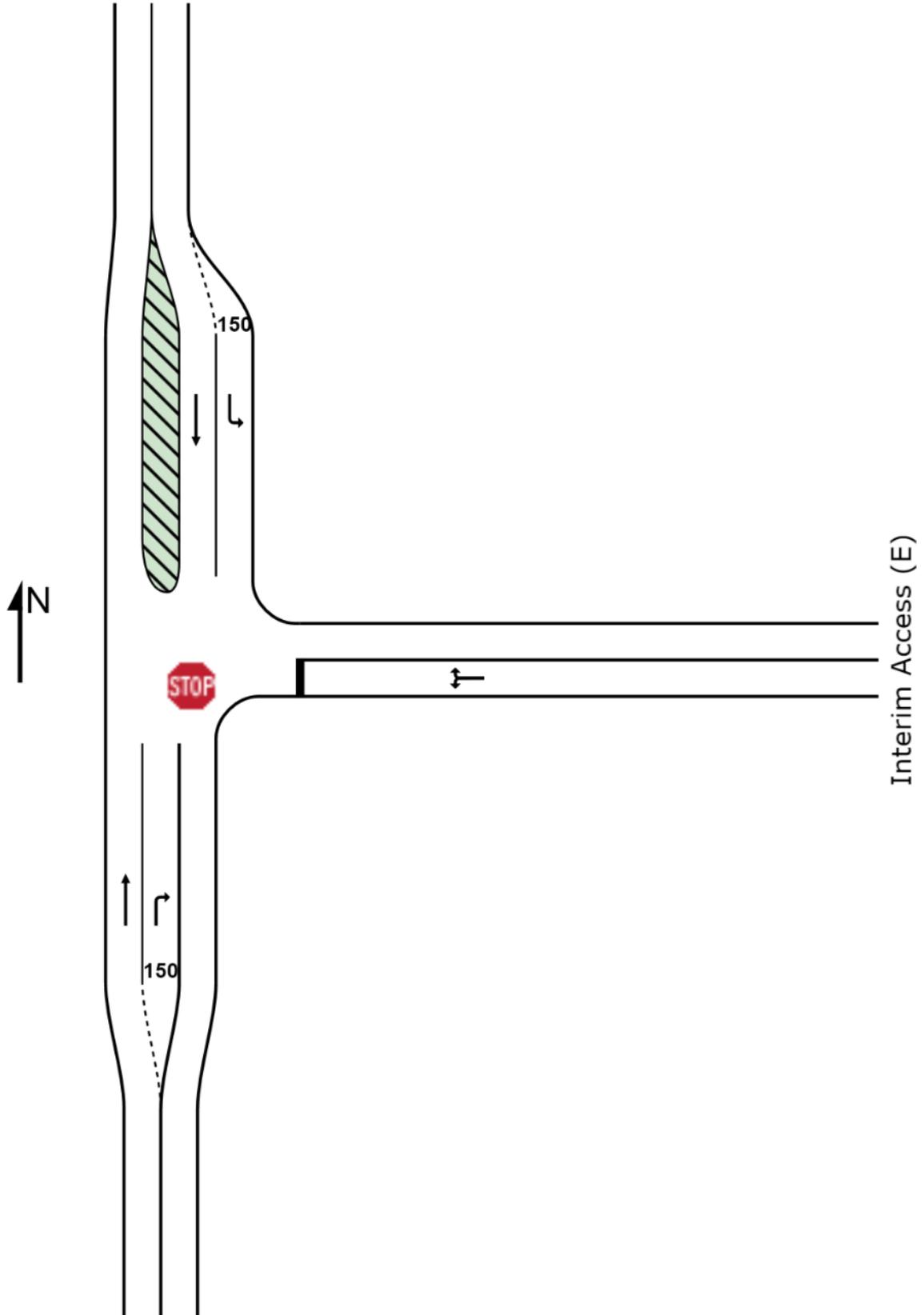
SIDRA Outputs

SITE LAYOUT

 Site: 2018 AM

Interim Service Station Access
Stop (Two-Way)

Great Northern Highway (N)



Great Northern Highway (S)

Organisation: GTA CONSULTANTS | Created: Monday, 14 December 2015 2:23:03 PM

Project: P:\16P1000-1099\16P1004000 - Muecha LSP - Industrial\Modelling\151103sid-16P1004000_GNH_Initial.sip6

MOVEMENT SUMMARY

 Site: 2016 AM

Interim Service Station Access
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %								
South: Great Northern Highway (S)											
2	T1	159	32.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	99.9
3	R2	6	50.0	0.008	10.4	LOS A	0.0	0.3	0.36	0.64	31.5
Approach		165	32.7	0.097	0.4	NA	0.0	0.3	0.01	0.02	92.3
East: Interim Access (E)											
4	L2	8	50.0	0.030	7.3	LOS A	0.1	1.0	0.47	0.96	27.0
6	R2	6	50.0	0.030	12.2	LOS A	0.1	1.0	0.47	0.96	27.0
Approach		15	50.0	0.030	9.4	LOS A	0.1	1.0	0.47	0.96	27.0
North: Great Northern Highway (N)											
7	L2	8	50.0	0.006	9.2	LOS A	0.0	0.0	0.00	0.66	59.3
8	T1	215	32.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	99.9
Approach		223	32.7	0.132	0.4	NA	0.0	0.0	0.00	0.03	97.4
All Vehicles		403	33.3	0.132	0.7	NA	0.1	1.0	0.02	0.06	87.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 16 December 2015 5:34:00 PM

Project: P:\16P1000-1099\16P1004000 - Muchea LSP - IndustrialModelling\151216sid-16P1004000_GNH_Initial_2016.sip6

MOVEMENT SUMMARY

 Site: 2016 PM

Interim Service Station Access
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %								
South: Great Northern Highway (S)											
2	T1	208	32.0	0.128	0.0	LOS A	0.0	0.0	0.00	0.00	99.9
3	R2	8	50.0	0.009	9.7	LOS A	0.0	0.3	0.28	0.62	31.7
Approach		217	32.7	0.128	0.4	NA	0.0	0.3	0.01	0.02	92.2
East: Interim Access (E)											
4	L2	5	50.0	0.028	6.4	LOS A	0.1	1.0	0.43	0.97	27.0
6	R2	8	50.0	0.028	11.4	LOS A	0.1	1.0	0.43	0.97	27.0
Approach		14	50.0	0.028	9.5	LOS A	0.1	1.0	0.43	0.97	27.0
North: Great Northern Highway (N)											
7	L2	5	50.0	0.004	9.2	LOS A	0.0	0.0	0.00	0.66	59.3
8	T1	134	32.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		139	32.7	0.082	0.4	NA	0.0	0.0	0.00	0.03	97.4
All Vehicles		369	33.3	0.128	0.7	NA	0.1	1.0	0.02	0.06	86.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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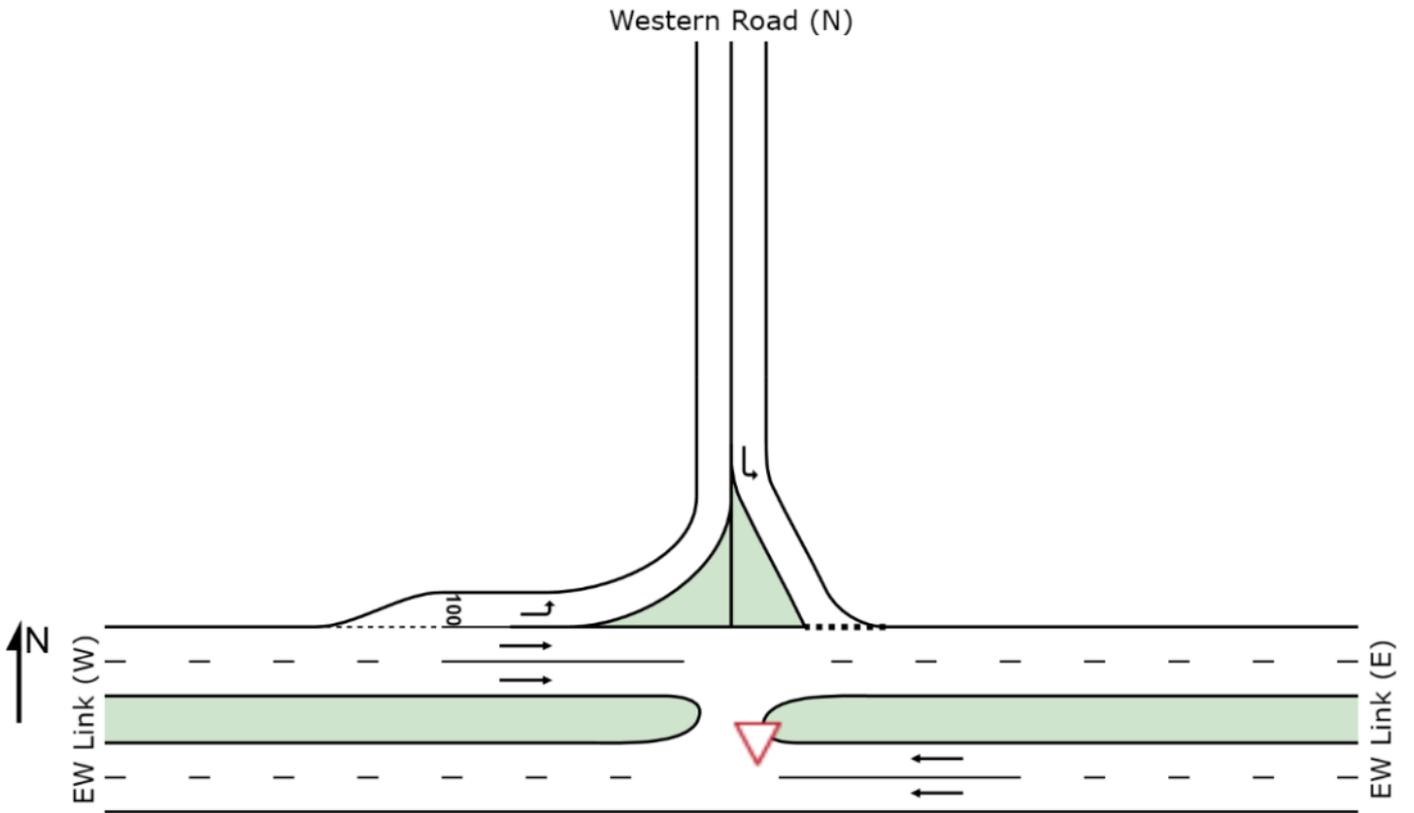
Organisation: GTA CONSULTANTS | Processed: Wednesday, 16 December 2015 5:34:12 PM

Project: P:\16P1000-1099\16P1004000 - Muchea LSP - IndustrialModelling\151216sid-16P1004000_GNH_Initial_2016.sip6

SITE LAYOUT

▽ Site: Site1 - Western LILO Int - 2031 AM

EW Link / Western (LILO) Road
Giveaway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: Site1 - Western LILO Int - 2031 AM

EW Link / Western (LILO) Road
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m	per veh	km/h	
East: EW Link (E)											
5	T1	118	35.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		118	35.0	0.037	0.0	NA	0.0	0.0	0.00	0.00	60.0
North: Western Road (N)											
7	L2	13	35.0	0.019	8.8	LOS A	0.1	0.6	0.47	0.63	50.9
Approach		13	35.0	0.019	8.8	LOS A	0.1	0.6	0.47	0.63	50.9
West: EW Link (W)											
10	L2	336	35.0	0.226	6.0	LOS A	0.0	0.0	0.00	0.51	53.7
11	T1	728	35.0	0.229	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1064	35.0	0.229	1.9	NA	0.0	0.0	0.00	0.16	57.8
All Vehicles		1195	35.0	0.229	1.8	NA	0.1	0.6	0.00	0.15	57.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Site1 - Western LILO Int - 2031 PM

EW Link / Western (LILO) Road
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m	per veh	km/h	
East: EW Link (E)											
5	T1	853	35.0	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		853	35.0	0.268	0.0	NA	0.0	0.0	0.00	0.00	59.9
North: Western Road (N)											
7	L2	91	35.0	0.097	7.0	LOS A	0.4	3.3	0.30	0.56	51.9
Approach		91	35.0	0.097	7.0	LOS A	0.4	3.3	0.30	0.56	51.9
West: EW Link (W)											
10	L2	141	35.0	0.095	6.0	LOS A	0.0	0.0	0.00	0.51	53.7
11	T1	299	35.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		440	35.0	0.095	1.9	NA	0.0	0.0	0.00	0.16	57.8
All Vehicles		1383	35.0	0.268	1.1	NA	0.4	3.3	0.02	0.09	58.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

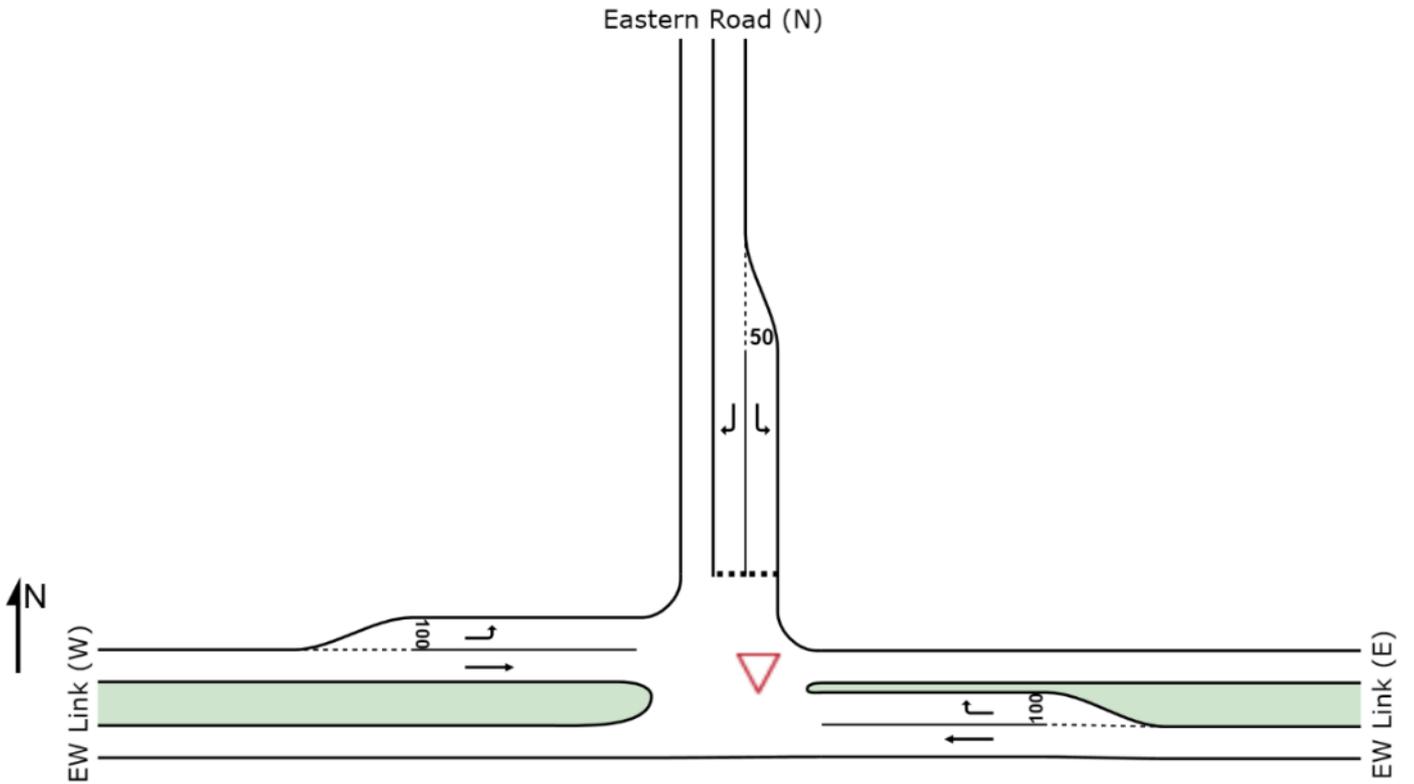
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

▽ Site: Site2 - Eastern Int 2031 AM

EW Link / Eastern Road
Giveaway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: Site2 - Eastern Int 2031 AM

EW Link / Eastern Road
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m	per veh	km/h	
East: EW Link (E)											
5	T1	1	35.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6	R2	1	35.0	0.002	10.2	LOS A	0.0	0.1	0.56	0.62	48.9
Approach		2	35.0	0.002	5.1	NA	0.0	0.1	0.28	0.31	53.9
North: Eastern Road (N)											
7	L2	1	35.0	0.001	6.0	LOS A	0.0	0.0	0.01	0.56	52.1
9	R2	80	35.0	0.135	9.2	LOS A	0.5	4.8	0.48	0.70	49.6
Approach		81	35.0	0.135	9.2	LOS A	0.5	4.8	0.47	0.70	49.6
West: EW Link (W)											
10	L2	493	35.0	0.331	6.0	LOS A	0.0	0.0	0.00	0.57	52.1
11	T1	1	35.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		494	35.0	0.331	6.0	NA	0.0	0.0	0.00	0.57	52.1
All Vehicles		577	35.0	0.331	6.4	NA	0.5	4.8	0.07	0.59	51.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▽ Site: Site2 - Eastern Int 2031 PM

EW Link / Eastern Road
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m	per veh	km/h	
East: EW Link (E)											
5	T1	1	35.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6	R2	1	35.0	0.001	7.2	LOS A	0.0	0.0	0.36	0.53	50.9
Approach		2	35.0	0.001	3.6	NA	0.0	0.0	0.18	0.27	55.1
North: Eastern Road (N)											
7	L2	1	35.0	0.001	6.0	LOS A	0.0	0.0	0.01	0.56	52.1
9	R2	583	35.0	0.750	12.8	LOS A	13.5	123.3	0.68	0.79	47.3
Approach		584	35.0	0.750	12.8	LOS A	13.5	123.3	0.68	0.79	47.3
West: EW Link (W)											
10	L2	206	35.0	0.139	6.0	LOS A	0.0	0.0	0.00	0.57	52.1
11	T1	1	35.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		207	35.0	0.139	5.9	NA	0.0	0.0	0.00	0.57	52.2
All Vehicles		794	35.0	0.750	11.0	NA	13.5	123.3	0.50	0.73	48.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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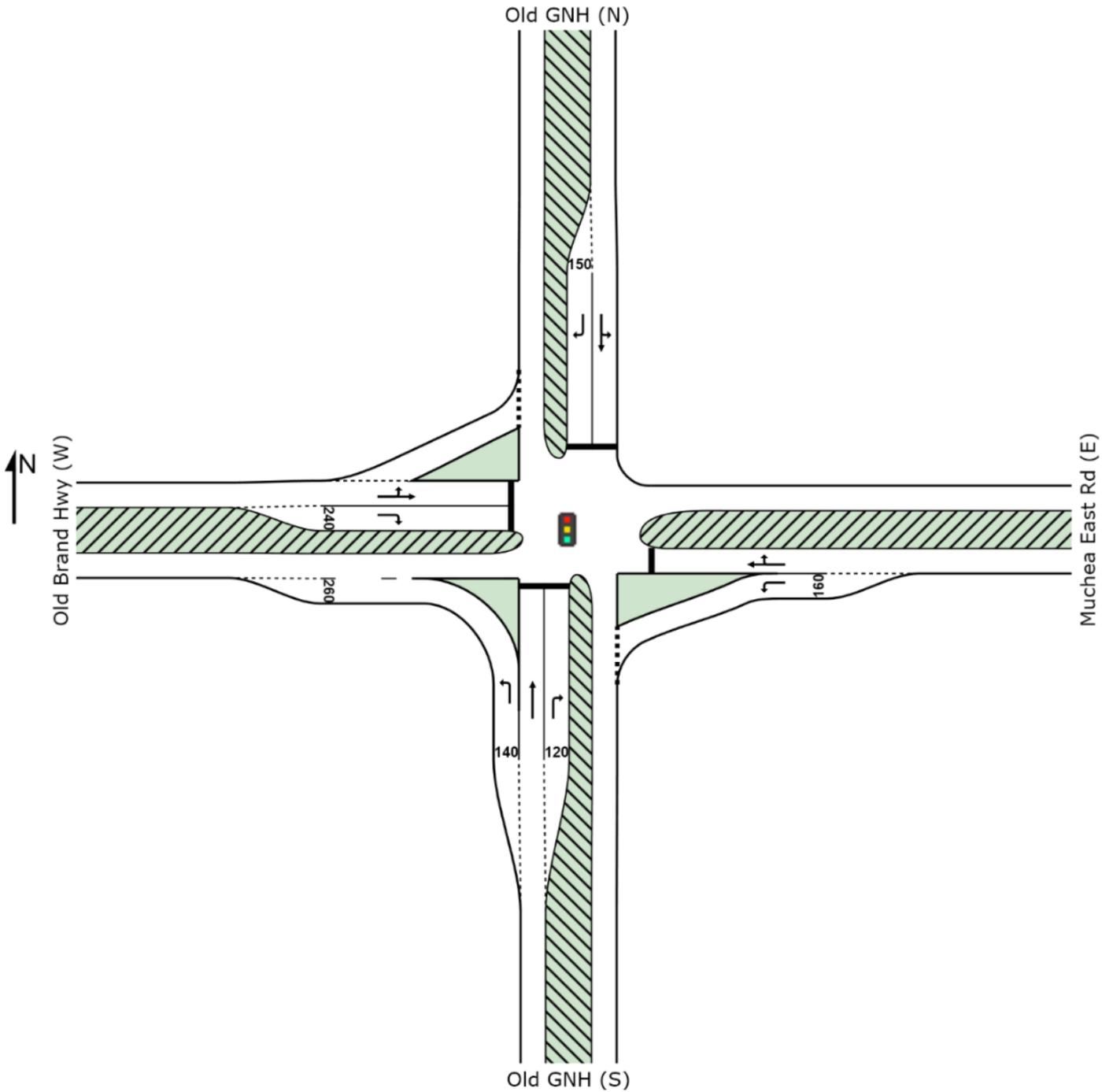
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Project: P:\16P1000-1099\16P1004000 - Muchea LSP - IndustrialModelling\151204sid-16P1004000_EWLink_Intersections.sip6

SITE LAYOUT

 Site: 2031 AM With Dev

GNH / Brand / Muchea E Signals
Signals - Fixed Time Isolated



MOVEMENT SUMMARY

 Site: 2031 AM With Dev

GNH / Brand / Muchea E Signals

Signals - Fixed Time Isolated Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m	per veh	km/h	
South: Old GNH (S)											
1	L2	52	33.0	0.034	8.1	LOS A	0.0	0.0	0.00	0.58	57.1
2	T1	318	33.0	0.689	28.8	LOS C	11.6	103.9	0.95	0.83	49.1
3	R2	16	33.0	0.070	26.1	LOS B	0.4	3.4	0.89	0.69	43.2
Approach		385	33.0	0.689	25.9	LOS B	11.6	103.9	0.82	0.79	49.8
East: Muchea East Rd (E)											
4	L2	17	25.0	0.014	9.1	LOS A	0.1	0.9	0.25	0.63	57.0
5	T1	41	25.0	0.449	38.1	LOS C	3.2	27.1	0.98	0.76	41.9
6	R2	41	25.0	0.449	45.3	LOS D	3.2	27.1	0.98	0.76	37.2
Approach		99	25.0	0.449	36.2	LOS C	3.2	27.1	0.85	0.74	41.6
North: Old GNH (N)											
7	L2	12	15.0	0.381	25.4	LOS B	3.6	28.5	0.90	0.72	50.7
8	T1	132	15.0	0.381	18.2	LOS B	3.6	28.5	0.90	0.72	56.7
9	R2	18	15.0	0.071	23.9	LOS B	0.3	2.6	0.89	0.69	47.3
Approach		161	15.0	0.381	19.4	LOS B	3.6	28.5	0.90	0.72	55.0
West: Old Brand Hwy (W)											
10	L2	15	34.0	0.183	30.1	LOS C	0.8	7.2	0.94	0.70	43.7
11	T1	15	34.0	0.183	22.2	LOS B	0.8	7.2	0.94	0.70	51.2
12	R2	49	34.0	0.441	49.5	LOS D	2.0	18.3	0.99	0.75	34.1
Approach		79	34.0	0.441	40.7	LOS C	2.0	18.3	0.97	0.73	38.0
All Vehicles		724	28.0	0.689	27.5	LOS B	11.6	103.9	0.86	0.76	47.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

PHASING SUMMARY

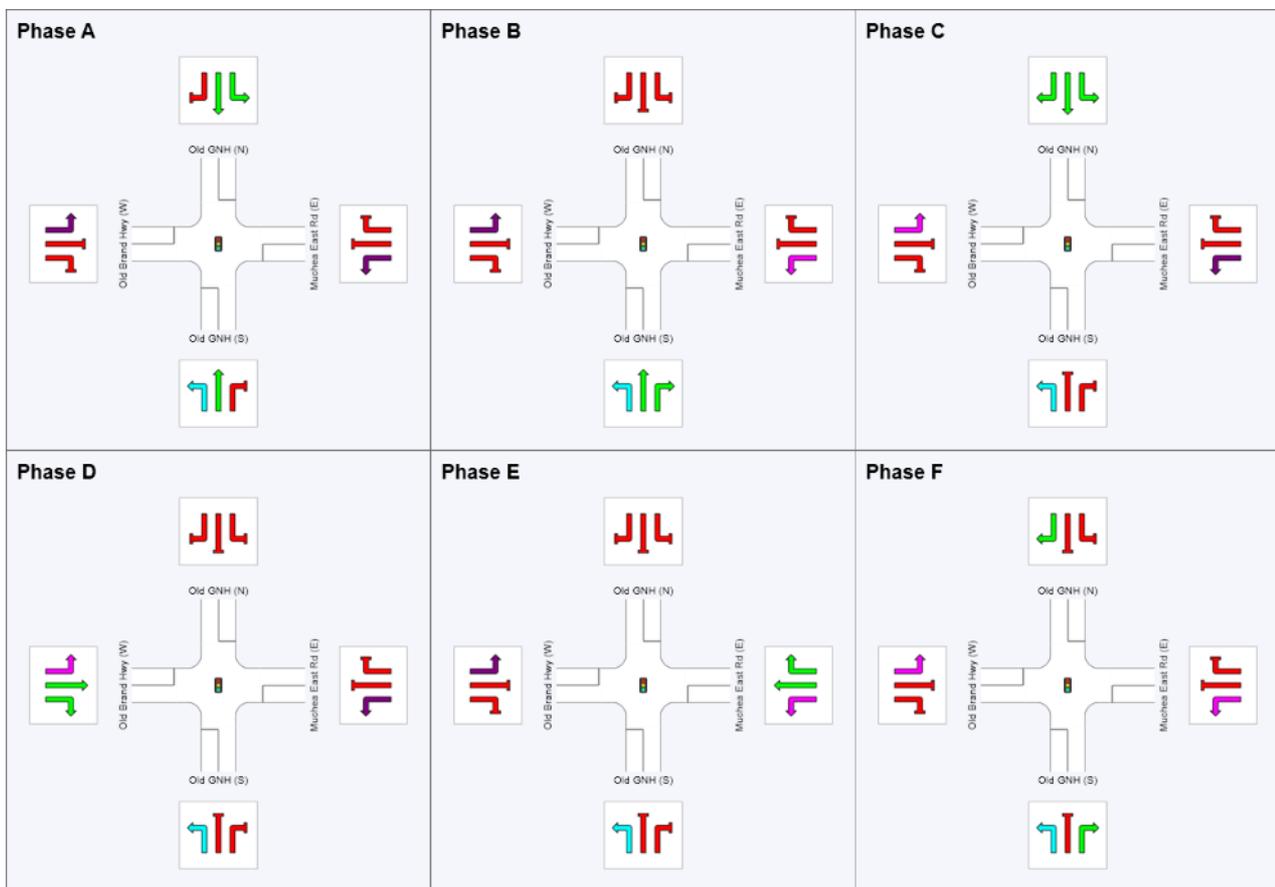
 Site: 2031 AM With Dev

GNH / Brand / Muchea E Signals
 Signals - Fixed Time Isolated Cycle Time = 80 seconds (Practical Cycle Time)

