MUCHEA EMPLOYMENT NODE
LOT 102 GREAT NORTHERN HIGHWAY

LOCAL STRUCTURE PLAN 1
PART ONE: IMPLEMENTATION
September 2017

SIRONA

CLE
TOWN PLANNING + DESIGN

MUCHEA EMPLOYMENT NODE
LOT 102 GREAT NORTHERN HIGHWAY
LOCAL STRUCTURE PLAN 1

PART ONE: IMPLEMENTATION

Prepared by:

CLE
TOWN PLANNING + DESIGN

PO Box 796
Subiaco WA 6904
t: 9382 1233
f: 9382 1127
www.cleplan.com.au

2322Rep52E
September 2017

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 _____

13 October 2017

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

13 October 2017 Date

13 October 2027 Date of Expiry

TABLE OF AMENDMENTS

Amendment Number	Summary of the Amendment	Amendment Type	Date Approved by WAPC

TABLE OF CONTENTS

TABLES

PLANS

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 aligns with the planned construction of the Perth-Darwin National Highway 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 Industrial' with the corresponding objectives, land use permissibility and development standards prescribed for the zone under TPS6 applicable. The only land that is not zoned General Industrial under LSP1 is that reserved for roads, environmental conservation and water management purposes. This General Industrial 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 Industrial 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.

LSP1 delivers a robust planning framework that will integrate seamlessly with the Perth-Darwin National Highway being progressed by Main Roads WA with respect to site access and staging of development. 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 Industrial - Local Reserves - District Distributor Roads - Local Roads - Future Road Widening	 104.5 ha 30.3 ha 3.8 ha 8.3 ha 2.1 ha	
Total Estimated Lot Yield	20 - 30 lots	
Estimated Area and Percentage of Local Reservations: - Conservation Reserve - Drainage / Waterway Reserve	 21.6 ha (71% of Local Reserves area) 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 MENSP.*

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 will be provided via a temporary intersection with Great Northern Highway in the location depicted on the Access Staging Plan (Plan B), until construction of Perth-Darwin National Highway is completed. Post-completion of PDNH, 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.

5.3 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 Perth-Darwin National Highway, no direct lot access is permitted to Great Northern Highway without the written approval of Main Roads WA. Upon completion of the Perth-Darwin National Highway, 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.