Phase times determined by the program
 Sequence: MRWA Phasing
 Movement Class: All Movement Classes
 Input Sequence: A, B, C, D, E, F
 Output Sequence: A, B, C, D, E, F

Phase Timing Results

Phase	A	B	C	D	E	F
Reference Phase	Yes	No	No	No	No	No
Phase Change Time (sec)	0	17	29	41	53	68
Green Time (sec)	11	6	6	6	9	6
Yellow Time (sec)	4	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2	2
Phase Time (sec)	17	12	12	12	15	12
Phase Split	21 %	15 %	15 %	15 %	19 %	15 %



	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class Running		Other Movement Class Stopped
	Mixed Running & Stopped Movement Classes		Phase Transition Applied
	Undetected Movement		

MOVEMENT SUMMARY

 Site: 2031 PM With Dev

GNH / Brand / Muchea E Signals

Signals - Fixed Time Isolated Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m	per veh	km/h	
South: Old GNH (S)											
1	L2	57	33.0	0.038	8.1	LOS A	0.0	0.0	0.00	0.58	57.1
2	T1	211	33.0	0.403	23.0	LOS B	6.5	58.4	0.82	0.69	53.2
3	R2	6	33.0	0.028	25.0	LOS B	0.1	1.2	0.88	0.66	43.8
Approach		274	33.0	0.403	19.9	LOS B	6.5	58.4	0.65	0.67	53.7
East: Muchea East Rd (E)											
4	L2	4	25.0	0.004	10.3	LOS A	0.0	0.3	0.32	0.62	55.9
5	T1	41	25.0	0.495	41.7	LOS C	2.5	21.2	1.00	0.75	40.8
6	R2	20	25.0	0.495	49.0	LOS D	2.5	21.2	1.00	0.75	36.3
Approach		65	25.0	0.495	41.9	LOS C	2.5	21.2	0.96	0.75	40.0
North: Old GNH (N)											
7	L2	3	15.0	0.605	24.7	LOS B	6.8	53.6	0.93	0.78	51.6
8	T1	265	15.0	0.605	17.5	LOS B	6.8	53.6	0.93	0.78	57.8
9	R2	16	15.0	0.063	24.1	LOS B	0.3	2.5	0.88	0.69	47.2
Approach		284	15.0	0.605	17.9	LOS B	6.8	53.6	0.93	0.77	57.0
West: Old Brand Hwy (W)											
10	L2	18	34.0	0.223	33.8	LOS C	1.1	10.0	0.94	0.71	41.8
11	T1	18	34.0	0.223	26.0	LOS B	1.1	10.0	0.94	0.71	48.6
12	R2	61	34.0	0.545	50.1	LOS D	2.5	23.0	1.00	0.77	33.9
Approach		97	34.0	0.545	42.7	LOS D	2.5	23.0	0.98	0.75	37.3
All Vehicles		720	25.3	0.605	24.2	LOS B	6.8	58.4	0.83	0.73	50.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

PHASING SUMMARY

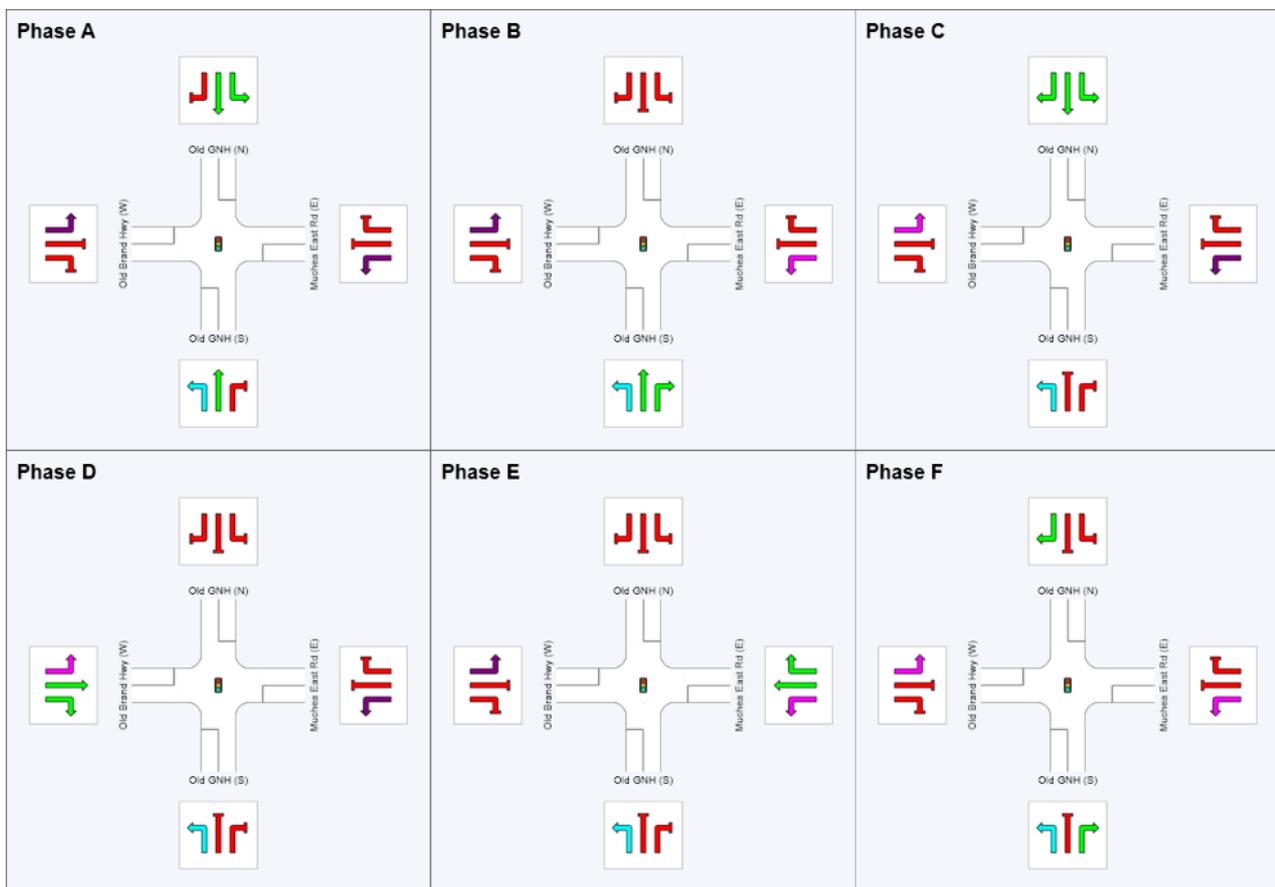
 Site: 2031 PM With Dev

GNH / Brand / Muchea E Signals
 Signals - Fixed Time Isolated Cycle Time = 80 seconds (Practical Cycle Time)

Phase times determined by the program
 Sequence: MRWA Phasing
 Movement Class: All Movement Classes
 Input Sequence: A, B, C, D, E, F
 Output Sequence: A, B, C, D, E, F

Phase Timing Results

Phase	A	B	C	D	E	F
Reference Phase	Yes	No	No	No	No	No
Phase Change Time (sec)	0	20	32	44	56	68
Green Time (sec)	14	6	6	6	6	6
Yellow Time (sec)	4	4	4	4	4	4
All-Red Time (sec)	2	2	2	2	2	2
Phase Time (sec)	20	12	12	12	12	12
Phase Split	25 %	15 %	15 %	15 %	15 %	15 %



	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class Running		Other Movement Class Stopped
	Mixed Running & Stopped Movement Classes		Phase Transition Applied
	Undetected Movement		

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SCHEDULE OF SUBMISSIONS – PROPOSED LOCAL STRUCTURE PLAN AMENDMENT; PRECINCT 1 (LOCAL STRUCTURE PLAN 1) OF THE MUCHEA INDUSTRIAL PARK

AGENCY SUBMISSIONS			
Submitter	Comment	Proponent Response	Shire Officer Response
Department of Defence	<p>Defence understands that this proposal is for the identification of land within the Muchea Industrial Park Structure Plan to be zoned 'Special Use Zone' which will facilitate development of, but not limited to, retail, service commercial and food outlets. The site is approximately 10 kilometres north of RAAF Base Pearce.</p> <p>RAAF Base Pearce is the only fully manned military aviation base in Western Australia and therefore, is of high strategic and operational importance. The base is the advanced flying training base for Air Force and Navy pilots. It supports transit operations for aircraft of the Maritime Reconnaissance and Surveillance Group (involving border protection, search and rescue and fisheries patrols in the Indian and Southern Ocean) as well as other military aircraft. The level of flying activities at the Base is also expected to increase into the future, with a consequent increase in aircraft traffic and noise exposure.</p> <p>Defence has considered the proposal plan in terms of its potential to adversely impact on military aviation operations at RAAF Base Pearce. Defence is seeking to ensure that the presence and potential impact of RAAF Base Pearce is fully considered as part of the proposal and provides the following comments.</p> <p>Aircraft Noise</p> <p>Although the subject site is situated outside of the RAAF Base Pearce Australian Noise Exposure Forecast (ANEF) contour map, it is located along the extended runway centreline of Runway 36 and will be exposed to noise from aircraft arriving and departing the base. Defence work with local councils to ensure that land around its bases are zoned appropriately to minimise any impact to noise sensitive uses. It is possible that potential commercial businesses will experience impact to their indoor and outdoor amenity.</p> <p>While Defence is conscious of the noise generated by its activities and makes every effort to minimise community aircraft noise exposure, Defence cannot readily modify its activities due to the establishment or intensification of noise-sensitive developments in close proximity to RAAF Base Pearce. Defence's requirements to conduct a broad range of flying scenarios, both day and night, means current noise mitigation measures may require adaption to meet future training requirements. Defence therefore requests that the land be identified as being in the vicinity of an active military airfield that conducts 24 hour flying operations and that exposure to aircraft noise is inevitable. Defence will not accept any liability based on aircraft noise.</p> <p>Bird Strike</p> <p>Guideline C of the National Airports Safeguarding Framework (NASF) provides guidelines to manage the risk of collisions between wildlife and</p>	<p>Noted.</p> <p>The proposed amendment does not seek to introduce sensitive land uses that may be impacted by aircraft noise.</p> <p>Managing the risk of bird strike will need to be addressed at the development application stage, most likely through a 'Waste Management Plan' (or similar) which is a typical information requirement for development applications.</p>	<p>The Shire does not expect that noise from aircraft will impact on the proposed uses that could potentially occupy the 'Special Use' zone, as these uses would not be regarded as sensitive land uses.</p> <p>The risk of bird attracting land uses is acknowledged and can be appropriately managed through conditions of development approval (i.e. waste management plans), if considered necessary at the time.</p>

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	<p>aircraft at or near airports where that risk may be increased by the presence of wildlife-attracting land uses. The subject site is located within the area “Birdstrike Area C”; located within 13km of the airport. In this area, certain land uses that have the potential to attract wildlife should be avoided as they will potentially increase the risk of bird strike for aircraft operation from RAAF Base Pearce.</p> <p>Organic waste and/or storage of bins associated with the proposed uses may be attractive to vermin and/or birds and will potentially increase the risk of bird strike. Defence requests that an appropriate condition for the management of organic waste (such as a limit on maximum storage onsite and the use of covered/enclosed bins) be included for any activity identified within the NASF Guideline C - Attachment 1.</p>		
Department of Mines, Industry Regulation and Safety	The Department of Mines, Industry Regulation and Safety (DMIRS) has determined that this proposal raises no significant issues with respect to mineral and petroleum resources, geothermal energy, and basic raw materials	Noted.	Noted.
Department of Health	<p>1. Water Supply and Wastewater Disposal The amendment area is required to connect to scheme water and be in accordance with the Government Sewerage Policy 2019. Suitable provision for an adequate onsite effluent disposal area is to be accommodated in any planning approval. Separate onsite disposal systems are required for human waste and trade waste systems. For on-site wastewater disposal systems to be approved, the site capability needs to be demonstrated via a winter 'site-and-soil evaluation' (SSE) in accordance with Australian Standard 1547 (AS/NZS 1547). Refer: https://ww2.health.wa.gov.au/Articles/S T/Site-and-soil-evaluation-foronsite-wastewater-management</p> <p>2. Food Act Requirements All food related businesses (fast food, cafe, etc.) to comply with the provisions of the Food Act 2008 and related code, regulations and guidelines. Details available for download from: http://ww2.health.wa.gov.au/Articles/F I/Food-regulation-in-WA</p>	<p>Noted.</p> <p>Connection to a reticulated water supply is planned and available. Further, connection to reticulated water is required as a condition of subdivision approval prior to the issuance of titles. Aqua Ferre (WA) Pty Ltd trading as Muchea Water has already achieved the status of ERA licenced water supplier to the proponent’s Muchea Industrial Park development, and Lot 84 will be serviced via Muchea Water.</p> <p>On site effluent disposal is planned for the local service centre site as outlined within the approved structure plan. The development application will need to detail the type and scale of the onsite effluent treatment / disposal system at the development application stage in accordance with the structure plan and government policies. Further information regarding the site’s capability is provided within the technical note prepared by Emerge Associates (attached).</p>	Noted.
Department of Primary Industries & Regional Development	DPIRD does not object to the proposed amendment. DPIRD expects that wastewater, stormwater and effluent are carefully managed to prevent any impacts on the shallow water table in this area, as outlined in Section 6 (Infrastructure) of Part 1 of the Local Structure Plan Amendment.	Noted.	The approved Local Water Management Strategy over the LSP1 area will remain operable for the proposed ‘Special Use’ zone and captures requirements for waste water disposal, surface water and groundwater management.
Department of Biodiversity, Conservation & Attractions	<p>Wastewater management It is noted that the subject area is outside of the Water Corporation’s schedule for reticulated sewerage and that on-site aerobic treatment units (ATUs) will be used in accordance with the Muchea Employment Node Local Structure Plan 1 to treat wastewater generated within the ‘Special use’ zone. It is further noted that the ‘Special use’ zone will facilitate a variety of land uses that can be associated with high wastewater volume production. It should therefore be demonstrated that the subject site has capacity to adequately treat the anticipated volume of wastewater generated onsite in</p>	<p>A detailed response to DBCA’s submission has been prepared by Emerge Associates (attached).</p> <p>LSP1 and the approved LWMS provide for onsite wastewater disposal and establish a comprehensive framework for managing wastewater at each stage of the planning process. The prospective purchaser for the site is aware of the need to dispose of wastewater on site through the use of ATU’s. Managing wastewater will be a matter of balancing the GFA of the Centre with the land required for disposal of treated</p>	In response to the submission received by DBCA and the concerns highlighted regarding waste water disposal, the proponent provided supplementary information for consideration (Attachment 8). The additional information demonstrates that waste water disposal can occur on-site and in accordance with the Government Sewerage Policy. Shire officers are satisfied that waste water disposal can occur on-site, but will require further analysis and assessment when

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	<p>accordance to the requirements of the Government Sewerage Policy (2019) (GSP). Furthermore, GSP requires on-site wastewater systems to be located more than 100 metres from a waterway, significant wetland or drainage system that discharges directly into a waterway or significant wetland, and to be a minimum of 1.5 metres above the highest known groundwater level. The separation distance should be measured outwards from the outer edge of riparian or wetland vegetation.</p> <p>Soils within a wastewater land application area associated with an on-site wastewater management system are to have a phosphorus retention index (PRI) greater than 20. Where the PRI of the soil is less than 20, it is recommended that amended soils be added to the wastewater land application area to a depth of 1 metre. Appropriate vegetation should be planted within the wastewater land application area to assist with the absorption of nutrients. It is recommended that a mix of plant species and growth forms that can tolerate wetting and drying conditions are planted in the wastewater land application area. The appropriate plant species are those capable of high nutrient removal. Refer to table 5 of Vegetation Guidelines for Stormwater Biofilters in the South-West of Western Australia (Monash University, 2014) when considering species selection.</p>	<p>wastewater. This can only be determined once the prospective purchaser proceeds to detailed design and confirms the types of land uses and floor areas. This will then allow the number of staff / patrons to be calculated and therefore the effluent volumes. Once this 'hydraulic load' has been calculated, suitably sized ATU's and irrigation areas can be determined.</p> <p>To assist demonstrate that the site has capacity to accommodate the proposed use in terms of wastewater, we have obtained documentation that relates to a similar proposal in Pinjarra that manages wastewater on site. The full document is enclosed within Emerge Associates' detailed response (attached) however, the key considerations relevant to the proposed LSP1 amendment are:</p> <ul style="list-style-type: none"> • The development example comprises a service station, convenience store, fast food operator and three showroom tenancies; • Expected wastewater volume was calculated to be 15,100 litres per day; • Implementing a spray drip system, this required a land application area of 3,020m² on a 1.7 hectare site (18% of the site); • The irrigation area was dispersed across the site; • Based on Emerge Associate's calculations, if a flatbed leach drain system had been implemented in lieu of the spray drip system, the irrigation area could have been reduced to approximately 787.2m² (5% of the site). <p>The proposed local service centre site is 2.1 hectares in area, which is 4,000m² larger than the example site outlined above. The comparable example therefore demonstrates that the site is capable of accommodating development of the type intended based on hydraulic load estimations and the land required for irrigation. Implementing a flatbed leach drain system in lieu of a spray drip system will allow for the irrigation area to be reduced and the amount of floor space to potentially be increased, subject to further detailed information being provided at the development application stage in accordance with LSP1.</p> <p>In response to DBCA's other comments:</p> <ul style="list-style-type: none"> • Separation from waterways and drainage systems can be achieved (refer Emerge report); • 1.5m above MGL can be achieved through the use of imported fill; and • Vegetation planting is not a consideration at structure plan stage, but can be demonstrated at the development application stage. 	<p>the specific land uses and floor areas of businesses within the proposed 'Special Use' zone are known. This will occur at the development application stage.</p>
<p>Department of Water & Environmental Regulation</p>	<p>The Department has identified that the proposal has the potential for impact on water values and management. While the Department does not</p>	<p>The proposed structure plan amendment does not materially impact the implementation of the LWMS which is premised upon onsite wastewater disposal and the requirements of the Government</p>	<p>It is considered that an amendment to the Local Water Management Strategy is not required, as the underlying principles of waste water, surface water and ground</p>

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	<p>object to the proposal, key issues and recommendations are provided below and these matters should be addressed:</p> <p>The Department notes that a Local Water Management Strategy (LWMS) has been previously approved for this site. The LWMS should be amended to address the changes to the local structure plan to ensure the requirements of the Government Sewerage Policy are being met and to ensure there is an appropriate water source for the future land uses.</p>	<p>Sewerage Policy. The UWMP continues to be updated with the evolution of the development based on the considerations identified within the LWMS. An amendment to the LWMS is therefore unnecessary, as the principles of the LWMS are applicable regardless of land use (industrial or commercial). As demonstrated above, the additional effluent volumes that are likely to be generated based on the proposed land uses can be accommodated in accordance with the current LWMS.</p> <p>Aqua Ferre (WA) Pty Ltd trading as Muchea Water has already achieved the status of ERA licenced water supplier to the proponent’s Muchea Industrial Park development, and Lot 84 will be serviced via Muchea Water regardless of land permissibility.</p>	<p>water management remain the same. These principles will be further refined through an Urban Water Management Plan that is a requirement of subdivision approval and will need to be tailored specifically to address the change in land uses within the ‘Special Use’ zone.</p>
<p>Department of Fire & Emergency Services</p>	<p>The amendment is considered a change in site conditions where under clause 4.6.4 of the Guidelines for Planning in Bushfire Prone Areas an update to the approved BMP may be required.</p> <p>Planning Bulletin PB111 2016 does; however, provide exemptions at part 6 from the requirements of SPP 3.7 including where the proposal does not increase the number of employees, the bushfire threat, or intensify the development.</p> <p>Given the proposal seeks to identify a 2.1 hectare parcel of land as a ‘Special Use’ zone as per your correspondence, which may not be considered an intensification of land use, the application of State of Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) may not be required in this instance.</p> <p>Please note that the application of SPP 3.7 is ultimately at the discretion of the decision maker.</p> <p>Thank you for providing us with the opportunity to make a submission, DFES has no further comments.</p>	<p>The proposed amendment is not expected to significantly increase the number of employees and the bushfire threat remains the same as if the site were developed under the current structure plan. The established principles of setting buildings back from potential hazards and providing the required access / egress to and from the site remain the same as outlined in the approved BMP i.e. no changes to the road network or the overall developable area are proposed that would alter the bushfire risk.</p> <p>A future development application based on the proposed structure plan amendment will need to be accompanied by the appropriate level of bushfire assessment and reporting. As demonstrated in the ‘design principles’ plan, development can be comfortably accommodated outside of the area affected by bushfire hazards at the western boundary.</p>	<p>It is considered that the proposed amendment to LSP1 does not materially change the bushfire risk and as such does not recommend that an update to the Bushfire Management Plan is required.</p>
<p>Main Roads WA</p>	<p>Orderly and Proper Planning The Shire of Chittering Local Planning Scheme 6 (LPS 6) at clause 3.7 Special Use Zones, states that Special Use Zones apply to special categories of land use, which do not comfortably sit with any other zone in the Scheme.</p> <p>State Planning Policy 4.1 Industrial Interface at clause 5.2.1 (b) states that land uses permitted in General industry zones, including incidental or ancillary uses, should be consistent with the objectives of the zone outlined in the Planning and Development (Local Planning Schemes) Regulations 2015 (the Regulations). While this amendment to the LSP proposed a Special Use Zone, the Muchea Industrial Park is considered an industrial area and as such, any land uses permitted within the greater Muchea Industrial Park should be consistent with industrial land uses.</p> <p>The extent of the proposed retail land use seems to be in conflict with orderly and proper planning, the objectives for Muchea Industrial Park and the Scheme (cl. 4.20(a) the form and scale of the development is to be</p>	<p>Main Roads WA’s submission includes a lengthy discussion on orderly and proper planning, concluding that Amendment 1 should not be supported as it conflicts with the aims and objectives of the planning framework. Not only do we disagree with this conclusion, the general discussion around the various planning instruments relevant to the proposal is based on incorrect assertions and interpretations.</p> <p>MRWA is responsible for managing the State’s road network and is not a planning authority. On this basis alone, the comments relating to land use planning outcomes should be disregarded. Notwithstanding, we have endeavoured to interpret and understand the source of MRWA’s concerns and provide a response in the proceeding rows.</p> <p>The Muchea Employment Node Structure Plan (MENSP) makes provision for approximately 1.0 hectare of ‘shop/retail’ and 6.4 hectares of ‘other retail’ at 1% of the total MEN area. Amendment 1 could</p>	<p>The ‘Special Use’ zone is considered an acceptable approach as there is no zone currently in LPS6 that caters for the commercial and retail activities proposed.</p> <p>As detailed in the officer’s report, the MENSP and DMIPSP refers to retail/shop opportunities within the MIP. Provide such opportunities is important to service the expected workforce in the MIP and can additionally service the local community where these services are not currently offered locally.</p> <p>As above.</p>

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	<p>compatible with surrounding land uses). The proposal includes 2650m² of retail type uses - drive-through fast food, fuel retail, medical services/consulting rooms, a small supermarket with liquor sales, etc.</p>	<p>provide for up to 2,650m² of ‘shop/retail’ and ‘other retail’ floor space consistent with the MENSPP’s planning for services and amenities to support industrial land uses.</p> <p>Amendment 1 proposes to deliver services and amenities for the MIP and broader MEN workforce to increase accessibility to these uses in a relatively isolated location. Land use permissibility within the Special Use Zone has been carefully considered to ensure there are no sensitive land uses capable of approval or uses that may prejudice the operation of the broader MIP as an industrial estate.</p>	
	<p>Table 2 of Mucnea Industrial Park Local Structure Plan 1 provides a list of proposed uses that may be permissible within the proposed Special Use Zone. However, all of the uses, with the exception of Liquor Store, are already contained within LPS 6 with permissibility in at least one zone. As such, none of them could be considered special categories of land use which do not comfortably sit with any other zone in the Scheme.</p>	<p>Amendment 1 proposes a Special Use Zone to ensure that the range of permitted land uses are suitable for the selected site and will not result in the potential for land use conflict. There is no other standard zone within LPS 6 that would be suitable for delivering the intended outcomes, hence the need for a special use zone.</p>	<p>The proposed land uses permitted within the ‘Special Use’ zone are not captured under one existing zone of LPS6. The need for incorporating a ‘Special Use’ zone into LSP1 allows for selective uses to be granted permissibility into the local service centre.</p>
	<p>Further, LPS 6 defines uses which are considered appropriate for an industrial area and uses which should be prohibited from an industrial area. The introduction of the proposed Special Use Zone contradicts, and conflicts with, the current planning objectives for both industrial areas, and specific land uses.</p>	<p>The site is zoned ‘Industrial Development’ under LPS 6. In accordance with clause 3.4.3 of LPS 6, land use permissibility is in accordance with an approved structure plan.</p>	<p>As detailed in the officer report, the introduction of a ‘Special Use’ zone into LSP1 does not conflict or compromise the objectives of the ‘Industrial Development’ zone has prescribed by LPS6. The proposed modification to the Structure Plan Map and permitted uses on lots around the periphery of the local service centre ensures that land use conflict does not arise, allowing the balance of the industrial park to be developed as intended.</p>
	<p>More specifically, LPS 6 provides for the subject site at clause 5.7 Mucnea Employment Node Special Control Area (SCA). At cl. 5.7.1(f), the Scheme states the purpose of the SCA is to limit the development of land uses that might compromise the intended purpose of the area as an industrial estate. The proposed uses are considered incompatible with the industrial setting of Mucnea Industrial Park and its ongoing development as a major industrial area. The proposal should not be supported as it does not align with clause 67(2)(a), (b) and (m)(i) of the Regulations.</p>	<p>The MENSPP makes provision for approximately 1.0 hectare of ‘shop/retail’ and 6.4 hectares of ‘other retail’ at 1% of the total MEN area. Amendment 1 could provide for up to 2,650m² of ‘shop/retail’ and ‘other retail’ floor space consistent with the MENSPP’s planning for services and amenities to support industrial land uses.</p> <p>Amendment 1 proposes to deliver services and amenities for the MIP and broader MEN workforce to increase accessibility to these uses in a relatively isolated location. Land use permissibility within the Special Use Zone has been carefully considered to ensure there are no sensitive land uses capable of approval or uses that may prejudice the operation of the broader MIP as an industrial estate.</p>	<p>As above.</p>
	<p>While some appropriate retail use to support the precinct would be acceptable, such as a lunch bar or small convenience store, providing destination uses to service the needs of the wider community and passing traffic, unrelated to the industrial purposes of Mucnea Industrial park is cause for concern.</p>	<p>In addition to enhancing the services available to an already under-served residential population, a primary purpose of Amendment 1 is to deliver services and amenities to the MIP and broader MEN workforce. The proposal will hopefully attract business and investment to the MEN and/or increase take up rates for land. This is not a cause for concern but an outcome that is consistent with the Shire’s planning to stimulate activity and growth within the MEN.</p>	<p>As detailed in the officer’s report, the MENSPP and DMIPSP refers to retail/shop opportunities within the MIP. Provide such opportunities is important to service the expected workforce in the MIP and can additionally service the local community where these services are not currently offered locally.</p>
<p>Road Network Efficiency and Road User Safety <u>Existing Great Northern Highway</u></p>		<p>Management of GNH does not need to be resolved as part of Amendment 1 as the Centre does not propose direct access from GNH or any new intersections with GNH. All access will be obtained from</p>	<p>Noted. No direct access to Great Northern Highway is proposed. Road network efficiency and road user safety has been addressed in the officer’s report in</p>

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	<p>LSP 1 at 5.7 states that upon completion of the Tonkin Highway extension, direct lot access to Great Northern Highway is permitted. This statement is incorrect and accesses would be prohibited, or strictly limited as Great Northern Highway is a primary distributor and a major freight route for heavy and Over Size Over Mass (OSOM) vehicles.</p> <p>Section 5.ii of the Transport Assessment in the Appendices, reiterates the assumption throughout the LSP that the existing Great Northern Highway will be downgraded and handed over to the Shire of Chittering to maintain and operate. There is no commitment on the future management of the existing Great Northern Highway from either state or local government, however regardless of future management responsibility, functionality of the road as a key freight route with a focus on mobility, safety and efficiency, as referenced in the Draft MIPSP. Section 1.5 of the MIPSP acknowledges that the establishment of a safe and efficient movement network is critical with a defined road hierarchy to be established with individual lot access from local access roads and restricted access from primary and distributor roads.</p> <p>Great Northern Highway is continues to be the OSOM route and plays an important role on the State road network; it is considered that there is an ongoing need for Great Northern Highway to remain on the State road network. However, while a final decision is yet to be made, Great Northern Highway must be protected as a State road in terms of access and intersections, until that determination is made.</p>	<p>existing local roads and no changes to the structure plan framework as it relates to GNH are proposed. It should be noted that the structure plan map has been updated to specifically identify the sections of GNH that are restricted to ‘Oversize Overmass’ (OSOM) vehicles however, this is an administrative update to reflect the current situation since the original LSP was approved. It does not propose anything different than the current situation at Muchea post-completion of Tonkin Highway, under which the northern section of GNH is restricted by bollards for use by OSOM vehicles.</p> <p>With regards to the existing structure plan and its allowance for access onto GNH, we confirm that prior to the structure plan being approved in October 2017, the structure plan was assessed by the Shire, MRWA and DPLH and no issues were raised regarding GNH. Since then, the Tonkin Highway extension has been completed and has assumed the role of the primary north-south road in the locality. We expect that this would lend further support to the structure plans approach to the management of GNH, as volumes have been redistributed onto Tonkin Highway.</p>	<p>conjunction with an assessment from an independent traffic consultant.</p>
	<p>LSP 1 introduces a number of factors which increase the crash risk for the area which directly contravenes the Safe Systems approach (adopted for National and State road safety strategies) which is designed to ensure that when driver errors do occur, they do not result in high severity outcomes. The increased number of vehicles into the area increases road user exposure to a crash risk. Additionally, the proposed land uses may encourage vulnerable road users such as motorcyclists, cyclists and pedestrians into the area. This, combined with other elements of the proposed road environment, such as a mix of light and heavy vehicles and uncontrolled accesses will increase the likelihood of crash events in the area.</p> <p>Increased right turn traffic at the Great Northern Highway / Tonkin Highway / Loop Road may bring forward the requirement for an intersection treatment, likely left-in/left-out, which will ultimately increase volumes on Loop Road if there is an additional destination for passing traffic.</p> <p>Section 4.5 of the Transport Assessment discusses intersection separation distances on Great Northern Highway and references the Shire of Chittering’s LPP 16 as being silent on separation distances. Main Roads WA does not agree with the assertion that 150m between intersections is adequate for Great Northern Highway and any intersection separation requirements should be determined on a case-by-case basis with safety and functionality as the foundation for any determination. There should be enough time to allow a vehicle to reach speed, react and then decelerate to</p>	<p>Suitable road design and intersection controls have been implemented that are capable of accommodating the estimated traffic volumes. This is demonstrated by the TIA Addendum which supports the proposed amendment.</p> <p>Given the distance between the site and the nearest population centre, it is unlikely that large numbers of pedestrians and/or cyclists will be attracted to the area. Motorcyclists are entitled to utilise the road network and standard road rules exist to protect them and other road users.</p> <p>A mix of heavy and light vehicles co-exist with other road users in industrial areas across Western Australia. The MIP road network is capable of accommodating the additional traffic volumes that are expected to be generated in association with the proposed Centre.</p>	<p>As above.</p>

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	<p>stopping, bearing in mind the additional storage and manoeuvring requirements for heavy vehicles, particularly RAV 10 vehicles.</p> <p>The functional area of Great Northern Highway and Muchea East Road should be considered with reference to Austroads Guide to Road Design Part 4A and Main Roads WA Supplement to this Guide in terms of adequate sight distance.</p>		
	<p>Main Roads WA would not support Road 6 as a direct link to Great Northern Highway as there are options for this road to connect through to the local road network (Guillente Road), which is part of the greater Precinct 1 North A area, but not included in this LSP.</p>	<p>No changes to the road network are proposed as part of Amendment 1. The alignment of all roads and intersections, including 'road 6' remain as approved by the WAPC as per the 2017 structure plan and / or subsequent subdivision approvals.</p>	<p>Road 6 is not proposed to be changed as part of this local structure plan amendment and it is not considered that a change to this road is warranted as a result of the 'Special Use' zone introduction.</p>
	<p>Development Control Policy (DCP) 5.1 Regional Roads (Vehicular Access) provides direction at cl. 3.3.2 stating that there is a general presumption on traffic and safety grounds against the creation of new driveways or increased use of existing accesses to these roads. Where alternative access is or could be made available from side or rear streets or from rights of way, no access shall be permitted to the regional road unless special circumstances apply. Main Roads WA Driveway Policy requires that new driveway locations shall conform to DCP 5.1. Non-compliance with the DCP 5.1 and the Driveway Policy does not align with cl. 67(2)(e), (f) and (s) of the Regulations.</p>	<p>No access to a regional road is proposed by Amendment 1. Comment is noted.</p>	<p>No access to a regional road is proposed through this local structure plan amendment. Access restrictions are currently in place for the subject land which were imposed through the original subdivisional approval.</p> <p>The subject land has ingress rights from Mercury Rise, with egress traffic to use Canaveral Way to the north of the subject land.</p> <p>Cl. 67(2)(e), (f) and (s) of the <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> are matters for consideration of a development approval.</p>
	<p>Contrary to DCP 5.1 and cl. 67(2)(r) and (t) of the Regulations, adding destination uses to the area that are aiming to draw in passing traffic that would not normally enter the industrial area, could create conflicts between heavy vehicles and light vehicles, pedestrians and cyclists, putting all road users at risk.</p>	<p>This comment is speculative and suggests that any proposal that attracts traffic to an area should not be supported based on road safety. All shopping centres attract traffic that would otherwise not be drawn to the area. The important aspect is ensuring that the network of roads and intersections is capable of accommodating the estimated traffic volumes to manage risk, as is proposed by Amendment 1.</p>	<p>Road network efficiency and road user safety has been addressed in the officer's report in conjunction with an assessment from an independent traffic consultant.</p>
	<p>Proposed Road 1 (Mercury Rise) As per the Draft Muchea Industrial Park Structure Plan (October 2020), there should be no direct lot access off the loop road (Road 1). Ultimate network management responsibility for the loop road is yet to be finalised (specifically the potential for a Great Northern Highway realignment) and proliferation of accesses would compromise this.</p> <p>LSP 1 proposes an additional six left-in accesses to Road 1 within ~500m of the Great Northern Highway intersection (pages 7-8 Transport Assessment Addendum). As Road 1 requires a high level of functionality, safety and efficiency to be maintained, protection of this road from direct lot accesses is appropriate.</p> <p>Conclusion Main Roads WA believes that the proposal should not be supported as it conflicts with the aims and objectives of the planning framework, MRWA policy and road safety strategies, which have been set out above and include references to:</p>	<p>All access to Mercury Rise is proposed in accordance with recent subdivision approvals and the approved structure plan, all of which have been assessed by MRWA. Amendment 1 does not propose any changes in this regard and access will be consistent with all pre-existing approvals.</p>	<p>Access restrictions are currently in place for the subject land which were imposed through the original subdivisional approval.</p> <p>The subject land has ingress rights from Mercury Rise, with egress traffic to use Canaveral Way to the north of the subject land.</p>

SCHEDULE OF SUBMISSIONS – PROPOSED LOCAL STRUCTURE PLAN AMENDMENT; PRECINCT 1 (LOCAL STRUCTURE PLAN 1) OF THE MUCHEA INDUSTRIAL PARK

	<ul style="list-style-type: none"> Shire of Chittering Local Planning Scheme 6 Development Control Policy 5.1 Draft State Planning Policy 4.1 Planning and Development (Local Planning Schemes) Regulations 2015, Clause 67 Draft Muchea Industrial Park Structure Plan (October 2020) Muchea Employment Node Structure Plan Main Roads WA Driveway Policy Safe Systems 		
PUBLIC SUBMISSIONS			
Submitter	Comment	Proponent Response	Shire Officer Response
Clint O'Neil Lower Chittering	<p>After wading through numerous iterations of the proponent industrial estate proposal, attachments and reference material to those proposals that cross reference each other, written obligations and commitments made by the proponent and its consultants on behalf of the proponent, there would appear to remain a number of regulatory hurdles that have not been resolved and may need clarification prior to assessment of the requested amendments.</p> <p><u>Submission summary</u></p> <ul style="list-style-type: none"> What are the planning grounds the proponent relies on that enable mid-level public officials to review and reassess the endorsed LSP1 for the industrial estate? 	Clause 29, Schedule 2 of the <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> .	Clause 29, Schedule 2, Part 4 of the <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> .
	<ul style="list-style-type: none"> What document/s on the public record, lodged by the proponent with relevant DMA's, establishes that the proponent has been authorised by the Economic Regulation Authority under the provisions of the Water Services Act 2012, as a third party water provider and authorised holder of infrastructure assets necessary to provide water services to individual lot owners/customers within the industrial estate? 	<p>The ERA has licenced Aqua Ferre (WA) Pty Ltd (trading as Muchea Water) over the entirety of the proponents Muchea Industrial Park (MIP) land holdings incorporating the LSP1 area, along with other unrelated land-parcels to the north of the MIP. This is public record via the ERA:</p> <p>https://www.erawa.com.au/cproot/21530/2/Water-services-licence-WL51-Version-3-28-October-2020.pdf</p> <p>https://www.erawa.com.au/cproot/21529/2/Operating-area-map-OWR-OA-317-A---WL051---Muchea-Water.pdf</p>	Refer to proponent's response.
	<ul style="list-style-type: none"> What planning precedent does the proponent rely on to entertain a review, amendment or variation by mid-level public officials of the high level judgement rulings of the JDAP panel - meeting No 38 – 24 June 2019? 	The proposed structure plan amendment does not relate to the decision of the JDAP cited by the submitter and applies to a different property within the MIP.	Not relevant to the subject matter.
	<ul style="list-style-type: none"> Even though the proponent and Shire positions on permissible land use without reticulated water supply to a lot may be in accord, what grounds do the proponent and Shire rely on to establish that there is no direct conflict with the high level WAPC endorsed 'Model Subdivision Conditions and Advice (December 2020)' and 'Local Government guidelines for subdivision development-edition No2.3 	ERA licenced Aqua Ferre (WA) Pty Ltd to operate a water supply network providing potable water and fire hydrant services to the MIP, satisfying all conditions of the relevant subdivision approval.	The applicable subdivisional approval associated with the subject land requires a reticulated supply of water. Titles for lots cannot be created without meeting this requirement.

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	<p>(2016)', more particularly in relation to the application of relevant Australian Standards and Codes cited in the documents.</p>		
	<ul style="list-style-type: none"> What remedial actions are required to be undertaken to ensure that new owners of titled lots in the industrial estate are not significantly constrained, limited or suffer the burden of unreasonable development on-costs due to inadequacies of 'common industry standard' essential servicing to those titled industrial lots? 	<p>All industrial lots within the MIP are required to be connected to power and water as a condition of subdivision approval, with the relevant service authorities responsible for clearing the conditions.</p>	<p>Lots are required to be developed ready for use by the purchaser, which is a requirement of the conditional subdivisional approval. Not remedial action will be required by new owners of titled lots.</p>
	<p><u>Submission</u> It would appear that WAPC and the Shire of Chittering have deemed that proponent submissions on WAPC conditions 18 and 19 are sufficiently sound and robust to warrant the WAPC endorsed LSP1 (2017) as being satisfied, enabling the creation of freehold titled lots within the industrial estate. The proponent request currently before the Shire of Chittering is seeking to amend LSP1 by permitting a shopping cart full of permissible land uses applicable to lot 84 (2.01ha) in the industrial estate.</p> <p><u>DPLH draft Muchea industrial park structure plan (October 2020)</u> Extract <i>Muchea Local Structure Plan Stage 1 (LSP), which covers 147ha, was approved by the WAPC in 2017. The LSP identifies 104.5ha for General Industry, 30ha for conservation and 8ha for drainage. It provides for the coordination of subdivision of approximately 30 industrial lots and includes the first section of a loop road connecting to NorthLink.</i></p> <p><i>The first stage of industrial subdivision in the park was approved in May 2018 directly adjacent to NorthLink and the RTAA comprising 12 freehold industrial lots. In February 2020, an application for a further eight industrial lots to the east of the existing subdivision was approved. In June 2019, the development of a BP service station/ truck refueling facility was approved on one of the lots by the Mid-West Wheatbelt Joint Development Assessment Panel.</i></p> <p><i>1.8 – water supply</i> <i>A water supply is essential for the industrial park, and this structure plan recommends that it be a requirement for all development. The WAPC is open to any fit for purpose infrastructure provision, provided it is licensed by the Economic Regulation Authority (ERA).</i></p> <p><i>In February 2020, Muchea Water was granted a license by the ERA to service Precinct 1 of the industrial park. Other servicing arrangements can be made as planning progresses in other precincts.</i> <i>While existing land uses in the park make use of rainwater tanks and hardstand harvesting, there is to be no intensification of land use without a licensed water supply.</i></p> <p>DPLH has previously expressed issues and concerns with orderly planning and development of the proponent's industrial estate. Taking into consideration the technical matters raised in this submission, DPLH may, on its own initiative, undertake an investigation to clarify the soundness and</p>	<p>The proponent owns lot 84.</p>	<p>The applicant (CLE) have lodged an application to amend a local structure plan on behalf of the landowner, Harvis. This is in accordance with Clause 16(3)(b) of Schedule 2, Part 4 of the <i>Planning and Development (Local Planning Schemes) Regulations 2015</i>.</p>

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	<p>reliability of the statements above and there inclusion within a statutory planning instrument.</p> <p>The proponent in its published staging plan (26/3/21) has identified that lots 84, 83, 82, 7, 6 and 14 have been sold. The first issue that arises, taking into consideration the preamble to the WAPC Model Subdivision Conditions and Advice (December 2020), are the planning grounds the proponent, as the industrial estate developer, relies on to lodge a valid land use amendment application with the Shire when the proponent is not the owner of the land – lot 84.</p>		
	<ul style="list-style-type: none"> What are the planning grounds the proponent relies on that enable mid-level public officials to review and reassess the endorsed LSP1 for the industrial estate? 	<p>Clause 29, Schedule 2 of the <i>Planning and Development (Local Planning Schemes) Regulations 2015</i>.</p>	<p>Clause 29, Schedule 2, Part 4 of the <i>Planning and Development (Local Planning Schemes) Regulations 2015</i>.</p>
	<p>The second issue that arises is whether the proponent owned water supply infrastructure assets, servicing the sold lots with residential domestic type drinking water supply, have been certified by qualified professional water and fire engineers as having sufficient sustainability and capacity to meet and satisfy ‘common industry standard’ water supply to lots within the industrial estate, more particularly the applied for commercial land use developments on lot 84 and has gained relevant authorisation from the Economic Regulation Authority.</p> <ul style="list-style-type: none"> What document/s on the public record, lodged by the proponent with relevant DMA’s, establishes that the proponent has been authorised by the Economic Regulation Authority under the provisions of the Water Services Act 2012, as a third party water provider and authorised holder of infrastructure assets necessary to provide water services to individual lot owners/customers within the industrial estate? 	<p>The proponent is not the owner of the ‘water supply infrastructure assets’ nor are they required to be. The ERA has licenced Aqua Ferre (WA) Pty Ltd (trading as Muchea Water) over the entirety of the proponents Muchea Industrial Park (MIP) land holdings incorporating the LSP1 area, along with other unrelated land-parcels to the north of the MIP. This is public record via the ERA: https://www.erawa.com.au/cproot/21530/2/Water-services-licence-WL51-Version-3-28-October-2020.pdf https://www.erawa.com.au/cproot/21529/2/Operating-area-map-OWR-OA-317-A---WL051---Muchea-Water.pdf</p> <p>Additionally, the Proponent employs WaterCorp registered Civil Engineers Cossill & Webley and WaterCorp registered Civil Contractors Wormall Civil to ensure the water infrastructure designed and constructed within the estate are delivered to the WaterCorp standard manuals before being handed over to the ERA licenced water supplier.</p>	<p>The supply of water to any future development on Lot 84 will need to comply with the relevant subdivisional requirements.</p>
	<p>In the event that the first and second issues are deemed to be not relevant to the proponent amendment application before the Shire, then the submitter objects to approval being granted for the creation of a special use commercial lot within the industrial estate and the significant range of land uses applied for, for the following reasons:</p> <p>LSP1 amendment (a) Introduce a ‘special use’ zone at the western entrance to the MIP The Shire of Chittering promotes itself as being a small business friendly local government. Most small businesses in the Shire are owner operators employing and supporting community members, engage with and support community groups to advance the interests of the community as a whole, servicing clients and customers both within the Shire and further afield from a home base in the Shire. The proponent claims that its retail needs assessment (‘RNA’)(December 2020) finds that there is a compelling rationale for facilitating additional retail floor space, with the proposed commercial services activity centre</p>	<p>The independent Retail Needs Assessment was undertaken by experienced 3rd party consultant Shrapnel Urban Planning, who undertook an objective review of the quantity and classification of retail within a defined relevant subframe catchment area. The study determined the catchment area around Muchea and Lower Chittering extending northwards to Bindoon and GinGin was relevant as to population areas. The proximity of those catchments to the now permanently altered vehicular movement patterns around Tonkin, Brand and Great Northern Highways (ie the Northlink upgrades) were taken into account.</p> <p>With respect to the Bullsbrook townsite, both the planned population catchment growth and retail proposal supporting that growth within the Bullsbrook Townsite area were excluded from the catchment subframe as these areas are somewhat removed from the Northlink backbone infrastructure, and therefore less relevant to the Muchea proposal.</p>	<p>Noted.</p>

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	<p>special use ('SU') site (lot 84) providing that additional retail floor space, to cater for the business and employees that will populate the industrial estate. However, the proponent has not identified the number of employees that would utilise, as a convenience, the range of offerings proposed and applied for. Within the proponent's cited RNA, reference is made to a 10km radius investigation area, where existing small businesses offer a wide range of services to the local community and passing commuters.</p> <p>It is disappointing that the proponent in promoting and marketing its own cause has elected to make disparaging comments and observations of the existing commercial small business in Muchea whilst omitting any mention of the approved 25,000m² commercial floor space that falls within its 10km investigation area (Bullsbrook central – Swan SP 2017-5 Bullsbrook central structure plan (2019))</p>		
	<p>Within the WAPC published 'Model Subdivision Conditions and Advice (December 2020)' a number of judgement rulings are cited that set the boundaries for what does or does not constitute valid planning grounds. Reference is also made to the imposition of conditions on land development and satisfaction of those conditions. While referral agencies may recommend the imposition of conditions and may also be nominated to provide written confirmation that a condition has been fulfilled, responsibility ultimately rests with the WAPC.</p> <p>The published and WAPC endorsed 'Local Government guidelines for subdivision development-edition No2.3 (2016)' provides guidance to Local Government public officials on what constitutes acceptable satisfaction of information supporting land development by a developer.</p> <p>DPLH has expressed ongoing issues and concerns with land use development occurring prior to the proponent satisfying all the conditions of the conditional approval (WAPC 155948) that was granted by the Western Australian Planning Commission (WAPC) for the subdivision of a portion of Lot 809. The subdivision includes the creation of 12 industrial lots, conservation and drainage lots, and portions of road reserve (40m and 30m wide) providing frontage to those lots and connecting to the future alignment of Great Northern Highway.</p> <p>Of relevance:</p> <p><i>Condition 18 – Arrangements being made with a licensed service provider so that provision of a suitable water supply service will be available to the lots shown on the approved plan of subdivision (licensed service provider)</i></p>	<p>The proponent has made arrangements with ERA licenced water service provider Aqua Ferre (WA) Pty Ltd to service all lots within the proponents land-holdings as-and-when lots are delivered under the applicable subdivision approvals.</p>	<p>Noted.</p>
	<p><i>Condition 19 – the provision of easements for existing or planned future water infrastructure, as may be required by the licensed service provider being granted free of cost to that body (licensed service provider)</i></p>	<p>The proponent has provided the necessary easements required by Aqua Ferre (WA) Pty Ltd to facilitate the construction of their water supply infrastructure.</p>	<p>Noted.</p>

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	<p><i>Condition 28 – information is to be provided to demonstrate that the measures contained in the bush fire management plan, by bushfire safety consulting and emerge associates, that address the following:</i></p> <p><i>a) Provision of reticulated water supply and fire hydrants</i></p> <p><i>b)</i></p>	<p>The proponent has ensured that reticulated water supply fire hydrants are provided adjacent to each titled lot created within the proponent’s land goldings on the reticulated water network adopted for operation by ERA licenced Aqua Ferre (WA) Pty Ltd.</p>	<p>Noted.</p>
	<p>When making a judgement ruling on a land development application (JDAP meeting No 38 – 24 June 2019) the panel resolved to approve application DAP/18/01488 subject to a number of conditions.</p> <p><i>4. An urban water management plan (UWMP) shall be submitted to and approved by the Shire prior to the commencement of works on-site and implemented prior to first operation of the development. The UWMP shall be designed consistent with the approved Local Water Management Strategy for the Muchea Employment Node Local Structure Plan 1 and shall encompass the development site and relevant adjoining land to the satisfaction of the Shire.</i></p> <p><i>7. A reticulated water supply shall be provided at the full cost of the applicant/landowner to service the proposed development to the satisfaction of the Shire prior to first operation of the proposed development.</i></p> <p><i>8. The Bushfire Management Plan dated May 2019 shall be implemented in perpetuity to the satisfaction of the Shire.</i></p> <p>With regards to conditions 18 and 19 of the WAPC conditional approval (155948) and conditions 4 and 7 of the JDAP resolution, the submitter relies on information in the public domain.</p> <p>Based on information in the public domain, the commercial drinking water supply arrangement between Muchea Water (licenced provider WL51) and the proponent requires Muchea Water to provide a specified volume of drinking water (50,000kL/a) to a water storage tank located on a leased area of land on the proponent’s industrial estate.</p> <p>The proponent has claimed ownership, control and management of all reticulated water supply infrastructure assets from the discharge point of the drinking water storage tank to the metered water connection point at each created lot, providing a residential domestic type drinking water supply to each lot. The proponent has put forward the proposition that all water supply infrastructure assets would meet and satisfy Water Corporation’s published design standard DS63, however, has remained silent on the contextual relationship between DS63 and Water Corporation’s published developer manual.</p> <p>The proponent in its LSP1 (2016) commitments has identified at 6.2 Water Supply -</p> <p><i>A reticulated water supply is required to be installed at the first stage subdivision to the satisfaction of the Western Australian Planning</i></p>	<p>The Submitter’s assertion that the ‘the proponent is the claimed owner of all water supply distribution assets on the industrial estate’ is erroneous. The proponent has clearly demonstrated with a licensed service provider so that provision of a suitable water supply service will be available to all lots. The submitter’s general intent of assertions with respect to availability of adequate industrial standard potable water supply are not correct.</p>	<p>The supply of water to any future development on Lot 84 will need to comply with the relevant subdivisional requirements, which includes satisfying regulatory requirements imposed on the licensed water provider.</p>

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	<p><i>Commission. The water supply shall be provided in accordance with Part 5.1 of the Local Water Management Strategy approved as part of this Local Structure Plan.</i></p> <p>However, the proponent has made no reticulated water supply commitments to subsequent stages in the industrial estate. The proponent at clause 5.2 'land use permissibility' of the application notates a reference to schedule 11 of the Shire of Chittering Local Planning Scheme No 6, being:</p> <p><i>'Reference should also be made to Schedule 11 – 'Muchea Employment Node Special Control Area' of TPS6 with regards to land use permissibility in the absence of a reticulated water supply.</i></p> <p>As the proponent is the claimed owner of all water supply distribution assets on the industrial estate, it remains open for the proponent to determine whether it is in its commercial interest to install water supply infrastructure assets that meet and satisfy 'common industry standard' water supply servicing to industrial / commercial land developments. As stated at clause 5.2, given the permitted land uses without the benefit of appropriate connected reticulated water supply, the option remains open for the proponent to determine that it is not viable or in its commercial interest to provide common industry standard water supply servicing to a number of lots within the industrial estate.</p>		
	<p>The Shire of Chittering published 'Muchea Industrial Park guidelines (2018) provides support for the proponent position above, stating at clause 4.1 – land use and industrial design – <i>'In the event a licensed reticulated water scheme is not provided and connected to the MIP reticulated system, permissible land uses will generally be limited to transport depot, storage, warehouse, landscape supplies. Alternatively, land uses will be in accordance with the appropriate zone as per the LPS 6 Zoning Table.</i></p> <ul style="list-style-type: none"> • Even though the proponent and Shire positions on permissible land use without reticulated water supply to a lot may be in accord, what grounds do the proponent and Shire rely on to establish that there is no direct conflict with the high level WAPC endorsed 'Model Subdivision Conditions and Advice (December 2020)' and 'Local Government guidelines for subdivision development-edition No2.3 (2016)', more particularly in relation to the application of relevant Australian Standards and Codes cited in the documents. 	<p>The proponent has clearly demonstrated arrangements with a licensed service provider so that provision of a suitable water supply service will be available to the lots shown on the approved plan of subdivision.</p>	<p>Development and subdivision is to be in accordance with relevant regulatory requirements.</p>
	<p><u><i>The Bushfire Management Plan dated May 2019 shall be implemented in perpetuity to the satisfaction of the Shire</i></u> – reference Emerge Associates BMP-May 2019</p> <p>DFES and DPLH jointly publish planning guidelines for bush fire protection. These guidelines require water to be delivered from hydrants located on water utility mains at the rate of 600 L/min for four hours. Extensive</p>	<p>The Submitter's assertion that the <i>'the proponent has claimed ownership of all water supply distribution infrastructure assets on the industrial estate'</i> is erroneous. The proponent has clearly demonstrated arrangements with a licensed service provider so that provision of a suitable water supply service(s).</p>	<p>Reference to compliance with a condition of a JDAP approval is not relevant to this matter.</p> <p>The implementation of a Bushfire Management Plan associated with a conditional subdivisional approval is required prior to land titles being created.</p>

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industrial or commercial zones have a nominal fire flow provision of 40 L/sec applied at the time of land development or rezoning of land that is being redeveloped.