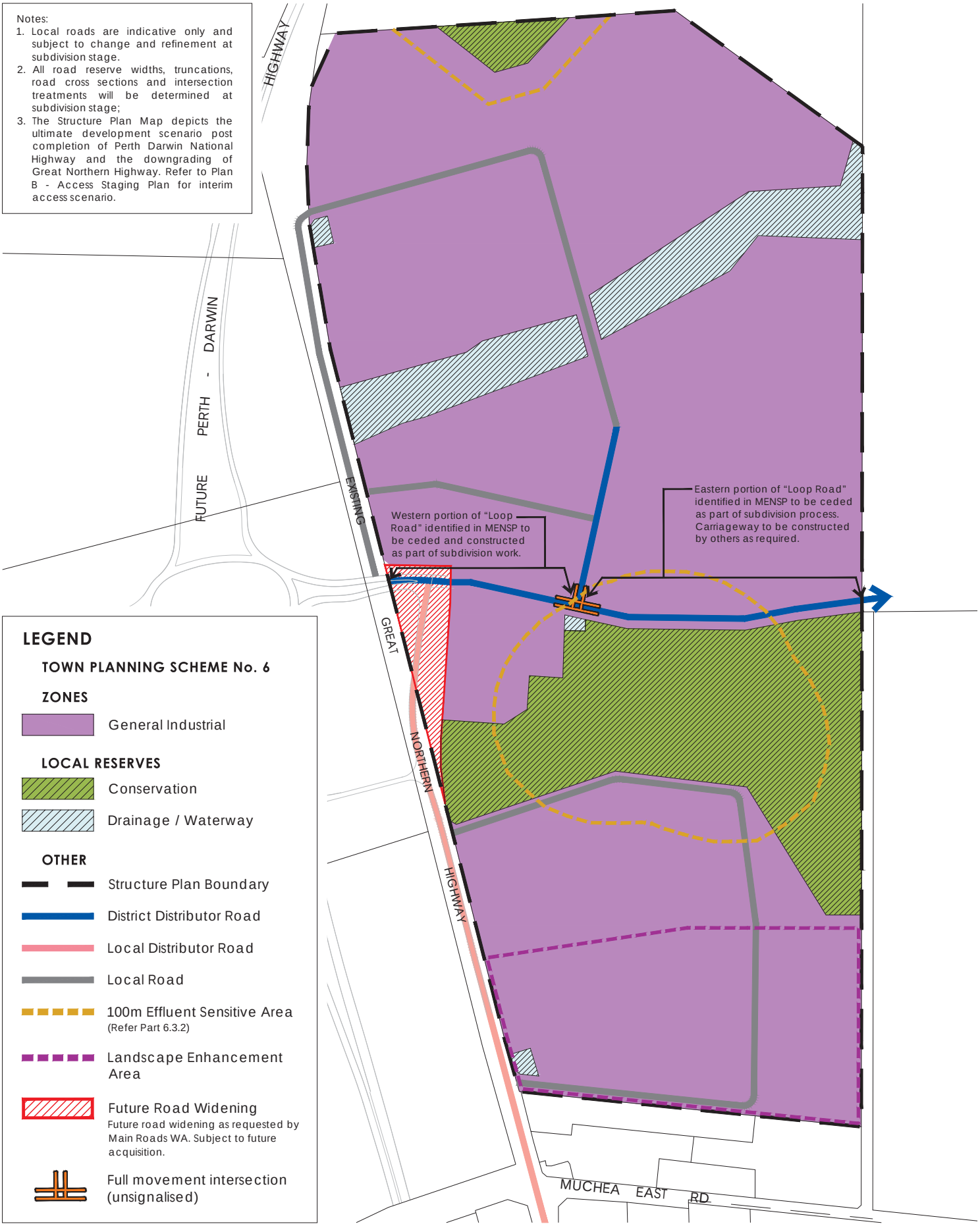
6.5 Roads

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.