The proponent’s consultant Emerge Associates has developed a bushfire management plan (**BMP**) for the industrial estate (EP 18-091(01)(May2019), stating that *‘The development will be provided with a permanent and secure reticulated water supply to be installed by an approved provider (to be nominated at a later date), including the installation of fire hydrants. The proposal complies with Element 4.*

Assessment against the Bushfire Protection Criteria

Table 3

Bushfire protection criteria	Intent	Method of compliance Acceptable solution	Proposed bushfire management strategies	Compliance statement
Element 4: water supply	To ensure water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.	A4.1 Reticulated areas. It is anticipated that a reticulated water supply, together with fire hydrants that will be installed to meet the specifications of Water Corporation (Design Standard DS 63). The Water Corporation would be responsible for all hydrant maintenance repairs. Based on the outlined management measures, future development	It is anticipated that a reticulated water supply, together with fire hydrants that will be installed to meet the specifications of Water Corporation (Design Standard DS 63). The Water Corporation would be responsible for all hydrant maintenance repairs.	Based on the outlined management measures, future development will be able to comply with and meet the intent of Element 4: Water.

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			<p>will be able to comply with and meet the intent of Element 4: Water.</p> <p>A4.2 Non-reticulated areas - Not applicable</p> <p>A4.3 Individual lots within non-reticulated areas (only for use if creating 1 additional lot and cannot be applied cumulatively) - Not applicable</p>				
<p>For a significant period of time the proponent and its predecessors have been fully aware that Water Corporation had no interest or intention to provide water supply servicing to the MIP special control area. The proponent would have been fully aware when lodging the May 2019 BMP with JDAP that the statements and commitments recorded in table 3 – element 4 were incapable of being implemented as required by JDAP condition 8.</p> <p>To the submitter’s knowledge the proponent has not provided documentation in the public domain to establish that a qualified professional fire engineer has certified existing or proposed water supply infrastructure assets and management of those assets, servicing the industrial estate, has been tested and assessed to be fully compliant with AS2419 – fire hydrant installations – system design, installation and commissioning, AS 1851 – routine maintenance of fire protection systems and equipment and the Plumbing Code of Australia.</p> <p>Without the benefit of a professional fire engineer’s compliance report it is unclear how the Shire or WAPC have been satisfied that the proponent’s element 4: water supply – fire protection and mitigation to protect people, property and infrastructure within the industrial estate has been achieved</p>							

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	<p>and implemented in perpetuity. Even though JDAP condition 8 cites the Shire as the approving authority, the WAPC published Model Subdivision Conditions and Advice (December 2020) clearly states that WAPC is the ultimate decision maker of all conditions.</p> <p>The proponent has claimed ownership of all water supply distribution infrastructure assets on the industrial estate. There would be an expectation that the proponent would attach sound and reliable documentation that fully addresses the JDAP condition 8, relevant Australian Standards and Codes and licensed authorisation granted by the ERA, when taking into consideration the extensive range of land uses applied for.</p>		
	<p>WAPC and DPLH, under delegated authority, are the ultimate decision makers for orderly planning and development of land and a number of irreversible decisions have been made authorising the creation of freehold titles on the industrial estate, based on incomplete, unreliable and misleading information. What remedial actions are required to be undertaken to ensure that new owners of titled lots in the industrial estate are not significantly constrained, limited or suffer the burden of unreasonable development on-costs due to inadequacies of ‘common industry standard’ essential servicing to those titled industrial lots.</p>	<p>All industrial lots within the MIP are required to be connected to power and water as a condition of subdivision approval, with the relevant service authorities responsible for clearing the conditions.</p>	<p>Lots are required to be developed ready for use by the purchaser, which is a requirement of the conditional subdivisional approval. Not remedial action will be required by new owners of titled lots.</p>
<p>Bitutek Pty Ltd</p>	<p>Bitutek Pty Ltd is shortly to settle on the purchase on Lot 14 on DP420884, and as a future occupant of that site we confirm we have no objection to the proposed amendment to Local Structure Plan, Muchea Industrial Park Precinct 1, providing for introduction of non-industrial (retail/shop) type uses over the specific entry Lot84 (opposite BP)</p>	<p>Noted.</p>	<p>Noted.</p>
<p>Lester Group</p>	<p>We write to express our support for the proposed rezoning of the proposed 2.1ha Lot 84 Mercury Rise with the Muchea Industrial Park.</p> <p>We currently have this property under contract to purchase as we see the necessity for a commercial and retail facility to be located not only within the 150ha Muchea Industrial Park, but also the greater 1,000ha Muchea Employment Node.</p> <p>We believe a commercial precinct such as this will provide retail and shopping amenity to cater for what will be significant employment node in the medium to long term. This retail amenity will also cater for the growing truck, freight, recreational and tourist consumer.</p>	<p>Noted.</p>	<p>Noted.</p>

*Note: Comments are as per original submission received by the Shire.



transport planning
traffic engineering
transport modelling

Technical Note: No 1

Date: 22/03/2021

Project No: t21.052

Project: Muchea Industrial Park Amendment 1

Subject: Peer Review of Structure Plan Amendment - Transport Assessment Addendum

INTRODUCTION

The Local Structure Plan 1 (LSP 1) for the Muchea Industrial Park (MIP) was approved by the Western Australian Planning Commission (WAPC) on 13 October 2017. The Shire of Chittering is now in receipt of an application to amend Local Structure Plan No. 1 for the Muchea Industrial Park. The Amendment includes introduction of a commercial/retail precinct at the entrance to the MIP. This is likely to increase traffic movements on surrounding roads and intersections.

Accordingly, an Addendum to the current Transport Assessment (TA) undertaken by GTA in December 2015 has been conducted and provided by WSP in December 2020 to support this application. Accordingly, Transcore's services are sought by the Shire to undertake a Peer Review of WSP's TA Addendum.

Accordingly, this technical note documents the outcome of the Transcore's peer review of the WSP's TA Addendum dated December 2020.

The following documents were reviewed for the purpose of this peer review:

- ✚ Muchea Industrial Park Amendment 1 – Part Two: Explanatory Report CLE, January 2021;
- ✚ Muchea Industrial Park, Transport Assessment Addendum– WSP, December 2020; and,
- ✚ Lot 102, Muchea Local Structure Plan Transport Assessment – GTA, December 2015.
- ✚ Muchea Employment Node Structure Plan by Department of Planning (August 2011); and,
- ✚ Draft Muchea Industrial Park Structure Plan by WAPC (October 2020).

WSP TRANSPORT ASSESSMENT ADDENDUM REPORT

WSP TA Addendum report provided an update to TA report dated 21/12/15 prepared by GTA consultants (the original report for the Lot 102, Muchea Local Structure Plan). The GTA TA report was prepared in accordance with the Western Australian Planning Commission (WAPC) Transport Assessment Guidelines for Developments, dated August 2006. This Guideline was updated in August 2016. Therefore, it is recommended that a Transport Impact Assessment (TIA) in accordance with the updated WAPC Guidelines (August 2016) should be prepared for the proposed amendment to the structure plan to ensure all the requirements of a TIA has been addressed in accordance with current guidelines.

The SIDRA analysis undertaken in the 2015 GTA TA report should also be updated in accordance with the requirements of Main Roads WA Transport Operational Modelling Guidelines Ver02 January 2021. THE WSP report does not include up date traffic counts and SIDRA analysis.

It is also recommended that in preparation of the TIA for the proposed amendment, reference should be made to the Draft Muchea Industrial Park Structure Plan by WAPC (October 2020).

TRIP GENERATION

The WSP TA Addendum report outlines the estimated GLFA for different land uses that would be developed for the proposed commercial/retail precinct which forms the south western corner of zone 3 in Figure 4.2 of the WSP report. However, the WSP report does not detail the trip generation of these land uses. The WSP report indicates that the trip generation of Zone 3 would be about 1,389vpd which is lower than that reported in the original GTA TA report for Zone 3 (reported to be about 2,494vpd). It is expected that the proposed commercial/retail precinct would increase traffic generation of Zone 3.

Transcore's trip generation estimation for commercial/retail precinct is provided in Appendix A which indicates that the commercial/retail precinct would generate about 1,440vpd with about 200vph and 325vph during the weekday AM and PM peak hours respectively. The trip generation of the commercial/retail precinct would be higher on Saturday Mid-day and would be in the order of 400vph.

The balance of Zone 3 would be about $(62,360 - 7,350 = 55,000\text{m}^2)$ GLFA which would generate about 2,200 daily trips, 253vph in AM and 280vph in PM peak hours respectively assuming the original trip rates documented in GTA TA report. This would result in total trip generation of 3,640 daily trips, 453vph in AM and 605vph in PM peak hours for Zone 3 respectively. The WSP trip generation for AM and PM peak hours are almost the same as Transcore's trip generation estimation. However, the daily trip generation estimation by WSP is significantly lower than Transcore's estimation (by about 2,250vpd).

TRIP DISTRIBUTION AND ASSIGNMENT

Transcore generally agrees with the trip distribution and assignment assumptions documented in the WSP report, however, it is recommended that, if possible, Main Roads WA ROM plots should be obtained and reviewed to establish the future traffic projections on surrounding roads. Select link analysis plots would also assist to confirm the trip distribution assumptions applied by WSP.

ASSESSMENT YEARS

WAPC Guidelines (August 2016) requires assessment of road network and intersections for post development and 10 years post development scenarios. It is suggested that the WSP report clearly clarifies the time frame for the assessments.

INTERSECTION ANALYSIS

The GTA TA report provides intersection analysis for full development of MIP. The WSP TA report does not provide any SIDRA intersection analysis and relies on the original assessments undertaken in GTA TA report for intersection C. It should be noted that SIDRA analysis undertaken in GTA TA report is now out of date and is not in line with the requirements of Main Roads WA Transport Operational Modelling Guidelines Ver02- January 2021 and should be updated, particularly with focus on heavy vehicle performances.

With respect to intersection 2, the ultimate design and standard of this intersection would need to be reviewed to establish the suitability of the location of this intersection with respect to the existing and future intersections and crossovers in the vicinity.

RAV CLASSIFICATIONS

Reference needs to be made to Draft Muchea Industrial Park Structure Plan by WAPC (October 2020) for RAV classification and standards of the future road network within and surrounding the proposed amended LSP area.

CONCLUSIONS

The WSP report for the proposed structure plan amendments should be prepared in accordance with the latest WAPC Transport Assessment Guidelines. Further, the TIA should include up to date traffic counts and SIDRA analysis in accordance with Main Roads WA latest Transport Operational Modelling Guidelines incorporating other comments provided by Transcore in this technical note.

Appendix A

Trip Generation

Table 1: Weekday morning peak, Saturday Mid-day and afternoon peak hour trip generation for the proposed land uses

Land use	Quantity	Daily Rate	Weekd-AM Peak	Sat-PM Peak	Weekd-PM Peak	Cross Trade	Daily Trips	Weekd-AM trips	Sat-PM trips	Weekd-trips	AM		Sat-PM		PM	
											IN	OUT	IN	OUT	IN	OUT
non-food Retail	1900	0.2	0.03	0.04	0.03	0.20	258	51	59	41	26	25	30	29	21	20
Supermarket	600	1.55	0.016	0.16	0.155	0.20	744	10	77	74	5	5	38	39	37	37
Fast food outlets	650	0.7	0.04	0.132	0.132	0.20	364	26	69	69	13	13	34	35	34	35
service commercial	4,200	0.02	0.03	0.06	0.04	0.20	71	113	188	141	57	56	94	94	71	70
TOTAL TRAFFIC							1437	200	393	325	101	99	196	197	163	162

Table 2: Passing trade and primary trips components of the trip generation

Passing Trade	Daily Trips	AM		Sat-PM		PM	
		IN	OUT	IN	OUT	IN	OUT
20%	52	5	5	6	6	4	4
36%	268	2	2	14	14	13	13
50%	182	7	7	17	17	17	17
30%	21	17	17	28	28	21	21
	523	31	31	65	65	55	55

Daily Trips	AM		Sat-PM		PM		
	IN	OUT	IN	OUT	IN	OUT	
206	21	20	24	23	17	16	
476	3	3	24	25	24	24	
182	6	6	17	18	17	18	
50	40	39	66	66	50	49	
	914	70	68	131	132	108	107

MEMO

TO: Daniel Chatley, Senior Development Manager, Harvis
FROM: Mark Fowler, Regional Executive, Planning and Mobility WA
SUBJECT: **Muchea Industrial Park – Transport Assessment Addendum
Peer Review Response**
OUR REF: PS121619-PAM-MEM-001
DATE: 19 April 2021

Dear Daniel.

WSP have reviewed the Peer Review completed on the Muchea Industrial Park Transport Assessment Addendum (prepared December 2020).

I have copied below (verbatim) and tabulated the Peer Review comments, together with a response to each.

COMMENT HEADING	COMMENT	WSP RESPONSE
WSP Transport Assessment Addendum Report	<p>WSP TA Addendum report provided an update to TA report dated 21/12/15 prepared by GTA consultants (the original report for the Lot 102, Muchea Local Structure Plan). The GTA TA report was prepared in accordance with the Western Australian Planning Commission (WAPC) Transport Assessment Guidelines for Developments, dated August 2006. This Guideline was updated in August 2016. Therefore, it is recommended that a Transport Impact Assessment (TIA) in accordance with the updated WAPC Guidelines (August 2016) should be prepared for the proposed amendment to the structure plan to ensure all the requirements of a TIA has been addressed in accordance with current guidelines.</p>	<p>It is noted that the previous scope of development has been approved by Council. The TA addendum seeks to gain approval for the altered scope of the development – i.e. the change in traffic generation from the previously approved development and the currently proposed development. If this was an entirely new development, WSP may support updating the TA to 2016 standards, however as it is an amendment to the development updating to 2016 is not applicable as indicated by WAPC on their website (refer to extract at Appendix A). The 2016 guidelines are a revision of the 2006 guidelines and are not materially different to the 2006 guidelines. An outline of the 2006 to 2016 guidelines is attached at Appendix A which outlined the minor alterations.</p>
	<p>The SIDRA analysis undertaken in the 2015 GTA TA report should also be updated in accordance with the requirements of Main Roads WA Transport Operational Modelling Guidelines Ver02 January 2021. The WSP report does not include updated traffic counts and SIDRA analysis.</p>	<p>The report details that overall traffic volumes in 2020 are decreased as compared to the 2013 traffic counts. Utilising the 2013 volumes as a base is therefore considered a conservative assumption. Additionally, the updated traffic counts available at the time of preparing the TA Addendum (December 2020) were included in the document (which was post-opening of Northlink through Muchea). A subsequent review of the latest traffic count data available in MRWA Tafficmap shows a slight decrease in the traffic volume at the current time in the period from December 2020 until April 2021.</p>

COMMENT HEADING	COMMENT	WSP RESPONSE
	<p>It is also recommended that in preparation of the TIA for the proposed amendment, reference should be made to the Draft Muchea Industrial Park Structure Plan by WAPC (October 2020).</p>	<p>The 'Draft Muchea Industrial Park Structure Plan' (Draft MIPSP), being an update to the area formerly referred to as Muchea Employment Node Structure Plan area, was published after the traffic analysis had been developed, and as such was not included.</p> <p>Being a 'high level' document, containing information that was compiled in early-2020 (or earlier), the Draft MIPSP assumptions such as the alignment of Mercury Rise road reserve, road profiles, drainage arrangements and the like are not reflective of existing Shire approved and ceded/constructed works within the LSP area. As such, the Draft MIPSP will actually need to be updated to reflect the physical conditions and already road-reserves in-situ, which are reflected in the TIA Addendum</p> <p>Additionally, the current (interim) and ultimate road designs for Mercury Rise, Verlor Drive and Canaveral Way, have been assessed and approved by the Shire of Chittering including 3rd party design review to RAV-10 vehicle access standards – the Addendum considers these, with road reserves and ultimate road configurations accommodating the ultimate needs.</p> <p>As the WAPC's MIPSP is still in draft form and has not been adopted, and noting the information above (being more detail advanced than the MIPSP) it is not appropriate to refer to the document.</p>

COMMENT HEADING	COMMENT	WSP RESPONSE
<p>Trip Generation</p>	<p>The WSP TA Addendum report outlines the estimated GLFA for different land uses that would be developed for the proposed commercial/retail precinct which forms the south western corner of zone 3 in Figure 4.2 of the WSP report. However, the WSP report does not detail the trip generation of these land uses. The WSP report indicates that the trip generation of Zone 3 would be about 1,389vpd which is lower than that reported in the original GTA TA report for Zone 3 (reported to be about 2,494vpd). It is expected that the proposed commercial/retail precinct would increase traffic generation of Zone 3.</p> <p>Transcore's trip generation estimation for commercial/retail precinct is provided in Appendix A which indicates that the commercial/retail precinct would generate about 1,440vpd with about 200vph and 325vph during the weekday AM and PM peak hours respectively. The trip generation of the commercial/retail precinct would be higher on Saturday Mid-day and would be in the order of 400vph.</p> <p>The balance of Zone 3 would be about (62,360 – 7,350 = 55,000m2 GLFA) which would generate about 2,200 daily trips, 253vph in AM and 280vph in PM peak hours respectively assuming the original trip rates documented in GTA TA report. This would result in total trip generation of 3,640 daily trips, 453vph in AM and 605vph in PM peak hours for Zone 3 respectively. The WSP trip generation for AM and PM peak hours are almost the same as Transcore's trip generation estimation. However, the daily trip generation estimation by WSP is significantly lower than Transcore's estimation (by about 2,250vpd).</p>	<p>It is acknowledged that different methodologies will yield different results.</p> <p>No further comment regarding peak trips as the Transcore assessment aligns with WSP's figures, especially at the weekday AM & PM cases which will be the critical factors of interaction with the overall industrial estate traffic movements (staff coming to & from work).</p> <p>Furthermore, the latest WSP trip generation figures have reflected the actual subdivision approvals (to date) and the land developer's observations of actual industrial land-use enquiry to date and likely occupancy/use and GFA of each lot. Adopting consistent factors to the GTA report has yielded the updated trip generation figures as shown.</p> <p>Regarding the additional 2250vpd, a change in demand of this magnitude will not impact on the recommendations regarding road network hierarchy and road configurations. The peak hour traffic volumes are the critical volumes as these determine the capacity requirements not the daily volumes.</p>

COMMENT HEADING	COMMENT	WSP RESPONSE
Trip Distribution And Assignment	<p>Transcore generally agrees with the trip distribution and assignment assumptions documented in the WSP report, however, it is recommended that, if possible, Main Roads WA ROM plots should be obtained and reviewed to establish the future traffic projections on surrounding roads. Select link analysis plots would also assist to confirm the trip distribution assumptions applied by WSP.</p>	<p>The methodology of the TA addendum has been retained as close as possible to the approach of the TA previously accepted by Council, and adopted information as provided by Main Roads WA at the time of original report preparation. The Addendum has been prepared to remain consistent with the information provided by Main Roads WA, and updated based upon traffic counts available from MRWA Trafficmap, with future year forecast estimates. It is considered, given MRWA generally do not provide ROM plots to consultants for private developments, and ROM24 in this area of Perth lacks robustness, the adopted approach is considered to make best use of the information available.</p> <p>It is unlikely that select link analysis plots will be useful to verify the trip distribution as MRWA no longer issue peak hour ROM24 information, and only 24 hour data. As such distribution information at the peak level will be unable to be determined from ROM24, and the method adopted in the TA and Addendum relied upon for determination of traffic volumes.</p>
Assessment Years	<p>WAPC Guidelines (August 2016) requires assessment of road network and intersections for post development and 10 years post development scenarios. It is suggested that the WSP report clearly clarifies the time frame for the assessments.</p>	<p>Report timeframe is as per previous TA (full buildout with existing traffic demand). The WSP TA addendum endorses the validity of the previous analysis and modelling undertaken to 2031 (considered ultimate) conditions.</p>

COMMENT HEADING	COMMENT	WSP RESPONSE
Intersection Analysis	<p>The GTA TA report provides intersection analysis for full development of MIP. The WSP TA report does not provide any SIDRA intersection analysis and relies on the original assessments undertaken in GTA TA report for intersection C. It should be noted that SIDRA analysis undertaken in GTA TA report is now out of date and is not in line with the requirements of Main Roads WA Transport Operational Modelling Guidelines Ver02- January 2021 and should be updated, particularly with focus on heavy vehicle performances.</p>	<p>As outlined in the Addendum, background traffic demand has decreased at this intersection (see section 2.3).</p> <p>Traffic demand is comparable between the previous TA and the revised analysis, as detailed and the background traffic has decreased. With respect to the Modelling Guidelines, the impact of the heavy vehicle is minimal at traffic signals (as we don't have filter right turns) and would be comfortably be accommodated in the capacity of the existing intersection performance as detailed in Appendix C of the original TA, which operate at a DoS 0.6-0.7 and LOS B, with residual capacity remaining to accommodate any heavy vehicles.</p> <p>It is also noted that at this stage, it is very difficult to estimate the level of RAV and heavy vehicle activity accurately, with the current approach adopted considered to be conservative in this regard.</p>
	<p>With respect to intersection 2, the ultimate design and standard of this intersection would need to be reviewed to establish the suitability of the location of this intersection with respect to the existing and future intersections and crossovers in the vicinity.</p>	<p>This is a design concern, outside of the scope of the structure plan transport impact assessment. The layout of Intersection B (referred to as '2' in the comment) allows for the ultimate intersection and no crossovers are proposed in the vicinity of this intersection by this proposal. Further the Shire has already approved detailed designs of road-reserves and the creation of adjacent lots (already titled), with matters such as driveway access restrictions, over-steer turning pockets and the like already addressed and imposed through the existing subdivision(s).</p>

COMMENT HEADING	COMMENT	WSP RESPONSE
RAV Classifications	Reference needs to be made to Draft Muchea Industrial Park Structure Plan by WAPC (October 2020) for RAV classification and standards of the future road network within and surrounding the proposed amended LSP area.	The 'Muchea Industrial Park Structure Plan' was published after the traffic analysis had been developed, and as such was not included. The amendment does not materially impact / change the development, and as noted above the Shire has already undertaken 3rd-party design review of the existing and ultimate design constructed roadways of Mercury Rise, Verlorl Drive and Canaveral Way to RAV-10 design standards, which is not compromised by the TA or Addendum.
Conclusions	The WSP report for the proposed structure plan amendments should be prepared in accordance with the latest WAPC Transport Assessment Guidelines. Further, the TIA should include up to date traffic counts and SIDRA analysis in accordance with Main Roads WA latest Transport Operational Modelling Guidelines incorporating other comments provided by Transcore in this technical note.	<p>See above comment responses.</p> <p>Overall it is concluded that:</p> <ul style="list-style-type: none"> - the outcomes of the previous TA remain valid, - the updated 2021 (April 2021) traffic counts are comparable to the those in the TA Addendum (December 2020), - as the TA is an amendment/addendum, updating the entire report to accord with the 2016 Guidelines over the 2006 Guidelines is not necessary nor will affect any material change to the outcome of the TA, - the spacial geometry and layout / land-take of Intersection B are already approved by the Shire and ceded by the Proponent/Developer, allowing for the ultimate dual-lane (if necessary) through road configuration of Mercury Rise. - Background traffic estimates have decreased from original projections, and therefore the results of the existing intersection performance as previously modelled remains relevant. <p>Accordingly, we respectively respond that the impact of the introduction of non-industrial uses to the 2.1ha proposed Lot 84, within the context of the existing approved road network of the local structure plan area and the much broader context of the Draft MIPSP (formerly referred to as Draft Muchea Employment Node Structure Plan), does not justify the further analytical rework as noted by the reviewer.</p>

APPENDIX A – WAPC REFERENCE INFORMATION

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transport planning
traffic engineering
transport modelling

Technical Note: No 2

Date: 30/06/2021

Project No: t21.052

Project: Muchea Industrial Park Amendment 1

Subject: Main Roads WA's traffic safety and functionality issues

INTRODUCTION

The Shire of Chittering has appointed Transcore to undertake a review of the traffic safety and functionality issues which have been raised by Main Roads WA's in their letter of 13 May 2021 to the Shire with respect to the proposed LSP amendment of Precinct 1 within Muchea Industrial Park. Main Roads WA concerns relevant to this technical note are detailed below:

- ✚ *Vehicle safety with respect to interaction between passenger vehicles and heavy haulage vehicles;*
- ✚ *Safety of motorcyclists, cyclist and pedestrians in the area; and,*
- ✚ *A future intersection/driveway into the Special Use Area potentially conflicting with the existing Great Northern Highway/Mercury Rise intersection. Particularly with regard to separation distances between the two intersections and the use of this road network by RAV10 vehicles.*

CLE Town Planning and Design (representing the proponent) have provided responses to Main Roads WA's concerns. The proponent responses refer to the conditions of Subdivision Approval (WAPC ref 155948) for Lot 809 Great Northern Highway, Muchea.

Accordingly, this technical note documents the outcome of Transcore's review of Main Roads WA concerns the commentary responses. As part of the process the following documents have been reviewed for the purpose of this technical note:

- ✚ *Muchea Industrial Park Amendment 1 – Part Two: Explanatory Report CLE, January 2021;*
- ✚ *Main Roads WA's letter of 13 May 2021;*
- ✚ *The proponent responses to Main Roads WA's letter of 13 May 2021; and,*
- ✚ *Subdivision Approval (WAPC ref 155948) Lot 809 Great Northern Highway, Muchea, Shire of Chittering (23 May 2018).*

A copy of the approved subdivision plan is provided in **Appendix A** of this technical note.

The following section of the technical note outlines Transcore's commentary with respect to each item raised by Main Roads WA.

INTERACTION BETWEEN PASSENGER VEHICLES AND HEAVY HAULAGE VEHICLES

Main Roads WA letter states that *"proposed land uses (within amended LSP) may encourage vulnerable road users such as motorcyclists, cyclists and pedestrians into the area. This, combined with other elements of the proposed road environment, such as a mix of light and heavy vehicles and uncontrolled accesses will increase the likelihood of crash events in the area"*.

Table 1 shows the daily trip generation of the proposed land uses within the amended LSP. The passing and primary trips are also summarised in this table.

Table 1: Trip generation of the proposed land uses

Land use	Daily Trips	Passing Trade	Passing trips	Primary trips
			Daily Trips	Daily Trips
non-food Retail	258	20%	52	206
Supermarket	744	36%	268	476
Fast food outlets	364	50%	182	182
service commercial	71	30%	21	50
Total	1437		523	914

As evident on average about 36% of the trips are expected to be passing trips and would not be added to the traffic volumes on surrounding roads. It is also expected that reasonable amount of the trip generation of the proposed land uses would be relevant to internal trips (about 30%). Therefore, the proposed development would result in some level of additional external traffic to the site but the level of external trips is not expected to be significant. Further due to nature and location of the proposed land uses significant attraction by pedestrian and cyclists are not expected.

According to Draft Muchea Industrial Park Structure Plan (October 2020) *in order to optimise safety and efficiency, along with the attractiveness of the industrial area or businesses (such as the proposed development), it is important to ensure traffic flows as freely as possible along major roads. Vulnerable road users such as pedestrians, cyclists and motorbikes must also be considered. All roads and intersections accommodating RAV10 vehicles, need to be designed to safely accommodate RAV10 vehicles and other road users in accordance with MRWA specifications.*

Accordingly, safety would not be compromised with respect to interaction between passenger vehicles and heavy haulage vehicles as long as long as safe and suitable design and intersection controls have been provided for the proposal. The same applies to vulnerable road users.

The WSP TA Addendum report indicated satisfactory traffic operation of the LSP amendment crossovers and surrounding intersections for both light and heavy vehicles. However, the WSP TA Addendum report provided an update to TA report dated 21/12/15 prepared by GTA consultants with no reference to the Draft Muchea Industrial Park Structure Plan (DMIPSP) by WAPC in October 2020. The DMIPSP

clarifies the updated road network system for the Structure Plan and possible cross section of the proposed road network including Loop Road. The intersection analysis, intersection spacing, safe and suitable design and intersection controls indicated in WSP TA Addendum report would be affected by the recent design criteria defined in DMIPSP.

Further discussions with respect to intersection spacing and design parameters is provided in the next sections of this technical note.

SAFETY OF MOTORCYCLISTS, CYCLIST AND PEDESTRIANS IN THE AREA

Transcore concurs with proponent's justification that *"Given the distance between the site and the nearest population centre, it is unlikely that large numbers of pedestrians and/or cyclists will be attracted to the area. Motorcyclists are entitled to utilise the road network and standard road rules exist to protect them and other road users"*.

However, it is important that all road network design must consider and cater for vulnerable road users. It is also noted from the proponent's response to Main Roads WA letter that:

- The provision of paths is required in accordance with the conditions of subdivision approval. For the stage 1 approval, this is addressed under condition 9 and accordingly, all designs have been approved by the Shire as per standard process; and,
- Whilst the paths have not yet been constructed for practical reasons, they have been bonded and will be constructed, providing separation between vehicles and pedestrians / cyclists.

The potential pedestrian crossing point would be related to crossing the Mercury Rise (interaction between the existing and future developments on both sides of Mercury Rise).

The WAPC Transport Impact Assessment Guidelines (2016) provides guidance on the levels of traffic volumes that are likely to affect the ability for pedestrians to cross various types of roads. Based on that guidance an undivided two-lane road should be acceptable for pedestrians crossing traffic volumes of up to approximately 11,000 vpd and this threshold can be increased to around 28,000 vpd by adding a central median or pedestrian refuge islands. On a four-lane road, because of its greater carriageway width, this threshold is lower; even with a median island the threshold is only around 16,000 vpd. However, it is acknowledged that these thresholds would be lower in this instance and due to presence of larger vehicles.

The Draft Muchea Industrial Park Structure Plan DMIPSP Road design indicates that *"Based on the trips generated and the distribution of trips outlined above there is no demand for two lanes on the loop road even with the fully realised ultimate development as less than 10000vpd would be on the loop road"*.

Considering that Mercury Rise (future Loop Road) is not projected to carry traffic volumes of more than 10,000vpd even in future then Mercury Rise as an undivided two-lane road should be acceptable for pedestrians crossing. However, considering the mix of traffic, it is recommended that consideration should be given to appropriate pedestrian crossing facility across Mercury Rise at appropriate location(s).

SEPARATION DISTANCES BETWEEN THE INTERSECTIONS

Appendix B shows the Design Principles Plan for the proposed development. This plan defines where access is prohibited along Mercury Rise in accordance with the stage 1 subdivision approval (May 2018), condition 10 – 14 of WAPC 155948. Mercury rise has also been constructed and ceded in accordance with the stage 1 subdivision and LSP 1.

Main Roads WA letter refers to the Draft Muchea Industrial Park Structure Plan (October 2020) for no direct lot access off the loop road (Mercury Rise).

According to DMIPSP the loop road will be reserved and constructed as subdivision and development occurs. A reservation width of 50m to 60m has been included in the structure plan to protect the future road alignment as per the accepted standard for RAV10 roads inclusive of drainage swales, verge and median and provision for high wide loads. There will also need to be provision for an 40m radius (indicative size subject to detailed design) roundabouts for four-way intersections and widening for auxiliary lanes at three-way intersections. Individual lot access will generally be via local access roads which connect to the loop road.

the Design Principles Plan shown in Appendix B does not provide sufficient distance for auxiliary lanes at the three-way intersection for the proposed LSP amendment. Provision of a 40m radius (indicative size subject to detailed design) roundabouts for four-way intersection at this location is also not feasible. Therefore, the proposed access/ egress to/ from the proposed LSP amendment is not in line with Draft Muchea Industrial Park Structure Plan (October 2020).

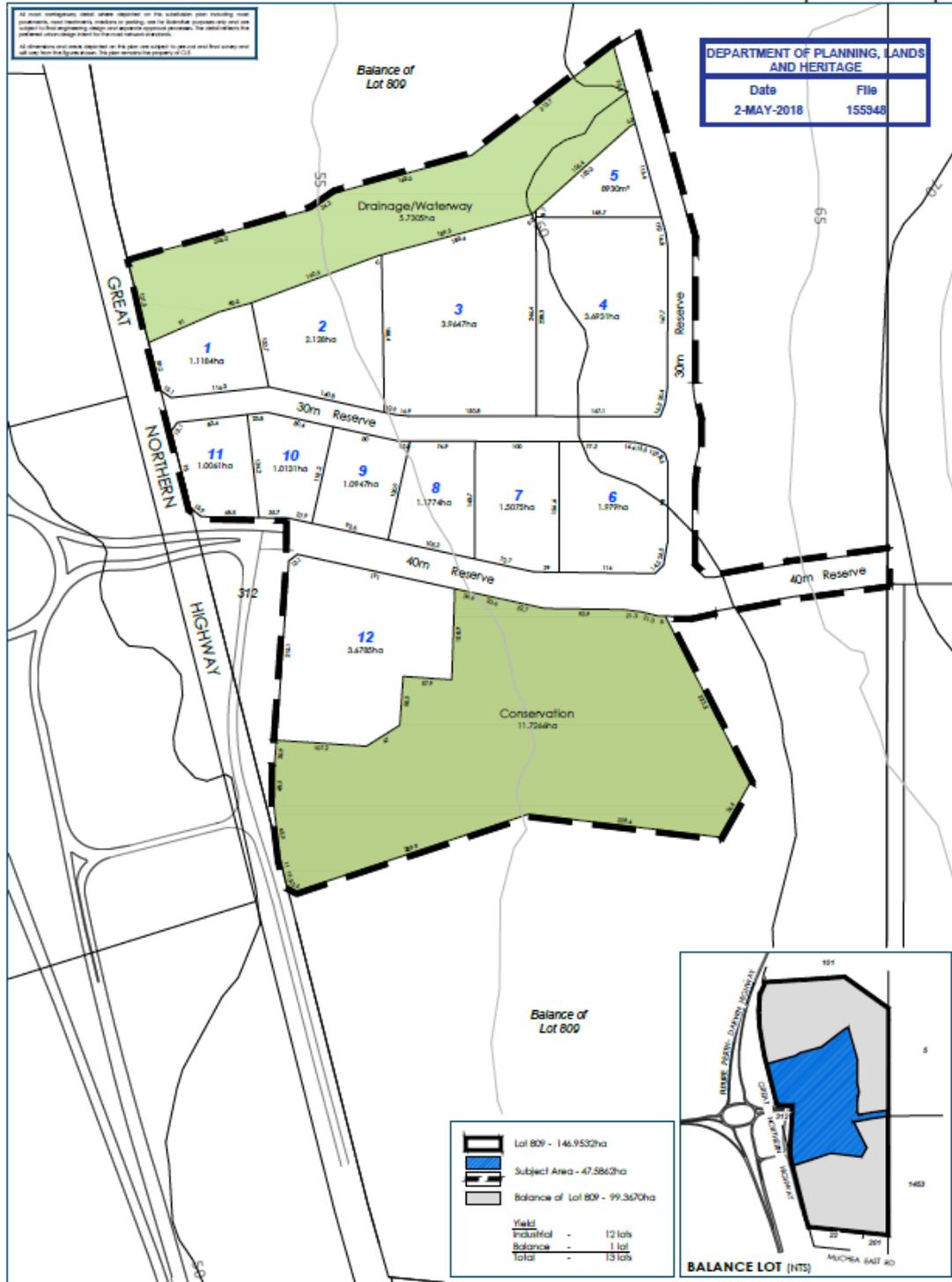
It is understood that the Draft Muchea Industrial Park Structure Plan (October 2020) has been adopted after the stage 1 subdivision approval (May 2018). Therefore, the design principles for the development of the Design Principles Plan shown in Appendix B have not considered the requirement of DMIPSP.

It is suggested that the proponent review the access/ egress to the proposed LSP amendment considering the requirements of DMIPSP.

Appendix A

Approved Subdivision Plan for Lot 809 Great Northern Highway, Muchea

Attachment 1 - Proposed subdivision plan



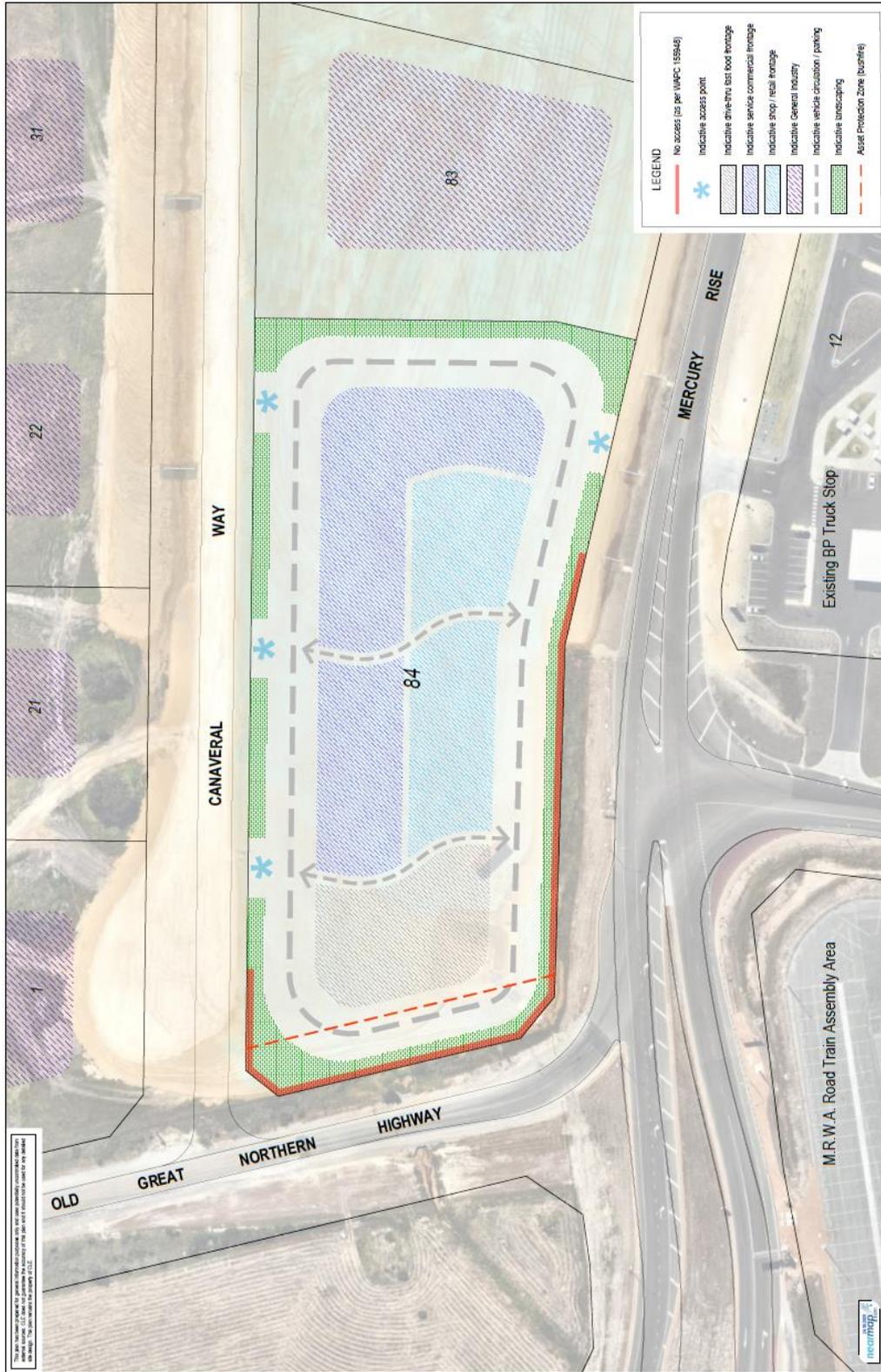
CLE TOWN PLANNING • DESIGN

PROPOSED FREEHOLD SUBDIVISION
 Lot 809 Great Northern Highway
 Muchea

plan no: 2322-991-01
 date: 30 April 2018
 scale: 1:10,000 @A3, 1:2,000 @A1

Appendix B

Design Principles Plan



Our ref: PAM-LTR-001 RevA - Slip Lane

By email
daniel@harvis.com.au

22 July 2021

Confidential

Daniel Chatley
Senior Development Manager
Harvis
Level 9, 190 St George's Terrace
Perth WA 6000

Dear Sir

**Local Structure Plan Amendment, Muchea Industrial Park
Lot 84 Access**

I refer previous discussion and correspondence regarding the potential need to provide an auxiliary left turn lane to permit access into Lot 84 from Mercury Rise at the above proposed development location, as highlighted in Transcore's review of the Main Roads WA submission in response to the proposed Structure Plan Amendment.

An assessment of the Main Roads WA warrants regarding the need to provide such a facility has been undertaken with respect to forecast traffic volumes along Mercury Rise, left turning development traffic generated by the site as well as various assumed design speeds and the percentage of heavy vehicles in the traffic flow. The data used is consistent with that included within the Original and Amendment Transport Impact Assessments.

It was concluded that dependent on the mix of development type and scale/size of development within the lot, in combination with the through traffic volumes on Mercury Rise the need for an auxiliary left turn lane could be triggered.

As such, a design assessment has been undertaken by Cossill and Webley to determine if an auxiliary left turn lane can be provided at this location, if warranted. Based upon the sketch design attached (which assumes a design speed of 60km/h with a 20km/h turning speed into the access, and is designed to MRWA standards), it is confirmed the auxiliary left turn lane can be provided at this location for the current road configuration.

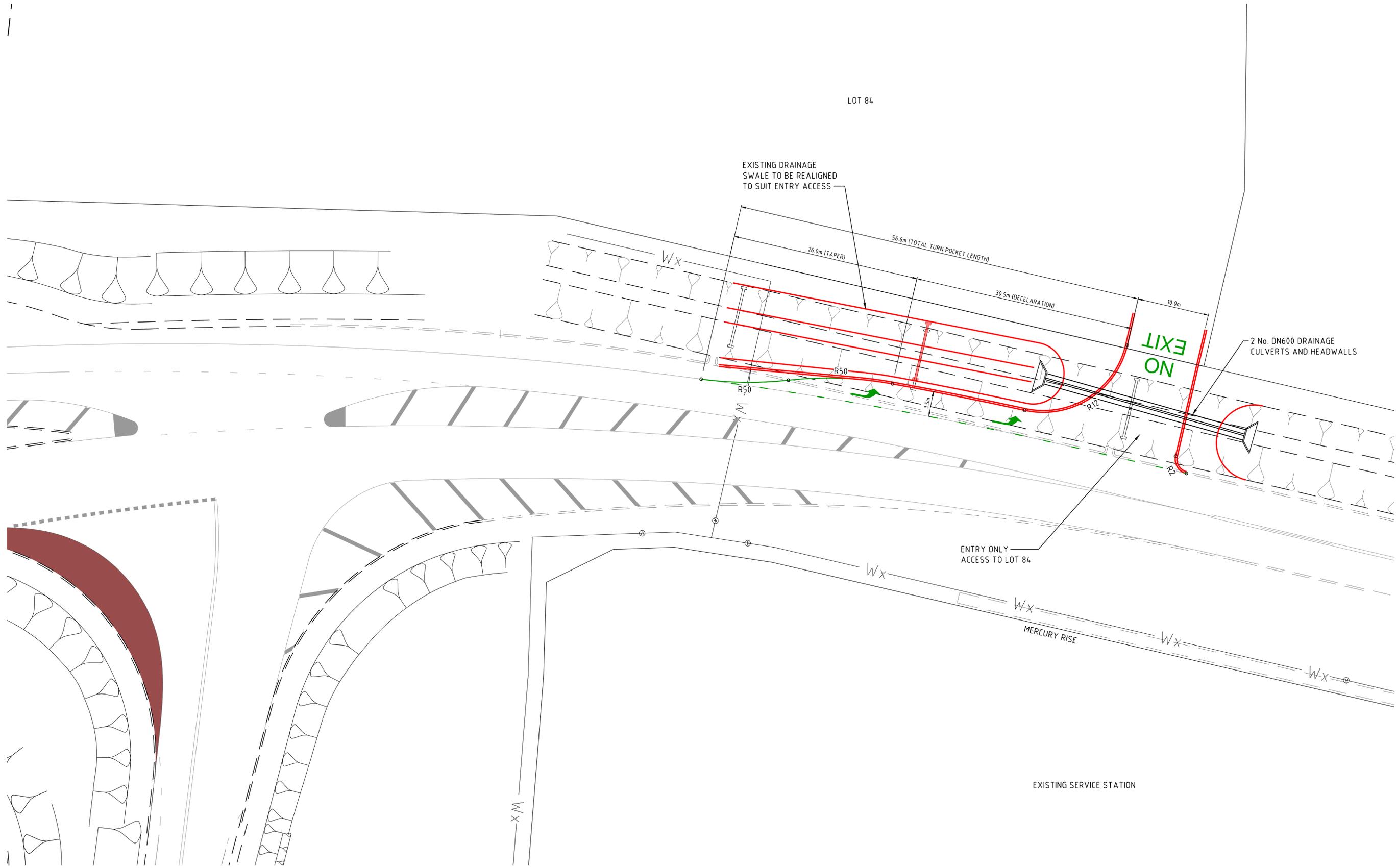
We trust this satisfies the outstanding queries associated with the access to Lot 84 from Mercury Rise.

Yours faithfully

A handwritten signature in black ink, appearing to be 'M Fowler', with a long horizontal stroke extending to the right.

Mark Fowler
Regional Executive, Planning and Mobility WA

ATTACHMENT 1 – ACCESS SKETCH DESIGN



P:\6327\Muchea\6327-00\car\6327-00-SK25.dwg, 20/07/2021, 8:43:08 AM, AaronDavies, Digital Signing PDF.ppt, 1:1, CIV Reference

A	20 07 21	AAD	-	-	ISSUED FOR INFORMATION
REV	DATE	DRN	CKD	APP	AMENDMENT



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CW Cossill & Webley
 CONSULTING ENGINEERS

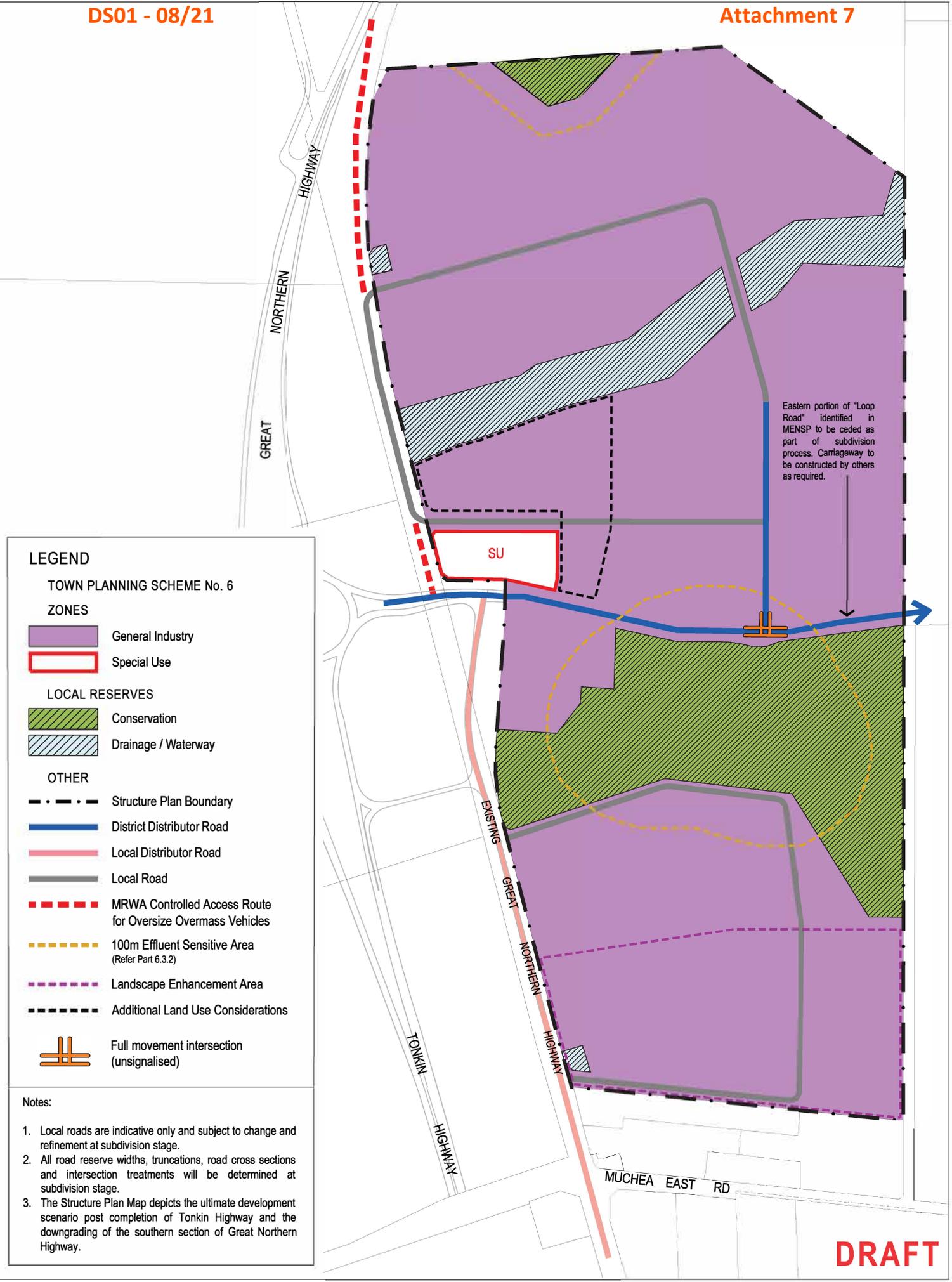
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T (08) 9422 5800 F (08) 9422 5801 E admin@cosweb.com.au

CLIENT	HARVIS CAPITAL ATF NORTHERN GATEWAY UNIT TRUST No. 2
DESIGNED	AAD
APPROVED	CHECK PRINT
SCALE	1:250

PROJECT	MUCHEA INDUSTRIAL ESTATE
TITLE	LOT 84 PRELIMINARY TURNING POCKET
WAPC No.	N/A
DRAWING No.	6327-00-SK25
REVISION	A

ORIGINAL SIZE A1



LEGEND

TOWN PLANNING SCHEME No. 6

ZONES

- General Industry
- Special Use

LOCAL RESERVES

- Conservation
- Drainage / Waterway

OTHER

- Structure Plan Boundary
- District Distributor Road
- Local Distributor Road
- Local Road
- MRWA Controlled Access Route for Oversize Overmass Vehicles
- 100m Effluent Sensitive Area (Refer Part 6.3.2)
- Landscape Enhancement Area
- Additional Land Use Considerations
- Full movement intersection (unsignalised)

Notes:

1. Local roads are indicative only and subject to change and refinement at subdivision stage.
2. All road reserve widths, truncations, road cross sections and intersection treatments will be determined at subdivision stage.
3. The Structure Plan Map depicts the ultimate development scenario post completion of Tonkin Highway and the downgrading of the southern section of Great Northern Highway.

DRAFT



Document Reference: EP17-089(07)—055B TEM

Emerge contact: Rachel Evans (0411 719 121)

4 June 2021

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Emerge Environmental Services Pty Ltd ABN
57144772510 trading as Emmerge Associates

Attention: Jake Whistler

Shire of Chittering
PO box 70
BINDOON WA 6502

Delivered by email to: Jake.whistler@chittering.wa.gov.au

Dear Jake,

PROPOSED LOCAL STRUCTURE PLAN AMENDMENT – MUCHEA INDUSTRIAL PARK PRECINCT 1 SPECIAL USE ZONE

INTRODUCTION

Emerge Associates have prepared this letter on behalf of Harvis Capital Pty Ltd (the proponent) who are developing the Muchea Employment Node (MEN) and in response to advice provided by the Department of Biodiversity, Conservation and Attractions (DBCA) on the proposed Local Structure Plan (LSP) Amendment (dated 21 April 2021, provided in **Attachment A**).

BACKGROUND

The proponent is progressing with a LSP amendment for the MEN to allow for a 'Special use' zone on Lot 84 (herein referred to as 'the site'), located at the entry to the development, adjacent to Tonkin Highway (see **Figure 1**). The site is approximately 2.1 ha and is shown on the LSP provided in **Attachment B**.

The special use zone will accommodate a small local service centre and provide a range of local amenities and services for workers in the MEN, local residents and passing traffic. A full range of the permitted uses are outlined in Table 2 of the LSP implementation plan (see **Attachment C**).

The site is located within the Shire of Chittering (SoC) and is currently zoned 'Industrial development' under the SoC Town Planning Scheme No. 6 (SoC 2019), consistent with the rest of the MEN.

Feedback provided by DBCA has highlighted requirements for the design of the development associated with the proposed 'special use' zone, in relation to waste management considering the site is not connected to Water Corporations sewer network. This advice has been provided in response to the *Government Sewerage Policy (GSP)* (DPLH 2019), which was published following the approval of the original MEN LSP. DBCA has indicated demonstration that the proposed 'special use' land use can be supported under the GSP should be required.

PREVIOUS STUDIES

The *Mucea Employment Node LSP 1 Local Water Management Strategy (LWMS)* (Emerge Associates 2017) was prepared to support the original MEN LSP 1.