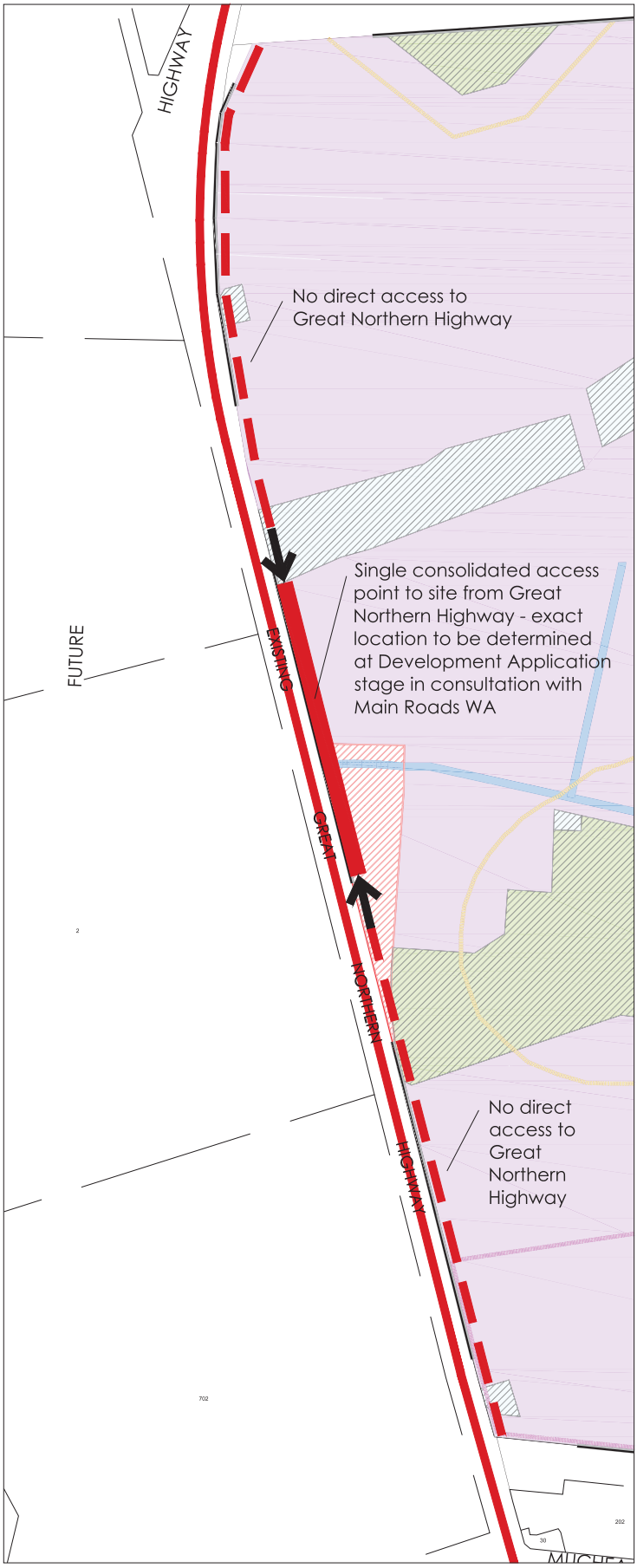
7.0 ADDITIONAL INFORMATION

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

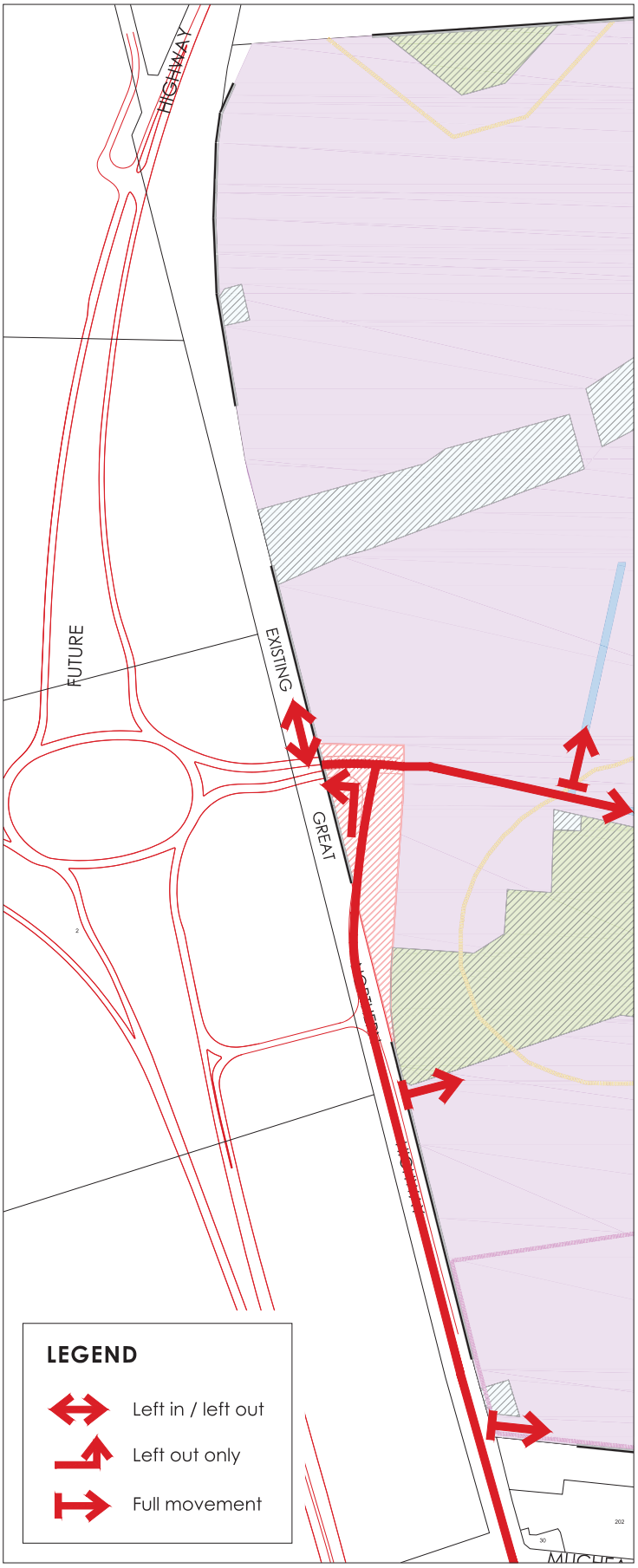
Notes:
1. Local roads are indicative only and subject to change and refinement at subdivision stage.
2. All road reserve widths, truncations, road cross sections and intersection treatments will be determined at subdivision stage;
3. The Structure Plan Map depicts the ultimate development scenario post completion of Perth Darwin National Highway and the downgrading of Great Northern Highway. Refer to Plan B - Access Staging Plan for interim access scenario.



PLAN A - LOCAL STRUCTURE PLAN



INTERIM ACCESS (pre Perth-Darwin National Highway)



ULTIMATE ACCESS

PLAN B - ACCESS STAGING PLAN

2322-65B-01 (09.06.2017), Nts

Lot 102 Great Northern Highway, Muchea

MUCHEA EMPLOYMENT NODE
LOT 102 GREAT NORTHERN HIGHWAY

LOCAL STRUCTURE PLAN 1
PART TWO: EXPLANATORY REPORT
September 2017

SIRONA

CLE
TOWN PLANNING + DESIGN

This page has been left blank intentionally

MUCHEA EMPLOYMENT NODE
LOT 102 GREAT NORTHERN HIGHWAY
LOCAL STRUCTURE PLAN 1

PART TWO: EXPLANATORY REPORT

Prepared by:

CLE TOWN PLANNING + DESIGN

PO Box 796
Subiaco WA 6904
t: 9382 1233
f: 9382 1127
www.cleplan.com.au

2322Rep53D
September 2017

This page has been left blank intentionally

CLIENT / PROJECT MANAGER

Sirona Capital

PROJECT TEAM

Town Planning and Urban Design - CLE Town Planning + Design

Environmental Assessment - Emerge Associates

Groundwater and Drainage Assessment and Monitoring - Emerge Associates

Traffic Analysis - GTA Consultants

Engineering Infrastructure and Services - Cossill & Webley

TABLE OF CONTENTS

3.0 LAND USE AND SUBDIVISION REQUIREMENTS

This page has been left blank intentionally

FIGURES

TABLES

APPENDICES

This page has been left blank intentionally

1.0 PLANNING BACKGROUND

1.1 Introduction and Purpose

The Muchea Employment Node Local Structure Plan 1 (LSP1) is lodged on behalf of the landowner, Sirona Capital, over lot 102 Great Northern Highway, Muchea ('the site').