Subsequently the *Mucea Industrial Precinct (MIP) LSP1 Urban Water Management Plan (UWMP)* (Emerge Associates 2019) was prepared to support subdivision of Stage 1 of the development, which included the site under the original 'industrial development' zoning. Both the LWMS and the Stage 1 UWMP were prepared prior to publish of the GSP.

The *Stage 2 MIP LSP1 UWMP Addendum* (Emerge Associates 2021) was prepared to support Stage 2 subdivision of the development. The addendum incorporated a site and soil evaluation (SSE) and assessment of onsite waste management systems, consistent with the requirements of the GSP which had been published by the time of preparation.

The requirements for onsite waste management systems, identified in the Stage 2 UWMP, will be provided to all lot owners/developers by the Proponent to inform associated Development Applications (DA) and detailed waste management systems.

SPECIAL USE ZONE – LOT 84

The following section provides a SSE and response to the GSP in support of the proposed change of zoning to 'special use' for Lot 84, and respond to DBCAs recommendation for demonstration that onsite waste systems can be supported.

1 ENVIRONMENT CHARACTERISTICS

A summary of the environmental investigations conducted across the broader LSP area are discussed in Section 3 of the Stage 1 UWMP (Emerge Associates 2019). In summary, the investigations of relevance to on-site sewage disposal within the site indicate that:

- There is one resource enhancement wetland (REW) located approximately 260 m south of the site.
- The entire site is classified as a sewage sensitive area (as per the GSP) due to being within proximity to an '*Estuary catchment on the Swan and Scott Coastal Plain*'.
- A waterway (UFI: 425026) is located approximately 200 m north of the site.
- Groundwater underlying the site flows from east to west (i.e. away from the REW) with maximum groundwater level (MGL) ranging between 51 m Australian height datum (AHD) and 54 m AHD.
- Bulk earthworks have recently been undertaken to raise the finished surface levels of the site by approximately 1-1.5 m with sand fill for engineering purposes. The fill will nominally have a Soil Category of 1, as per *AS/NZS 1547* (Standards Australia and Standards New Zealand 2012), hence, depth to groundwater from the finished surface level is >1.5 m. Refer to **Attachment D** for the earthworks plan.

2 SITE AND SOIL EVALUATION

2.1 Land capability

A summary of the considerations for effluent disposal (relevant to the site), in regards to the *GSP* is provided in **Table 1**, including a risk assessment and the mitigation measure to be implemented. As demonstrated, the residual risk posed by the development effluent disposal area is considered to be low, considering the mitigation measures to be implemented.

Table 1: Risk assessment - On-site effluent disposal constraints relevant to the site

Site/system Feature	Less constrained	More constrained	Mitigation measure	Risk category	Response to risk category
Microbial quality of effluent	Effluent quality consistently producing ≤ 10 cfu/100 mL E. coli (secondary treated effluent with disinfection)	Effluent quality consistently producing ≥ 106 cfu/100 mL E. coli	Secondary treatment with disinfection will be mandated for the site. Secondary systems achieve 10 cfu/100 mL of E. coli	Low	No further action required.
Soil-terrain	Category 1 to 3 soils	Category 4 to 6 soils	The site has been filled with 1.5 m of sand fill with a nominal Soil Category of 1 for engineering purposes	Low	No further action required.
Slope	0 – 10% (subsurface effluent application)	> 10% (surface effluent application), > 30% subsurface effluent application	Site contains slopes of <10%.	Low	No further action required.
Flood potential	Outside the maximum 10% annual exceedance probability (AEP) top water level (TWL)	Located within low-lying or prone to flooding in a 10% AEP rainfall event	The effluent disposal area will be located away from, and above the 10% AEP TWL within the lot detention area (LDA) (i.e. the stormwater management asset). Runoff from internal road reserves will be piped (sized for the 10% AEP).	Low-Moderate	A large lot size (2.1 ha) allows for sufficient clearance between stormwater management assets and the land application area. The LDA is likely to be located in the front corner of lot with the on-site sewage disposal system located elsewhere, ensuring sufficient clearance from the 10% AEP will be provided. During future individual lot DA stage, the lot owner will arrange the specific amount of sand fill required to ensure the 10% AEP TWL clearance. The exact position of the application area will be detailed in the future individual lot DA application.
Drainage system separation	On-site sewage systems are not located within 100 m of a drainage system	On-site sewage systems are located within 100 m of a drainage system that discharges directly into a waterway or significant wetland	The site is not located within 100 m from a drainage system or significant wetland (measured from the edge of the riparian zone). Effluent disposal areas will be >6 m from any roadside swales.	Low	Runoff from the lot will be treated within an LDA. Road network runoff will be treated via swales and effluent disposal setback will be located >6 m from these swales. Effluent disposal areas will achieve appropriate setbacks.

Table 1: On-site effluent disposal constraints relevant to the site- Risk assessment (continued)

Site/system Feature	Less constrained	More constrained	Proposed approach	Risk category	Response to risk category
Groundwater separation within a sewage sensitive area	MGL is lower than 1.5 m below the natural surface level	MGL is within 1.5 m of the natural surface level	The site has been filled will 1-1.5 m of sand fill as part of engineering works, ensuring the finished surface levels are >1.5 m above MGL.	Low	No further action required.
Application method	Subsurface application of effluent	Surface/above ground application of effluent	During future individual lot DA stage, the lot owner will confirm the application method.	Low	The lot owner will confirm the application method, at lot DA stage.

2.2 Setbacks

As outlined in the GSP (DPLH 2019), the onsite wastewater system will not be located within the following areas (relevant to the site):

- 100 m of a waterway or significant wetland and not within a waterway foreshore area or wetland buffer. The separation distance should be measured outwards from the outer edge of riparian or wetland vegetation
- Any area subject to inundation and/or flooding in a 10% AEP rainfall event

Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units (DoH 2015) also specifies setback distances from infrastructure for land application areas and for treatment units. For a flat or gently sloping site these are:

- 1.2 m from any boundaries or buildings
- 1.8 m from the surface irrigation disposal area
- 6 m from any well, bore (not used for drinking water purposes), or roadside swale.

Based on the aforementioned, indicative wastewater disposal setbacks are shown in **Figure 2**. Demonstration of their provision will be further detailed at the DA stage, when the layout of infrastructure will be known.

3 SEWAGE MANGEMENT

The full detail of the proposed land use will be provided through the DA process. However, representative calculations for the land use to demonstrate that onsite waste management can be supported under the site constraints, is provided in the following sections.

3.1 Expected wastewater volume

The proponent engaged with Aquarius Wastewater Systems (AWS), a Western Australian owned company that is well known to the Western Australian Department of Health (DoH) as a provider of alternate wastewater solutions, to understand potential design requirements of a system under the proposed land use. AWS provided an estimated hydraulic load for a similar development in Pinjarra which has comparable land uses to the site, including a petrol station, convenience/retail, commercial/showroom and fast-food outlets. AWS determined an estimated load of 15,100 L/day, which was approved by the DoH. This loading has been utilised for the land application area calculations provided in the following sections. AWS' assumptions to support the hydraulic load estimation is provided in **Attachment E**.

3.2 Appropriate treatment technology and onsite sewage management systems

As outlined in the approved Stage 1 UWMP, secondary treatment systems are to be installed and operated in accordance with the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*, the *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units* (DoH 2015) and AS 1547 (Standards Australia and Standards New Zealand 2012).

3.3 Land application area

A number of different system designs could be implemented on site, however two representative design solutions are presented below as examples.

Spray/drip application systems

The calculation of the minimum required land application area for spray/drip systems is described in Schedule 2 of the GSP and is the estimated hydraulic load multiplied by a conversion factor. Example calculations for spray/drip systems for a Soil Category of 1 (the soil category identified for the site) is summarised in **Table 2**.

Table 2: Example land application area required for spray/drip application systems (secondary systems)

Soil Category	Soil-terrain unit	Application System	Hydraulic loading (L/day)	Conversion factor (DPLH 2019)	Design irrigation rate (mm/day) (AS 1547)	Land application area (m ²)*
Category 1	Gravels and sands	Spray/drip	15,100	0.2	5	3,020

As shown in **Table 2**, the land application area for a spray/drip system is estimated to be 3,020 m². The total lot area is 2.1 ha, therefore this system can easily be accommodated within the lot.

Flatbed leach drain application systems

The following calculations are presented for discharge of treated wastewater via a flatbed leach drain system, and is based on the methodology provided in AS/NZS 1547:2012. The design assumes:

- The flatbed leach drain itself is 20 m in maximum length and 2.4 m in effective width.
- AS/NZS 1547:2012 recommends a minimum spacing of 1 m between drains, although for the purposes of this calculation 2 m spacing between drains is assumed.
- Based on Table L1 of Appendix L of AS/NZS 1547:2012, the Design Loading Rate (DLR) for secondary treated effluent for gravels and sands is 50 mm/day, which equals a loading rate of 50 L/m²/day.
- The hydraulic load was calculated by AWS to be is 15,100 L/day.
- Utilising the methodology within Section L4.2 of AS/NZS 1547, the length of drain required should be determined from the relationship below.

$$L = \frac{Q}{(DLR \times W)}$$

L = length in m

Q = design daily flow in L/day

DLR = design loading rate in mm/d

W = width in m

On the above basis, Category 1 soils will require 126 m of flatbed leach drain plus setbacks (or 7 x 20 m long drains). Assuming a 2 m setback either side the area required will be approximately 787.2 m². This can be easily accommodated within the 2.1 ha lot.

4 FURTHER INVESTIGATIONS

The above SSE and sewage management discussion demonstrates that the site can be developed for the proposed 'special use' purpose under the site constraints, provided the required mitigation measures and appropriate design considerations are implemented.

During individual lot scale DA, the ultimate proponent of the site will be required to:

- Determine any additional fill/soil amendment requirement to provide clearance above the 10% AEP TWL within LDAs.
- Where additional soil amendment is required to provide clearances (additional to imported fill for general engineering purposes), a minimum phosphorous retention index (PRI) of 20 is required to be underlain beneath the application area (DoH 2015).
- Ensure any application area is planted with appropriate vegetation (as listed in Table 5 of the *Vegetation Guidelines for Stormwater Biofilters in the South- West of Western Australia* (Monash University 2014)).
- Design the land application systems (e.g. flatbed leach drains, spray, trench systems) that is suitable for the specific site.
- Determine the specific hydraulic loading for the proposed industrial use (based on the number of employees proposed).

These are commonly completed as a condition of DA to support an application to construct or install an apparatus for the treatment of sewage.

SUMMARY AND CLOSING

Harvis Capital Pty Ltd have submitted an LSP Amendment application to change the zoning of Lot 84 within the MEN to 'special use'. DBCA have provided comment on the amendment application in relation to the requirement for onsite waste management systems and a recommendation for demonstration of compliance with the GSP.

This letter provides a SSE for the site and indicates required mitigation measures and site set backs for any onsite systems proposed. Also presented are indicative loading and discharge calculations for two system types based on an actual design for similar land use, demonstrating that the site can support on site sewage systems to a suitable level for LSP Amendment. Further detail will be provided on the specific design of the system at DA stage.

The findings of this letter demonstrate that the site is able to accommodate additional on-site treatment and application of wastewater as part of the LSP amendment process, and that this can be achieved in a way that mitigates potential risks to receiving environments and the public.

If you have any queries on the any details provided in this letter, please do not hesitate to contact me on the details above.

Yours sincerely
Emerge Associates



Rachel Evans
PRINCIPAL ENVIRONMENTAL CONSULTANT - HYDROLOGY

cc: Daniel Chatley, Harvis
Daniel Martinovich, CLE

Encl: Figure 1 – Site Locality
Figure 2 – Indicative Wastewater Disposal Setbacks
Attachment A – Letter Department of Biodiversity, Conservation and Attraction
Attachment B – Local structure plan
Attachment C – Local structure plan implementation plan
Attachment D – Bulk earthworks
Attachment E – Hydraulic load calculations

General References

Department of Health (DoH) 2015, *Code of practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units (ATU's)*, Perth.

Department of Planning, Lands and Heritage (DPLH) 2019, *Government Sewerage Policy*, Perth.

Emerge Associates 2019, *Urban Water Management Plan Muchea Industrial Precinct LSP 1 - Stage 1*, EP17-089(03)--010 RLE, Version B.

Emerge Associates 2021, *Urban Water Management Plan Addendum - Stage 2 Muchea Industrial Precinct LSP1*, EP17-089(28)--050C.

Monash University 2014, *Vegetation Guidelines for Stormwater Biofilters within South-west of Western Australia* Melbourne.

Shire of Chittering (SoC) 2019, *Local Planning Strategy*, Department of Planning, Lands and Heritage, Perth.

Standards Australia and Standards New Zealand 2012, *AS/NZS 1547:2012 On-site domestic wastewater management*, Sydney, New South Wales. 2012.

Department of Health (DoH) 2015, *Code of practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units (ATU's)*, Perth.

Department of Planning, Lands and Heritage (DPLH) 2019, *Government Sewerage Policy*, Perth.

Emerge Associates 2019, *Urban Water Management Plan Muchea Industrial Precinct LSP 1 - Stage 1*, EP17-089(03)--010 RLE, Version B.

Emerge Associates 2021, *Urban Water Management Plan Addendum - Stage 2 Muchea Industrial Precinct LSP1*, EP17-089(28)--050C.

Monash University 2014, *Vegetation Guidelines for Stormwater Biofilters within South-west of Western Australia* Melbourne.

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Standards Australia and Standards New Zealand 2012, *AS/NZS 1547:2012 On-site domestic wastewater management*, Sydney, New South Wales. 2012.

Figures



Figure 1: Site Locality

Figure 2: Indicative Wastewater Disposal Setbacks

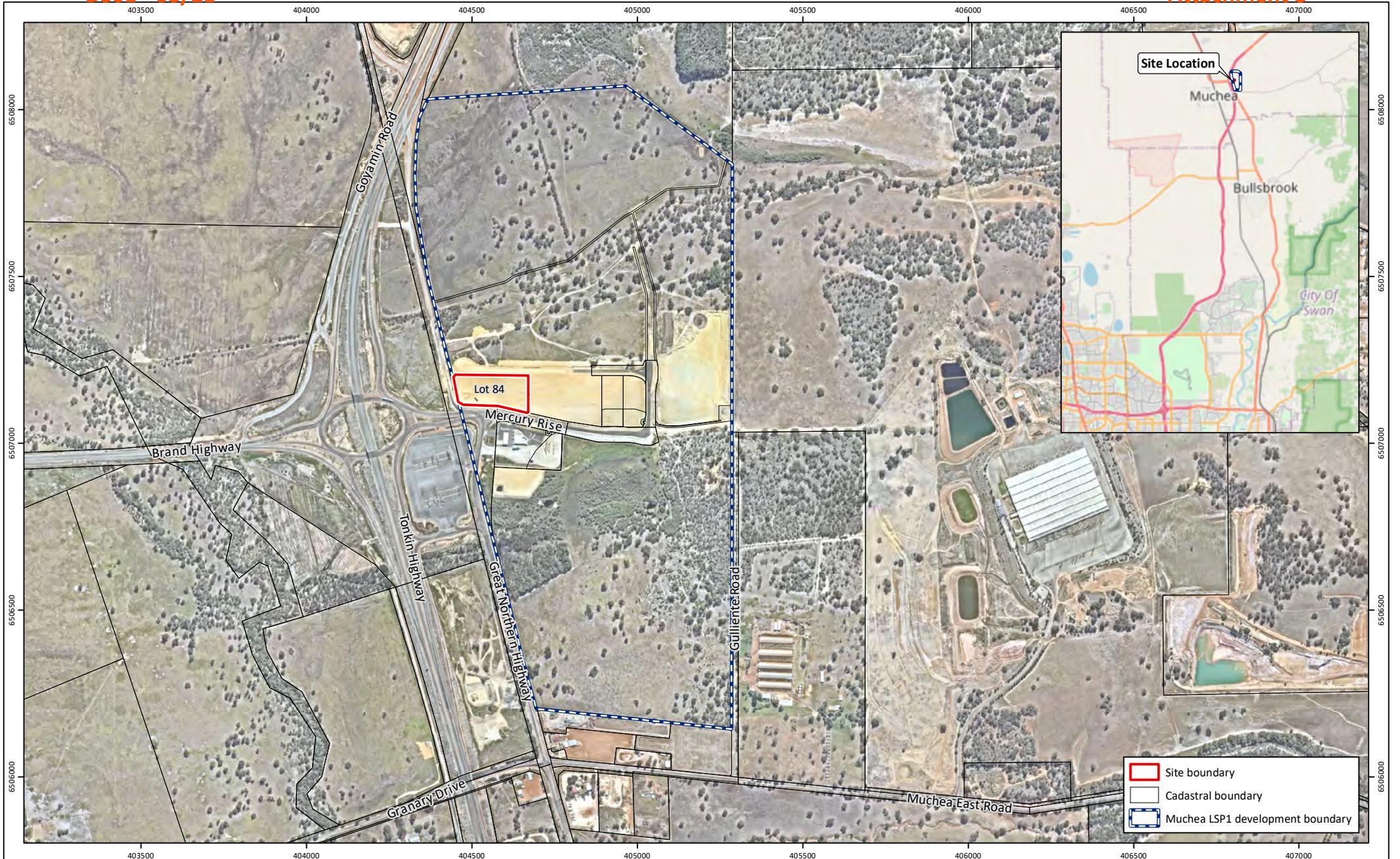


Figure 1: Site Locality

Project: Lot 84 Muchea Industrial Park
Local Structure Plan Amendment

Client: Harvis Capital Pty Ltd

Plan Number:
EP17-089(07)-F90

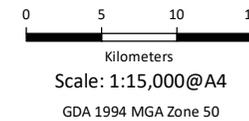
Drawn: TEM

Date: 26/05/2021

Checked: TEM

Approved: RLE

Date: 28/05/2021



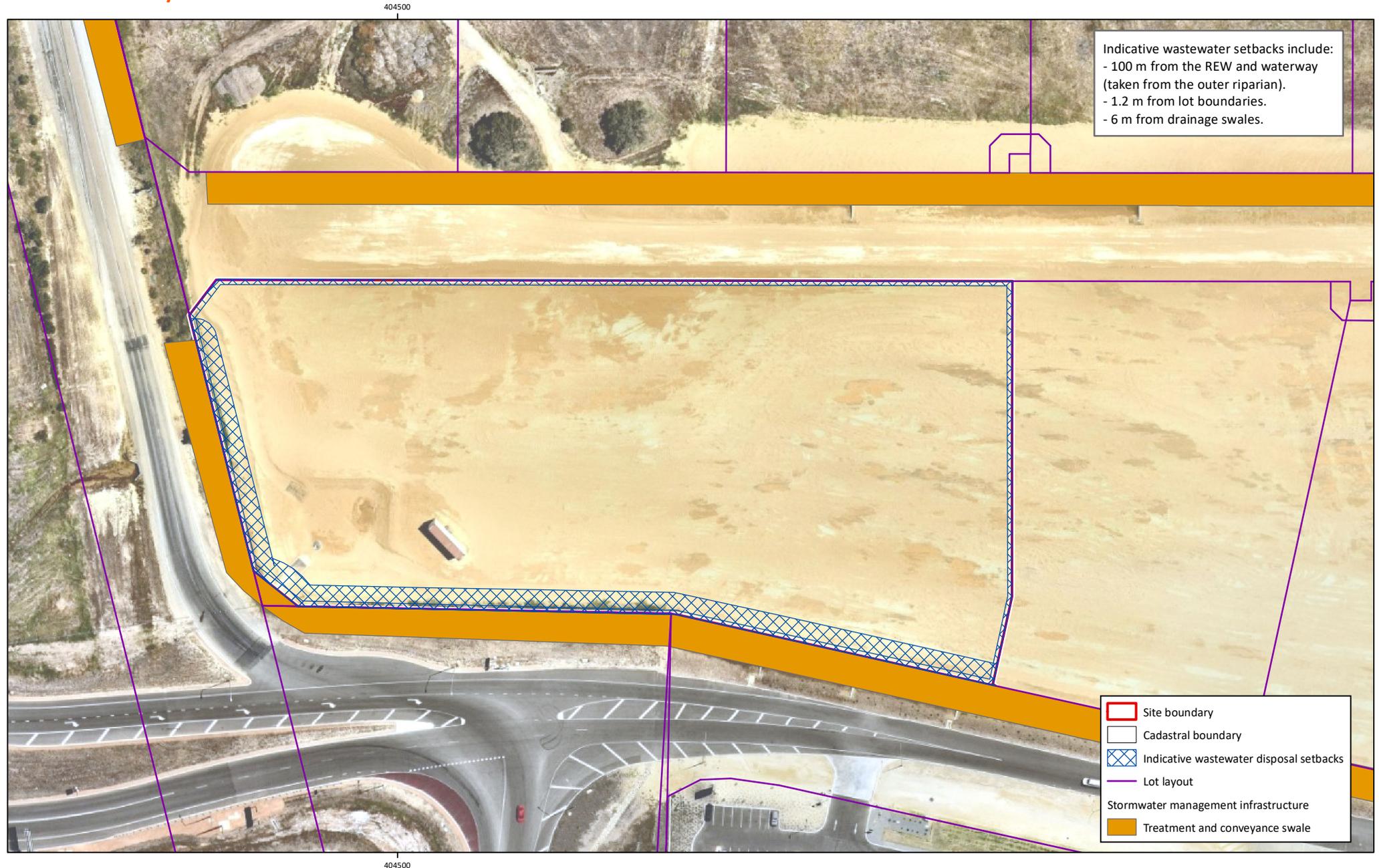
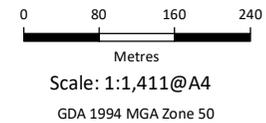


Figure 2: Indicative Wastewater Disposal Setbacks

Project: Lot 84 Muchea Industrial Park
Local Structure Plan Amendment
Client: Harvis Capital Pty Ltd

Plan Number:
EP17-089(07)-F91b
Drawn: TEM
Date: 04/06/2021
Checked: TEM
Approved: RLE
Date: 04/06/2021



Attachment A



Letter DBCA (2021)



Department of **Biodiversity,
Conservation and Attractions**



Your ref: O21124874
Our ref: PRS 46731
Enquiries: Michael Roberts
Phone: 9303 7755
Email: Michael.Roberts@dbca.wa.gov.au

Chief Executive Officer
Shire of Chittering
PO Box 70
BINDOON WA 6502

Attention: Jake Whistler

**Proposed Local Structure Plan Amendment 1 - Muchea Industrial Park (MIP)
Precinct 1**

I refer to your correspondence of 11 March 2021 requesting comments on the above scheme amendment. The Department of Biodiversity, Conservation and Attractions (the department) provides the following comments.

Wastewater management

It is noted that the subject area is outside of the Water Corporation's schedule for reticulated sewerage and that on-site aerobic treatment units (ATUs) will be used in accordance with the Muchea Employment Node Local Structure Plan 1 to treat wastewater generated within the 'Special use' zone. It is further noted that the 'Special use' zone will facilitate a variety of land uses that can be associated with high wastewater volume production. It should therefore be demonstrated that the subject site has capacity to adequately treat the anticipated volume of wastewater generated onsite in accordance to the requirements of the Government Sewerage Policy (2019) (GSP). Furthermore, GSP requires on-site wastewater systems to be located more than 100 metres from a waterway, significant wetland or drainage system that discharges directly into a waterway or significant wetland, and to be a minimum of 1.5 metres above the highest known groundwater level. The separation distance should be measured outwards from the outer edge of riparian or wetland vegetation.

Soils within a wastewater land application area associated with an on-site wastewater management system are to have a phosphorus retention index (PRI) greater than 20. Where the PRI of the soil is less than 20, it is recommended that amended soils be added to the wastewater land application area to a depth of 1 metre. Appropriate vegetation should be planted within the wastewater land application area to assist with the absorption of nutrients. It is recommended that a mix of plant species and growth forms that can tolerate wetting and drying conditions are planted in the wastewater land application area. The appropriate plant species are those capable of high nutrient removal. Refer to table 5 of Vegetation Guidelines for Stormwater Biofilters in the South-West of Western Australia (Monash University, 2014) when considering species selection.

Swan Region
Cnr Australia II Drive and Hackett Drive, Crawley WA 6009
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
Phone: (08) 9303 7755 Email: michael.roberts@dbca.wa.gov.au
www.dbca.wa.gov.au

Thank you for the opportunity to comment on this application. Please contact Michael Roberts at Parks and Wildlife Service's Swan Coastal District on 9303 7755 or by email at michael.roberts@dbca.wa.gov.au if you have any queries regarding this advice.

Yours faithfully

A handwritten signature in grey ink, appearing to read 'Benson Todd', is positioned above the typed name.

Benson Todd
REGIONAL MANAGER

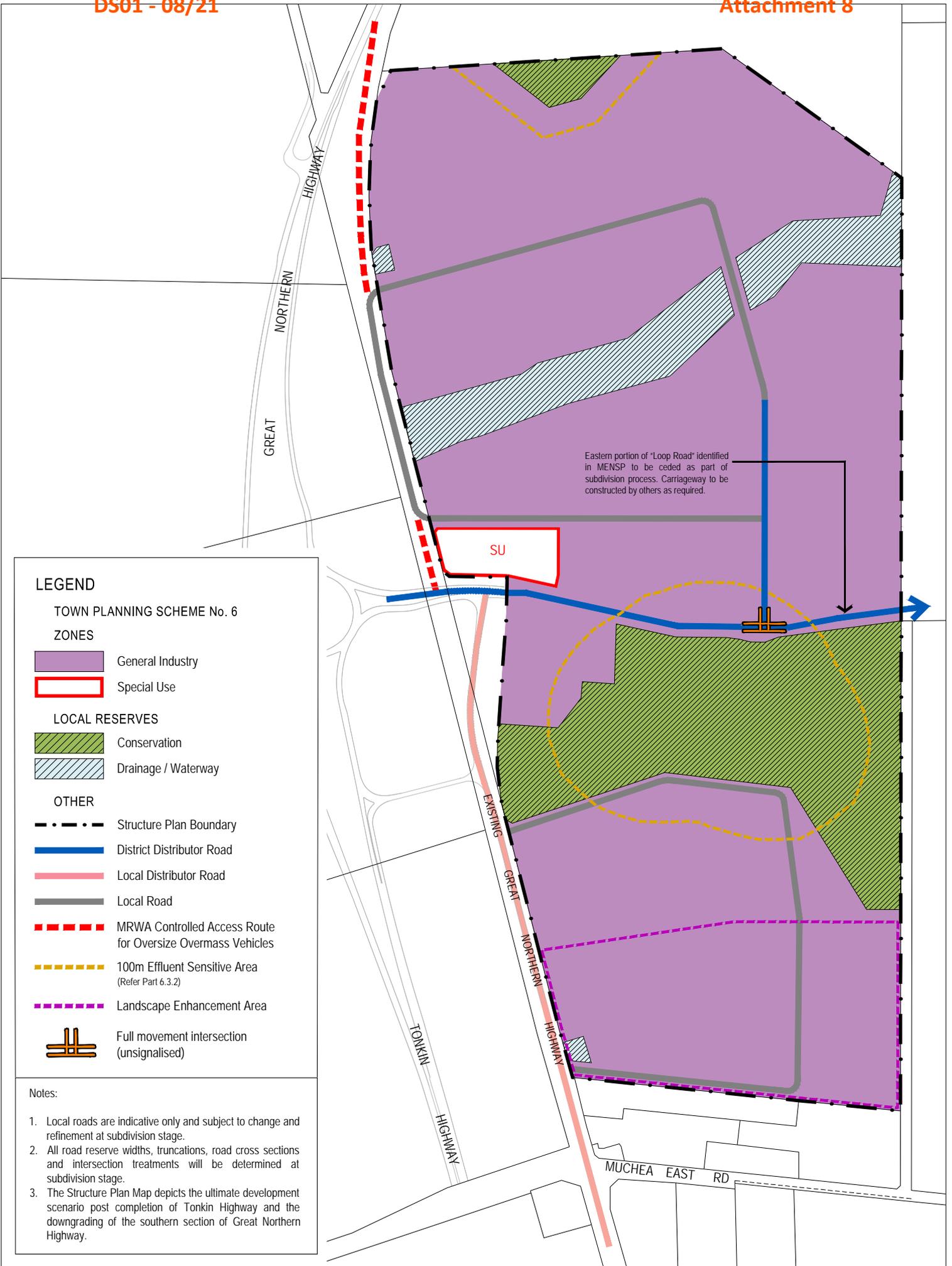
21 April 2021

Attachment B

Local Structure Plan



Prepared by CLE Town, Planning and Design (2021)



LEGEND

TOWN PLANNING SCHEME No. 6

ZONES

- General Industry
- Special Use

LOCAL RESERVES

- Conservation
- Drainage / Waterway

OTHER

- Structure Plan Boundary
- District Distributor Road
- Local Distributor Road
- Local Road
- MRWA Controlled Access Route for Oversize Overmass Vehicles
- 100m Effluent Sensitive Area (Refer Part 6.3.2)
- Landscape Enhancement Area
- Full movement intersection (unsignalised)

Notes:

1. Local roads are indicative only and subject to change and refinement at subdivision stage.
2. All road reserve widths, truncations, road cross sections and intersection treatments will be determined at subdivision stage.
3. The Structure Plan Map depicts the ultimate development scenario post completion of Tonkin Highway and the downgrading of the southern section of Great Northern Highway.



Attachment C

Local Structure Plan Implementation Plan



Prepared by CLE Town, Planning and Design (2021)

Table 2 - Special Use Zone

No.	Site Description	Use	Special Conditions
1.	Muchea Industrial Park - Local Service Centre	<ul style="list-style-type: none"> • Brewery • Consulting Rooms • Child Care Premises • Convenience Store • Factory Unit Building • Farm Supply Centre • Fast Food Outlet • Industry – Light • Industry – Service • Liquor Store - Small • Lunch Bar • Medical Centre • Motor Vehicle Repair • Motor Vehicle, Boat and Caravan Sales • Office • Public Utility • Restaurant • Recreation - Private • Roadhouse • Service Station • Shop • Showroom • Veterinary Centre • Warehouse / Storage 	

5.3 Environmental and Heritage Protection

The environmental features and their associated buffers within the reserves identified at Plan A are to be protected and retained in accordance with the approved management plans required under clause 3.1 of Schedule 11 – Muchea Employment Node Special Control Area of the Scheme. All subdivision and development is to be in accordance with the approved management plans.

5.3.1 Retention and Protection of Key Cockatoo Habitat Trees

Subdivision design and development applications are to consider the retention of key cockatoo habitat trees where reasonable. Key cockatoo habitat trees are those identified at Figure 9 of the Environmental Assessment and Management Strategy approved in association with this Local Structure Plan.

At subdivision stage, the alignment of proposed lot boundaries shall consider the location of key cockatoo habitat trees to maximise opportunities for trees to be retained within future building setback areas.

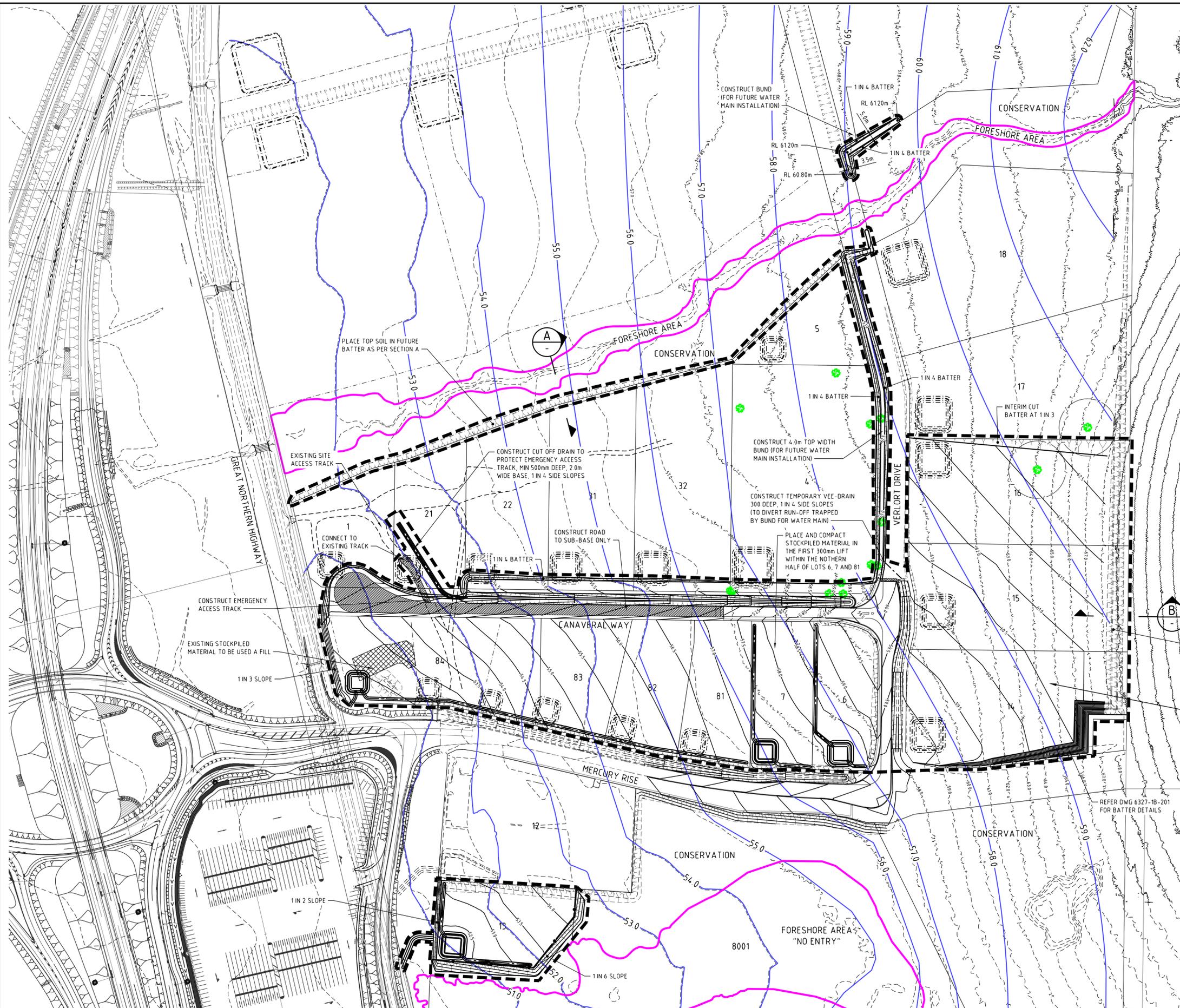
At the development application stage, the siting of buildings and hardstand areas should reasonably seek to avoid the location of key cockatoo habitat trees to enable their retention where possible.

Attachment D

Earthworks Plan



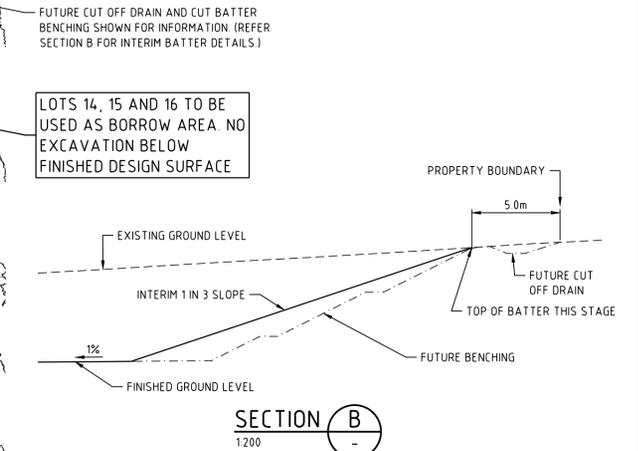
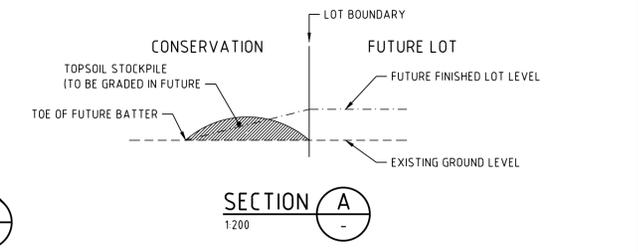
Prepared by Cossill and Webley (2021)



LEGEND	
DESCRIPTION	SYMBOL
LIMIT OF WORKS BOUNDARY	
FINISHED SURFACE CONTOUR	
EXISTING SURFACE CONTOUR	
EXISTING TREE TO BE RETAINED	
PROPOSED CONSERVATION FENCE	
MAXIMUM GROUNDWATER CONTOUR	

NOTES

- ALL LEVELS IN METRES TO AHD SURVEY BY MNG SURVEYORS.
- BATTERS TO EXISTING SURFACE AT 13 (CUT) 14 (FILL) UNLESS NOTED OTHERWISE.
- BATTER POSITION FOR FUTURE WALLS TO ENSURE CUT TO FILL EARTHWORKS BALANCE.
- ALL UNSUITABLE MATERIAL TO BE REMOVED BY THE CONTRACTOR TO APPROVED TIPPING SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALL FEES TO BE PAID BY CONTRACTOR.
- EXTENT OF CLEARING AND EARTHWORKS TO BE LIMITED TO THE STAGE CLEARING BOUNDARY UNLESS AGREED WITH THE SUPERINTENDENT.
- ALL CLEARED MATERIAL TO BE MULCHED AND STOCKPILED ON SITE AS DIRECTED BY THE SUPERINTENDENT.
- CONTRACTOR TO LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS ON SITE.
- CONTRACTOR TO GRADE EVENLY BETWEEN DESIGN CONTOURS AND MATCH INTO EXISTING SURFACE AT LIMIT OF EARTHWORKS BOUNDARY WHERE APPROPRIATE.
- EXCESS CUT FROM EARTHWORKS SHALL BE PLACED ON SITE AS DIRECTED BY THE SUPERINTENDENT.
- WHERE ROCK IS WITHIN 600mm OF THE FINAL SURFACE LEVEL THE CONTRACTOR SHALL TREAT THE SITE IN ACCORDANCE WITH THE SPECIFICATION.
- DESIGN LEVELS SHOWN SHALL BE ON THE FINISHED SURFACE INCLUDING TOPSOIL AND ASPHALT ON ROADS WHERE SPECIFIED.
- THE CONTRACTOR SHALL LIMIT THE MOVEMENT OF EQUIPMENT AND MANPOWER TO THE MINIMUM AREA NECESSARY AND PROTECT ALL VEGETATION AND EXISTING SERVICES ON SITE.
- ADJACENT RESIDENTS TO BE NOTIFIED OF THE WORKS AT LEAST TWO WEEKS IN ADVANCE. CONTRACTOR TO PROVIDE MOBILE NUMBER FOR SUPERVISOR AS PART OF NOTIFICATION.



NOTICE TO CONTRACTOR
 IT IS THE CONTRACTORS RESPONSIBILITY TO INVESTIGATE THE NATURE AND LOCATION OF ALL SERVICES WHICH MAY BE ENCOUNTERED AND TO CONSULT WITH THE RELEVANT SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF EXCAVATIONS. FAILURE TO DO SO OR TO TAKE DUE CARE SHALL NOT LIMIT THE CONTRACTORS LIABILITY FOR REPAIR OF ALL SERVICES DAMAGED BY HIM DURING CONSTRUCTION WORKS. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY FOR THE PROTECTION OF ALL EXISTING SERVICES.

REV	DATE	DRN	CKD	APP	AMENDMENT
4	24.07.20	AAD		M. WALLIS	SECTION B AND LOT 14 BATTER AMENDED
3	03.07.20	AAD	SJ	M. BOSISTO	ISSUED FOR APPROVAL
2	07.06.20	AAD	SJ	M. BOSISTO	LIMIT OF WORKS AMENDED, LOT CUT-OFF DRAINS ADDED, SECTION B ADDED
1	01.06.20	AAD	SJ	M. BOSISTO	VERLORT DRIVE BUND LEVELS AMENDED, BUND ADDED FOR FUTURE WATER MAIN
0	21.05.20	AAD	SJ	M. WALLIS	ISSUED FOR CONSTRUCTION



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CW Cossill & Webley CONSULTING ENGINEERS

Mailing Address: PO Box 680, Subiaco WA 6904
 Street Address: B12 (Level 2) 431 Roberts Road, Subiaco WA 6008

T (08) 9422 5800 F (08) 9422 5801 E admin@cosweb.com.au

CLIENT	HARVIS CAPITAL ATF NORTHERN GATEWAY UNIT TRUST NO. 2
APPROVED	MARK WALLIS
DESIGNED	AAD
SCALE	1:2000

PROJECT	MUCHEA INDUSTRIAL ESTATE - STAGE 1B
TITLE	EARTHWORKS PLAN
WAPC No.	155948
DRAWING No.	6327-1B-200
REVISION	4

ORIGINAL SIZE A1

P:\6327\Muc\6327-1B-200.dwg, 24/07/2020, 11:48:38 AM, Aaron Davies, Digital Signing PDF.pcs, 1:1, CIV Reference

Attachment E

Hydraulic load calculations



Prepared by Aquarius wastewater systems (2021)

HEALTH (MISCELLANEOUS PROVISIONS) ACT 1911
HEALTH (TREATMENT OF SEWAGE AND DISPOSAL OF
EFFLUENT AND LIQUID WASTE) REGULATIONS 1974 (Reg 4A(5)(a))

**APPROVAL TO CONSTRUCT OR INSTALL AN
APPARATUS FOR THE TREATMENT OF SEWAGE**



Approval is hereby granted to the Applicant: **MSP Pinjarra Pty Ltd**
to construct or install the apparatus for the treatment of sewage located at:

Lot or Pt. Lot No. : **1** House No. : **1602**
Street : **Pinjarra Road**
Suburb : **Pinjarra** Local Government : **Shire of Murray**

TYPE OF WASTEWATER SYSTEM

Commercial Aquarius 16kL O-2NR C Aerobic Treatment Unit to 3046m² subsurface irrigation.

CONDITIONS OF APPROVAL

The apparatus shall be installed in accordance with the approved plans (attached) and the conditions of approval listed below.

Construction of the apparatus shall be in accordance with the requirements of the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*.

All materials, pipes, bends, junctions, fittings and fixtures shall be sound and free from defects and approved by the Chief Health Officer or the *Water Services Act 2012*, Section 91.

All plumbing work must be carried out in accordance with the *Plumbers Licensing and Plumbing Standards Regulations 2000* (Plumbing Regulations) and meets the plumbing standards as defined in the Plumbing Regulations.

The system is approved to receive a maximum volume of 15,100 L/day.

Wastewater system not to be located in a trafficable area.

Wastewater system not to be located at a distance less than 30 metres from any well, stream or underground source of water intended for consumptions by humans.

Adherence to conditions on the Local Government Report Form.

As constructed plans and written certification that the unit has been installed in accordance with the Code of Practice for the Design, Manufacture, Installation and Operation of ATUs are to be submitted to the Environmental Health Officer at the Local Government before the apparatus may be used.

The receptacle for irrigation area to have sufficient setback to groundwater to the satisfaction of the Local Government.

ATU to be installed and constructed in accordance with the Code of Practice for the Design, Manufacture, Installation and Operation of ATUs.

ATU must be a minimum of 6.0 metres from a well, bore or any water course.

ATU to be located a minimum of 1.2 metres from any boundaries, buildings or structures.

ATU must be a minimum of 0.5 metres from the irrigation disposal area.

Subsurface irrigation is to be constructed and installed in accordance with the Code of Practice for the Design, Manufacture, Installation and Operation of ATUs.

Subsurface irrigation area must be a minimum of 0.5 metres from any boundaries, buildings, ATU, paths and driveways; 3.0 metres from sub-soil/open drains.

A signed maintenance agreement by an authorised ATU service person and the owner of the property is to be submitted to the Local Government Environmental Health Officer before a Permit to Use can be issued.

If the wastewater volume increases or the population increases, then the system should be increased accordingly after discussions with the Local Environmental Health Officer.

The wastewater treatment system and volumes should be monitored regularly, and a maintenance program implemented accordingly after discussions with the Local Environmental Health Officer.

Should any change in use of the premises occur that affects the wastewater volume, a new application to construct or install an apparatus for the treatment of sewage will need to be submitted.

Stormwater and subsoil drainage (where installed) shall be diverted away from the wastewater system.

This approval is valid for a period of two years. If the works are not completed after two years from the date of this approval, the applicant is required to submit a new application.

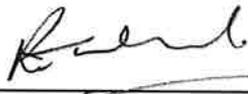
The person who completes the construction or installation of the apparatus shall notify the above Local Government Environmental Health Officer to arrange an inspection and obtain a permit to use the apparatus.

All works shall be left open and available for appropriate checking and testing.

All electrical components and installation for and incidental to the wastewater system, shall be in accordance with AS/NZS 3000 – Wiring Rules.

It is an offence under section 107(4) of the *Health (Miscellaneous Provisions) Act 1911* to use an apparatus before it has been inspected and a permit to use the apparatus issued.

DELEGATE OF CHO: _____



DATE: 22 April 2020

APPROVAL No: 15.20

RECEIPT No: 98780228421

w:\public health\ehd\water unit\wastewater management\waste\typing\wastewater docs and approvals\approvals 2020\15.20 - 1602 (11) pinjarra road, pinjarra\assessment tools & links\ww system approval letterhead 2019.docx



HEALTH ACT 1911
HEALTH (TREATMENT OF SEWAGE AND DISPOSAL OF EFFLUENT AND LIQUID WASTE) REGULATIONS 1974
**APPLICATION TO CONSTRUCT OR INSTALL AN APPARATUS
FOR THE TREATMENT OF SEWAGE**

1. Application Details

Read the application instructions in Appendix 1 before filling in this form.

Referring to Figure 1 in the Appendix 1, this is an application to the:

- Local Government → **Proceed to Section 2**
- Executive Director of Public Health → **Receipt number required** for the payment of \$56.00 **BEFORE** this application is forwarded to the Department of Health WA. Refer to Appendix 2 for payment instructions.

Receipt Number for the payment of \$56.00: _____ 987 802 284 21 _____

Note: Applications without a receipt number will be returned to applicant.

Complete Section 2 AND Section 3

2. Location of System

Lot Number	1	House Number	1602
Street Name	PINJARRA ROAD		
Town or Suburb	PINJARRA		
Nearest crossroad	BEACHAM ROAD		
Local Government (City/Town/Shire)	SHIRE OF MURRAY		
Minesite (Include Minesite name, GPS coordinates and sub-locations)	(if applicable)		

3. Owner / Applicant Details

Owner's Name	Alternative Property Custodians Pty Ltd as The Trustee For Privateinvest Pinjarra Property Trust No 1		
Applicant's Name	MSP Pinjarra Pty Ltd		
Applicant's Postal Address	70 Belmont Avenue		
Suburb	Belmont	Postcode	6104
Applicant's Phone Number	0404 174 769		
Applicant's Email Address	Aaron.norrish@metrowest.com.au		

Proceed to Section 4

4. Premises Details

Residential Premises → Proceed to Section 4.1

Non-Residential Premises → Proceed to Section 4.2

4.1 Residential Premises

- Number of bedrooms _____
- Number of other dwellings on the lot _____
- Is this an ancillary accommodation? No Yes → LG Planning approval required
- Spa(s) on premises? No Yes: Volume _____ Litres
- Note: _____

Proceed to Section 5

4.2 Non-Residential Premises

- Please give details of the premises and the nature of use.
United Service Station, convenience Store & Fast Food, plus commercial Tenancies
- Public buildings - please detail the licensed maximum occupancy rate:
 - Convenience calculated by **Class 6 persons**
- Number of persons on premises and **AND** any other volumes of liquid waste generated onsite:
 1. Convenience 234m²
 - CONVENIENCE - Staff (Non-showering): 5 : 5 @ 30 L/pers/day: **150 L/day**
 - CONVENIENCE: 12 pumps: 12 vhcles – 1.5 pers. ea. 18 @ 15mins: 72/hr 24hrs: 1728 @ 10% usage : 175 pers. @ 10 L/pers/day: **1,750 L/day**
 - CONVENIENCE Total: **1,900 L/day**
 2. Fast Food 322 m² Options
 - **Option 1. Breakdown rates includes commercial use per head**
 - FAST FOOD - Staff (Non-showering): 12 : 12 @ 30 L/pers/day: **360 L/day**
 - FAST FOOD 322 m²: Waiting 10 per 30 mins, 20 per hour 12hrs 240 x 20% usage: 48 @ 10 L/pers/day: **480 L/day**
 - FAST FOOD: Sitting 28 per hr 12hrs 336 x 50% usage: 168 @ 30 L/pers/day: **5,040 L/day**
 - **Total: 5,880**
 - Or
 - **Option 2. FF Commercial Estimate plus user rates**
 - FAST FOOD 322 m²: Commercial Use: Consultant Estimated waste load is **2600L/hr (per peak hour)**. For the purpose of sizing treatment systems **three-four times** of the peak should be allowed for ie **10,500L/Day** for this type of development
 - Plus Staff & Waiting above (360 + 480): **840 L/day**
 - FAST FOOD Option 2: **Total: 11,340 L/day**
 3. Tenancies
 - TENANCIES: Shwrms Staff (Non-showering):: 4 per tenancy x3: 12 @ 30 L/pers/day: **360 L/day**
 - TENANCIES: Shwrms 1430m²(-25% BOH):1072m² @5m²/pers 215 /hr x 7hrs:1500 @ 10% usage 150 @ 10L/pers/day: **1500 L/day**
 - **TENANCIES Total: 1,860 L/day**

Please refer to DOH factsheet: "Supplement to Regulation 29 – Wastewater system loading rates" for requirements and details on calculating daily wastewater volumes.

- Expected Daily Wastewater Volume: **15,100 Litres / Day**
- Proceed to Section 5

5. Treatment System Details

- Standard Septic Tank to Leach Drains or Evaporation Ponds → Proceed to Section 5.1
- Aerobic Treatment Unit** (Listed on DOH website's approved list) → Proceed to Section 5.2
- Wastewater Treatment Plants (includes Commercial ATUs) → Proceed to Section 5.3
- Greywater Reuse System → Proceed to Section 5.4
- Alternative Wastewater Treatment Systems → Proceed to Section 5.5

5.1 Standard Septic Tanks to Leach Drains or Evaporation Ponds

- Septic Tank Sizes _____
- Septic Tank Manufacturer _____
- Leach Drain Lengths _____
- Leach Drain Manufacturer _____
- Is it an alternating system? Yes No
- Evaporation ponds require an engineer's certification, certifying the evaporation ponds are capable of disposing the total wastewater volumes that is being fed into the ponds. Please provide details and specifications of ponds with application.

Proceed to Section 6

5.2 Aerobic Treatment Unit

- Name/Model of Aerobic Treatment Unit
 - Commercial Aquarius® 16KL O-2 NR Alternative Treatment Unit
 - Capacity 16kl / day
- Disposal Area Available: **Total 4257 m²**
- Disposal Method:
 - Surface Irrigation
 - Subsurface Irrigation**
 - Substrata Irrigation
- Total Volume: **15,100 L / day**
- **DIR Absorption Rate: 5 L/m² DIR (Design Infiltration Rate)**
 - refer Geotech Report.
 - AS NZS 1547 Table M1. Secondary Treated Effluent
- **Area Required: 3,020m².**
- Copy of maintenance agreement attached? **Yes** No → Required.
- If leach drains are used for disposal, please complete dot point 3-5 in Section 5.1.

Proceed to Section 6

5.3 Wastewater Treatment Plants

- Please attach technical details and plant specifications with application. The following must be covered:
 - Capacity
 - Volume of treatment tanks
 - Buffer tank(s) volume(s)
 - Treatment train details
 - Water quality objectives
 - Maintenance
 - Alarms
 - Technical drawings of system

■ Disposal Method:

- Surface Irrigation
 Subsurface Irrigation
 Substrata Irrigation

Disposal Area Size: _____ m²

- Evaporation ponds: require an engineer's certification, certifying the evaporation ponds are capable of disposing the total wastewater volumes that is being fed into the ponds. Please provide details and specifications of ponds with application.

■ Note: _____

Proceed to Section 6

5.4 Greywater Reuse System

■ Name and Model of Greywater Reuse System _____

■ Disposal Method:

- Surface Irrigation
 Subsurface Irrigation
 Substrata Irrigation

Disposal Area Size: _____ m²

■ If leach drains are used for disposal, please complete dot point 3-5 in Section 5.1.

■ Note: _____

Proceed to Section 6

5.5 Alternative Wastewater Treatment Systems

Attach system's technical specifications from the manufacturer with application.

Proceed to Section 6

6. Information for Government Sewerage Policy Compliance Assessment

■ Lot Size **17,482 m²**

■ Are there any existing on-site effluent disposal systems on the lot:

No Yes → Please provide the following information:

○ Local Government or Department of Health approval number(s) for all existing system(s).

○ Please provide current details on the following:

- The use(s) of all other premise(s); and
- Total number of persons that will occupy all other premises on the lot;
- Estimate total wastewater volumes that is being disposed on-site.

7. System and Site Layout Plans

Unless the following are provided according to the requirements specified, the application will be returned to applicant for resubmission:

- A copy of plan and specifications of the proposed apparatus showing the top and longitudinal section to a scale of not less than 1:50.
- **3 copies** of a site plan of the premises to a scale not less than 1:100, showing:
 - the position of all buildings erected or proposed and the position of the proposed and any existing apparatus including setback distances.
 - the position, type and proposed use of all fixtures intended to discharge into the apparatus;
 - the position and setback distances of all drains, pipes, inspection openings, vents, traps and junctions in relation to buildings and boundaries;
 - the size of pipes and fittings and the fall of the drains;
 - details of the proposed and any existing effluent disposal system and its setback distances to buildings, boundaries and trafficable areas; and
 - the source of water supply to be used in connection with the apparatus if premises is not supplied by a non-reticulated mains supply.
- **Applications to the Executive Director of Public Health: For plans that are larger than A3, an electronic copy will need to be provided in a data disc with application OR via email to WWApps@health.wa.gov.au together with the receipt / receipt number for the \$56.00 issued by the Department of Health WA. The premises address is to be identified in the email "Subject" field.**

8. Declaration and Signature of Applicant

I hereby apply as the owner, or the person authorised to act on behalf of the owner, for approval to construct or install the apparatus as referred to above. I have completed Section 1-6 of this application form and provided plans that meet the requirements detailed in Section 7.

Also attached (if required) is a local government report for an application to the Executive Director Public Health.

Applicants Signature:  Date: 27/11/19

Please print name: ALAN MORRIS

(If this application is to be approved by the EDPH, please ensure the \$56.00 application fee is paid prior to submission – Refer to Appendix 1 & 2 for further details)

Our Ref: PI05/1-01 / D19/58694
Enquiries to: Phil Steven

22 April 2020

Water Unit
Environmental Health Directorate
Grace Vaughan House
PO Box 8172
PERTH BUSINESS CENTRE WA 6849

Dear Sir/ Madam

(Shire of Murray) APPLICATION NO. 2019048
**Application to Construct/Install an Apparatus for the Treatment of Sewage at
Lot 1 (1602) Pinjarra Road, Pinjarra**

Council has received the above application from

MSP Pinjarra Pty Ltd
Aaron.norrish@metrowest.com.au

A copy of the application is attached together with the Local Government Report. The applicant has paid the Department of Health application fee, receipt 987 802 284 21.

Should you have any queries regarding this application, please contact me on direct telephone 9531 7735.

Yours faithfully



Phil Steven
Manager Environmental Health

LOCAL GOVERNMENT REPORT(TO BE PROVIDED WHERE AN APPLICATION TO CONSTRUCT OR INSTALL AN APPARATUS IS MADE TO THE EXECUTIVE DIRECTOR, PUBLIC HEALTH)
(Local Government Use Only)**1. APPLICANT / LOCATION DETAILS**

Owner's Name: Shire of Murray Applicant's Name: Aaron Norrish
 Street: Pinjarra Road Town or Suburb: Pinjarra
 Lot or Pt. Lot No: 1 House No: 1602 Local Government: Shire of Murray

2. SITE CONDITIONS

Nature of Soil: Sand Gravel Loam Clay

Other, specify: _____

Depth from natural ground level to highest known permanent/seasonal or tidal water table (mm): 0mm

Distance from natural water bodies > 30 metres

Will the apparatus be installed in any of the following locations:

- Within 30 m of a well, bore, watercourse, dam intended to be used for human consumption Yes No
- In an area likely to be subject to flooding or inundation in a 1:10 year return event. Yes No

If yes to any of the above, course of action taken: Irrigation areas to raised 500mm above natural ground level, ie 8m AHD to comply with ATU Code of Practice

Is the information on Section 6 of the application form correct? Yes No
 Lot size 73867m2

Does the proposed development complies with the Government Sewerage Policy? Yes No
 Proposal received development approval before new Government Sewerage Policy came into effect and therefore new Policy does not apply.

3. RECOMMENDATIONS OF LOCAL GOVERNMENT

- Approval recommended (subject to the conditions listed below)
- Approval not recommended (reasons for refusal attached)

4. CONDITIONS OF APPROVAL

Type of Disposal System and Dimensions (if different from application form): As per application

Other Conditions: See attached.

Delegate of Local Government: Phil Steven (Manager Environmental Health)

Local Government Approval No.: 2019048

Date: 23 January 2020 (revised 22/04/20)

Other Comments: See attached

LOCAL GOVERNMENT REPORT (continued)

Comments:

Sewer

The nearest sewer connection is over 600m away, on the other side of Pinjarra Road, Pinjarra, so it is not reasonable to connect, and so on-site effluent treatment is appropriate.

Wastewater inputs are shown on the application:

Buildings

Convenience Store

5 staff x 30L per day; customers 175 people x 10L per day 1,900L per day

Fast Food

12 staff x 70L per day; customers 48 x 10L per day 840L per day

Restaurant 336 x 30L/day, 50% usage 5040L/day

Takeaway 240 x 10L/day, 20% usage 480L/day

6360L per day

Commercial tenancies

8 staff x 30L/day 240L/day

2 staff x 70L/day 140L/day

66 customers x 30L/day 1980L/day

Playcentre visitors 98 x 10L/day 980L/day

Gym 6 staff x 70L/day x 2 shifts 840L/day

38 gym users x 70L/day 2660L/day

6840L per day

TOTAL required

15,100L per day

Proposed ATU:

16,000L per day

Required irrigation area:

15,100L / 5 (sand)

3,020m²

Proposed irrigation area:

3,046m²

Feel free to contact me with any queries.

Delegate of Local Government: Phil Steven (Manager Environmental Health)

Local Government Approval No.: 2019048

Date: 23 January 2020 (updated 22/4/20)

APPROVAL CONDITIONS:

Approval No.**2019048****Type of system:**

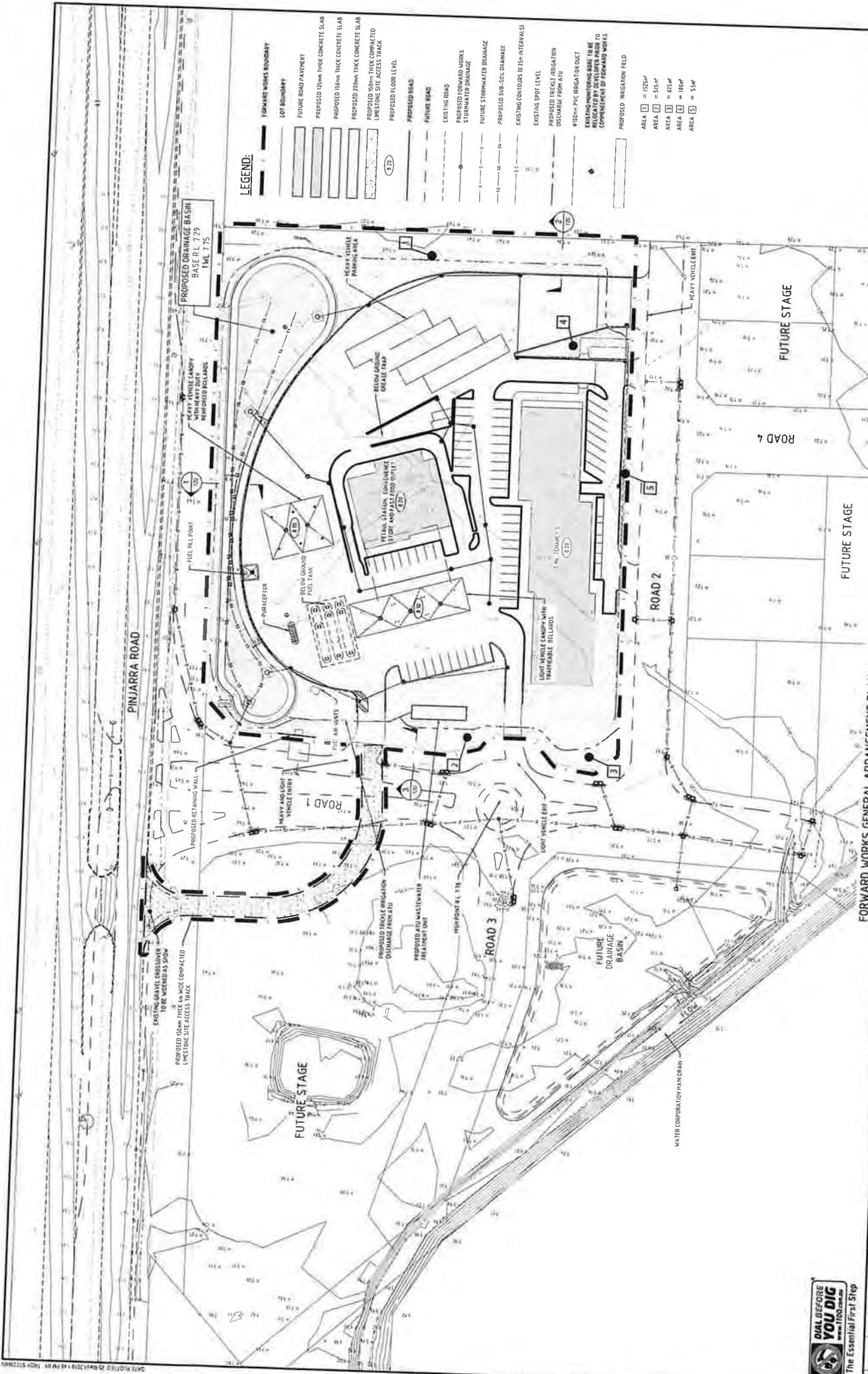
- Commercial Aquarius ATU 16kL per day
- Irrigation area 3046m²

All conditions below apply to this Approval:

1. The aerobic treatment unit shall be connected to a 3046 m² irrigation field which shall be installed on a 500mm sand pad so that the minimum depth to ground or perched water or impermeable ground layer, from the base of the irrigation dripper pipes, shall be 500mm.
2. The top of the ATU is to be located above the highest known groundwater level to prevent surface water ingress into the ATU.
3. The Shire's policy on nutrient release within the Peel Harvey Estuary catchment requires effluent treatment systems to reduce total phosphorous by 90% and total nitrogen by 80%, for which Aquarius Systems comply with these requirements.
4. Grease trap is required for kitchen(s) containing deep fryers, to specifications of Water Corporation according to the number and type of plumbing fixtures.
5. 'Future stormwater drainage' as marked on submitted plan is to be a closed pipe in order to achieve 6m separation from stormwater drains.
6. All works must comply with the *Health Act 1911*, and the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974* and the by-laws and practises of the *National Plumbing Code – AS/NZS 3500*.
7. All plumbing and drainage works up to the point of connection to the apparatus for the treatment of sewage shall be carried out by or under the direction of a licenced sanitary plumber approved in accordance with the *National Plumbing Code AS/NZS 3500*.
8. The installation of the aerobic treatment unit and the disposal field shall comply with the *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units (ATUs) Serving Single Dwellings* and the product approval.
9. The Department of Health requires a high water level alarm to be located in a position where it is readily visible and audible to persons from within the house connected to or serviced by the system. Where practicable, the alarm system should also be located in the immediate vicinity of the pump tank.
10. All set-back distances from load bearing structures or property boundaries shall comply with the *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units (ATUs) Serving Single Dwellings*.
11. The aerobic treatment unit (ATU) shall not be located within 30 metres of any well, bore, dam or water course that is used or available for human or animal consumption, or a watercourse within a proclaimed water catchment area. The irrigation field shall be at least 6 metres from any open drain or subsoil drain.
12. Upon completion of the installation of the ATU the installer shall provide to the Shire of Murray certification that the system has been installed in accordance with the

Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units (ATUs) Serving Single Dwellings.

13. A signed service agreement with the owner shall be forwarded to the Shire of Murray prior to the issue of a Permit to Use.
14. The effluent treatment system shall be located entirely within the subject lot and property boundaries.
15. All works including the location of the effluent disposal system shall not vary from the approved plan without prior Council approval.
16. Amendments/alterations to approved plans as approved by the local government must be detailed on as constructed plans and submitted to the Environmental Health Officer at the Shire of Murray.
17. Storm water, surface water and subsoil drainage (where provided) shall be discharged away from the effluent disposal system.
18. An on-site toilet must comply with the *Health (Temporary Sanitary Conveniences) Regulations 1997*.
19. This Approval is valid for a period of not more than two years or any lesser period specified in the Approval.
20. The person who completes the construction or installation of the apparatus shall notify Council's Health Services on telephone 9531 7777 to arrange an inspection and obtain a Permit to Use the Apparatus. All works shall be left open for appropriate checking and testing.



SCALE 1:500

DATE: 05 JUN 2018

SCALE: A1

PROJECT: METROWEST

PROJECT: 256 PINJARRA ROAD

PINJARRA - STAGE 1A

FORWARD WORKS

GENERAL ARRANGEMENT PLAN

CW1014500-C1-100

G

DATE: 05 JUN 2018

SCALE: A1

PROJECT: METROWEST

PROJECT: 256 PINJARRA ROAD

PINJARRA - STAGE 1A

FORWARD WORKS

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CW1014500-C1-100

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PINJARRA - STAGE 1A

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GENERAL ARRANGEMENT PLAN

CW1014500-C1-100

G

DATE: 05 JUN 2018

SCALE: A1

PROJECT: METROWEST

PROJECT: 256 PINJARRA ROAD

PINJARRA - STAGE 1A

FORWARD WORKS

GENERAL ARRANGEMENT PLAN

CW1014500-C1-100

G

metrowest
aspire | commit | create

Cardino
Shaping the Future

Cardino (WA) Pty Ltd
11 Leavelle Terrace
100 Stirling Street
Perth WA 6000
Tel: 08 9272 3400
Fax: 08 9272 3400

FORWARD WORKS GENERAL ARRANGEMENT PLAN

SCALE: 1:500

DATE: 05 JUN 2018

SCALE: A1

PROJECT: METROWEST

PROJECT: 256 PINJARRA ROAD

PINJARRA - STAGE 1A

FORWARD WORKS

GENERAL ARRANGEMENT PLAN

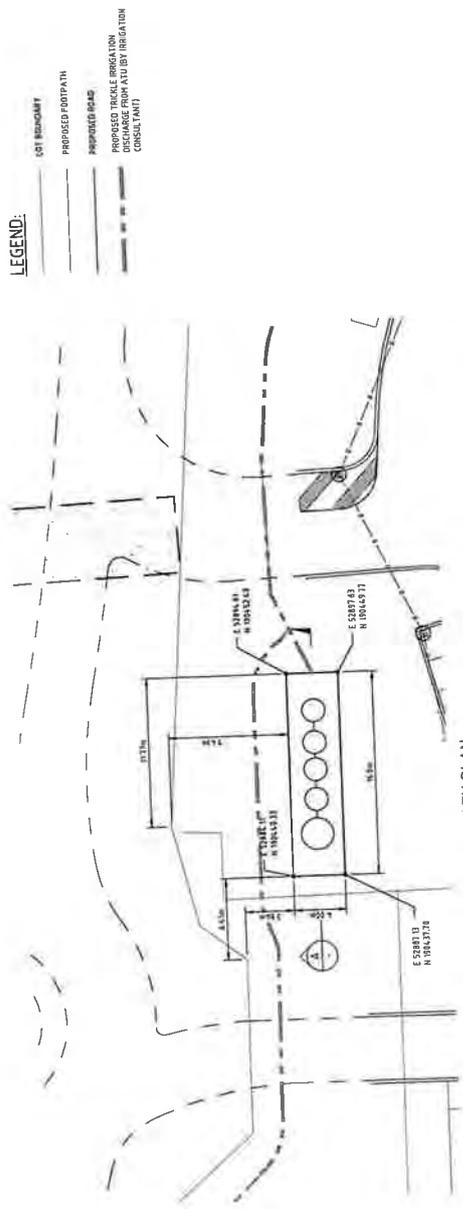
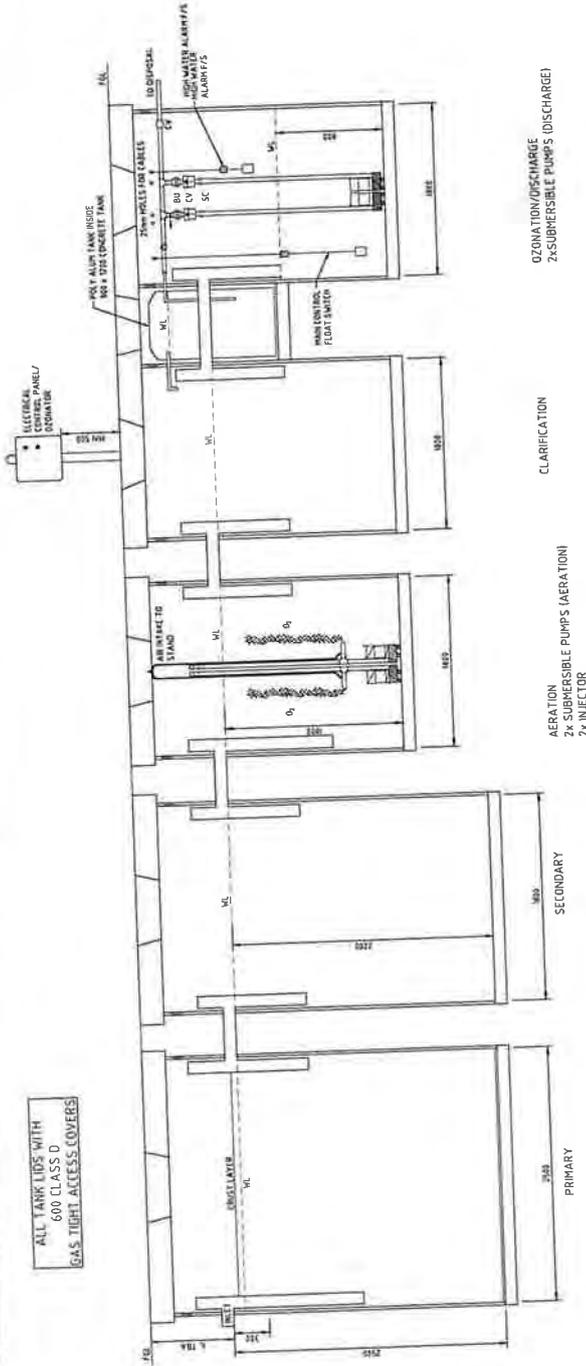
CW1014500-C1-100

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DIAL BEFORE YOU DIG
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The Essential First Step

1. SITE LOCATION IDENTIFICATION
2. DETERMINE THE LOCATION OF ALL SERVICES
3. OBTAIN A COPY OF THE SERVICE RECORDS
4. CONDUCT A VISUAL SURVEY OF THE SITE
5. OBTAIN A COPY OF THE SERVICE RECORDS
6. CONDUCT A VISUAL SURVEY OF THE SITE
7. OBTAIN A COPY OF THE SERVICE RECORDS
8. CONDUCT A VISUAL SURVEY OF THE SITE



LEGEND:

- GFI BOUNDARY
- PROPOSED FOOTPATH
- PROPOSED ROAD
- PROPOSED TRUCK IRRIGATION DISCHARGE FROM ATU BY IRRIGATION CONSULTANT

BUILDING LICENCE APPROVAL ONLY	
DATE	17.05.2018
BY	AT
DATE	17.05.2018
BY	AT
PROJECT NO.	CW1014500-CI-603

METROMEST
 256 PINJARRA ROAD
 PINJARRA - STAGE 1A
 FORWARD WORKS
 ATU LAYOUT PLAN & DETAIL

Gardno
 Shaping the Future
 1st Floor, 100 Stirling Street, Perth WA 6000
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 This drawing is a preliminary design and intended for the
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NO.	DATE	BY	CHKD	APPD
1	17/05/2018	AT	AT	AT
2	17/05/2018	AT	AT	AT
3	17/05/2018	AT	AT	AT
4	17/05/2018	AT	AT	AT
5	17/05/2018	AT	AT	AT
6	17/05/2018	AT	AT	AT
7	17/05/2018	AT	AT	AT
8	17/05/2018	AT	AT	AT
9	17/05/2018	AT	AT	AT
10	17/05/2018	AT	AT	AT

Total Wastewater Irrigation area 3047 sqm

LEGEND

- 50 mm CL 9 PVC Mainline (534m)
- LDPE with purple raster 32 mm supply manifold (400 m * 300 takeoffs)
- LDPE Purple 25 mm Flush manifold (200 m)
- Metalfilm 3.5 LPH @ 1.0 m x 0.3m spacing (3100m) AR= 11.7 mm/hr
- 50 mm Arkal disk Filter with 80 mesh disks (1)
- Submersible pump 170 LPM @ 12 m head (1) & 140 LPM @ 16 m head
- Holman Rotor 4 stations (1)
- ∇ 1" air/vacuum Breaker valve (1)
- ∇ 1/2" air valve (9)
- ⊗ 25 mm Manual Flush valve (9)

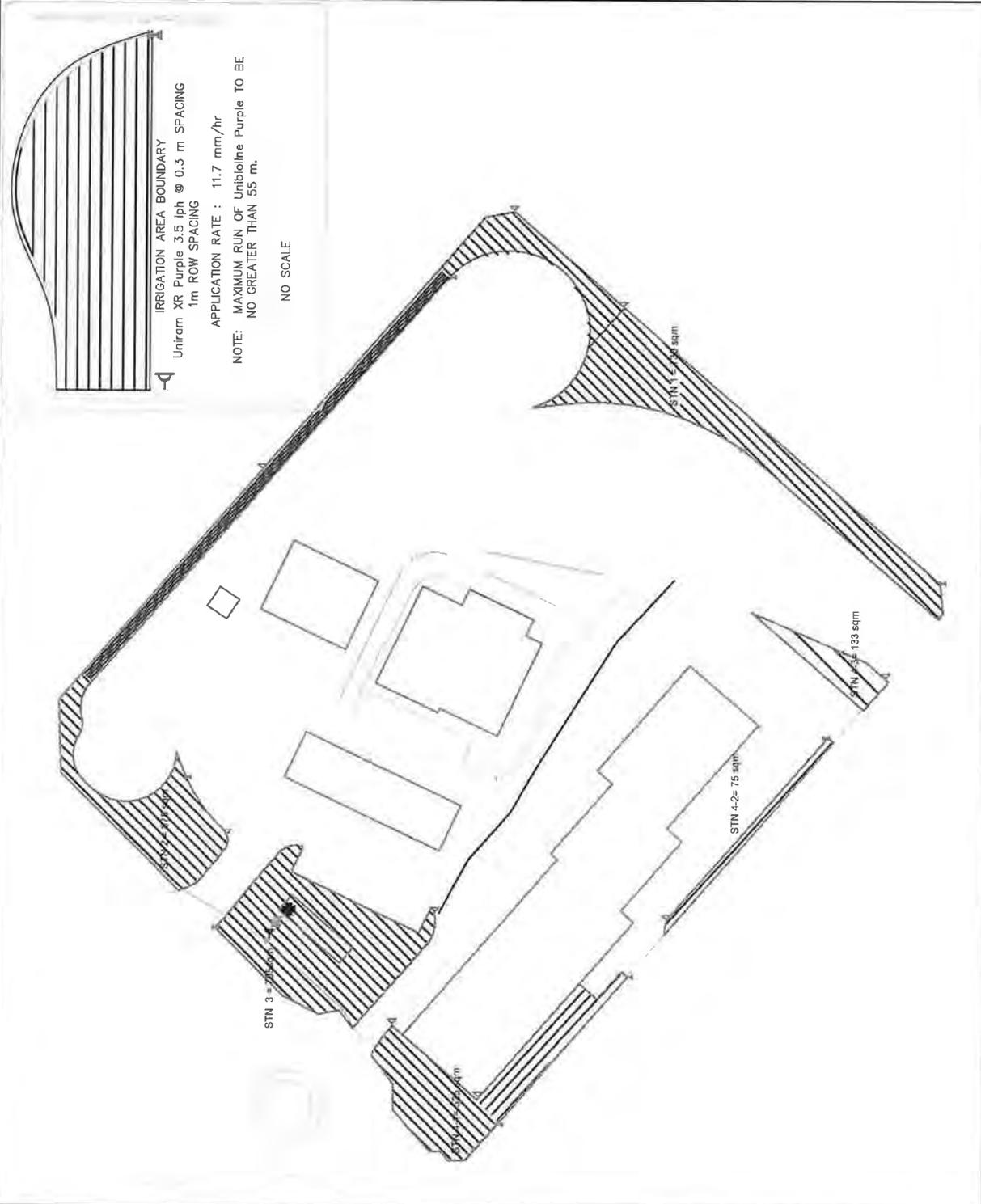


NO	REVISION	APPROVED DATE
A	ISSUED FOR APPROVAL	1 DEC 2020

102 Jowers Street
Boronia VIC 3601
Tel: 08 5240 8545
Email: admin@aquariuswastewater.com
www.aquariuswastewater.com.au

Certified Irrigation Designer, LIC 2106
Certified Irrigation Auditor Licence
CLIENT

PROJECT	Pinjara Service Station
TITLE	WASTEWATER IRRIGATION DESIGN
SCALE	
DATE	
DRAWN BY	
CHECKED BY	
DATE	





SERVICE AND MAINTENANCE AGREEMENT

Commercial AQUARIUS® O-2NR 16KL Alternative Treatment Unit

Serial Number: Aquarius O-2 NR 16KLC Com ATU

This Agreement is between Alternative Property Custodians Pty Ltd (ACN 630 513 512) of Suite 1, Level 2, 526 Whitehorse Road, Mitcham, Victoria 3132. Contact details are Phone: +61 430 116 690, tim.killian@privateinvest.com.au

And

Perth Civil and Hydraulic Services PTY LTD (License No's: 9411 Plumbing, GF0117 Gas), of U2 / 5 Tesla Link, Wangara (Mobile): 0421952589 (Office): N/A as an approved Aquarius® O-2NR ATU Service Agent of Aquarius Wastewater Systems Pty Ltd.

The Customer appoints the Company to maintain an O-2NR 16KL Alternative Treatment Unit, installed at 1602 Pinjarra Road, Pinjarra, to commence after the date of commissioning of the unit by the Environmental Health Office of the Shire of Murray 1915 Pinjarra Road, Pinjarra 6208, and continuing thereafter until cancelled by either party, giving six months notice in writing. The annual fee is \$2000.00 and is payable on invoice, or in advance, at the initial rate of \$500 per three monthly service call. This fee does not include GST or consumables.

1. Once every three (3) months of the term agreed, the Company shall inspect the Unit and carry out the work as per the Aquarius Wastewater Management/WA DoH ATU service sheet, and provide a report to the Customer's Local Council, the WA DoH and the customer on the outcome of the inspection.
2. If the Customer requests the Company to carry out additional work on the system other than specified in paragraph 1, apart from warranty work, the Customer will pay the Company reasonable additional charges for such work. Further costs for any additional work and/or materials necessary over and above those pursuant to paragraph 1, will be charged where; the need for the additional work and materials arises from negligent, wilfully damaging actions of any person; and/or from the Unit being required to bear a workload which is extraordinary and above the specified hydraulic or organic loading; and/or from earthquake, fire, storm, lightning, tempest, or land slip or from unauthorized persons interfering with the Unit in any way, or with the Customer's failure to advise the Company of any alarm warning or other malfunction becoming apparent or failure to comply with this Agreement.
3. The Customer acknowledges and agrees to enter into further annual agreements (with an Authorised Person or Company approved by AWS and the WA DoH) at the expiration of each year from the date of commissioning of the Unit and transfer such Agreement to any new title holder for as long as the AQUARIUS® O-2NR Alternative Treatment Unit remains installed at the above address. Failure to have the unit serviced on these agreed terms will void the manufacturer's warranty and be contrary to the WA DoH regulations.
4. Cost increases will be restricted to the CPI increase based on the preceding September quarter increase.

Dated:

.....
Customer's Signature

If the Customer is a Corporation, a Director of the Corporation signs this Agreement



.....
Tim Killian

.....
Director

.....
Print Name

.....
Dated: 17/04/2020

.....
Company's Representative Signature

CUSTOMER PAYMENT OPTIONS:

Please select one of the following:

- Four quarterly payments of \$
- One annual payment of \$

Please advise of any special considerations we should be made aware of, to assist us in servicing the AQUARIUS® O-2NR Alternative Treatment Unit, such as:

Convenient Time:

Fencing/Gate Requirements:

Inductions:

Security:

Other:

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