The site constitutes one precinct within the greater Muchea Employment Node Structure Plan (2011) (MENSP) which is a 1,113ha area of 'Proposed Industrial Development' within the Shire of Chittering. The MENSP refines the level of detail and work undertaken as part of the North East Corridor Extension Strategy (2003) and identifies a specific and strategic location for an employment node that is positioned to take best advantage of the both the current Great Northern Highway (GNH) alignment and the future Perth-Darwin National Highway (PDNH). Preparation of the MENSP by the State Government signified a decisive move to progress the planning framework over the area in order to facilitate industrial development and provide for employment generating land uses.

The recent gazettal of Amendment No.52 to the Shire of Chittering's Town Planning Scheme No.6 (TPS6) on 26 June 2015 signified the first scheme amendment within the Muchea Employment Node (MEN) and implements the work undertaken as part of the MENSP by establishing a zoning that will facilitate industrial development.

With the site zoned 'Industrial Development' by virtue of Amendment No.52, LSP1 is lodged as the next stage in the development process to guide future development, ensure orderly and comprehensive planning over the site and coordinate the provision of infrastructure. The progression of LSP1 is the critical first step in the realisation of the MESNP delivering important employment generating land uses within Muchea.

The site has a total area of 149ha and is in single ownership. The sheer size of the site provides an excellent opportunity to deliver a substantial area of employment generating land through the coordinated structure planning process, whilst its single ownership allows for further efficiencies in the provision and funding of infrastructure. As the first stage of development within the MEN, LSP1 is expected to accommodate an initial demand for affordable, large scale industrial land in the locality. LSP1 has been prepared with careful consideration given to its interface and ability to integrate with adjoining landholdings and is anticipated to serve as a catalyst for further amendments to TPS6 to rezone other landholdings within the MENSP.

The site, identified as 'Precinct 1 North A' in the MENSP is well-placed to accommodate the first stage of development within the MEN due to its strategic location abutting GNH which will provide excellent access and connectivity until PDNH is ultimately constructed circa 2019. Post 2019, the site will have direct access to PDNH via the key east-west linkage identified within the northern portion of the MENSP as a 'loop road'. This loop road will intersect and have direct access to PDNH and Brand Highway via the planned interchange approximately 200m west of the site.

It is envisaged that LSP1 will largely serve a freight / logistics distribution function servicing the regional areas north of Perth, primarily involved in the mining and agricultural industries. This expectation is based on the site's strategic location in immediate proximity to key regional transport infrastructure (GNH and PDNH) and the future Main Roads WA Road Train Assembly Area (RTAA) which is planned to abut the western boundary of the site and is expected to function as a key 'anchor' for the surrounding land uses. Initial land uses within LSP1 are expected to accommodate a road house to service existing freight traffic along GNH and users of the RTAA, as well as other uses necessary to support the RTAA.

The purpose of LSP1 is to facilitate subdivision and development of the site in a coordinated manner as required by the provisions of Schedule 15 of TPS6. LSP1 will establish the planning framework over the land within which subdivision and development applications will be considered and approved, addressing the strategies for managing development in relation to environmental, drainage, servicing and transport considerations. LSP1 will build on the volume of work undertaken as part of the scheme amendment process in relation to planning and environmental matters as well as addressing other characteristics associated with the site.

The highly experienced project team has worked collaboratively on the preparation of LSP1 and the accompanying technical appendices to ensure that all potential constraints in relation to the land have been appropriately addressed.

The preparation of LSP1 has also been informed by recent findings and experiences arising from a study tour of a number of new industrial precincts in the eastern states of Australia. A detailed overview of the study tour, including key findings and detailed descriptions of the estates visited is Appendix 1. The study tour not only contributed to the design of LSP1, but has also assisted to provide:

- An in depth understanding of differing market conditions and the impacts this has on land supply and lot size;
- A demonstration of differing methods of market delivery and the need to be flexible in terms of staging and lot size;
- An improved appreciation for the differing types of land uses and the need to secure larger anchor tenants in order to encourage and facilitate smaller scale operators; and
- A broad range of built form and land use controls, including differing car parking standards, facade treatments, fencing and landscaping.

The fundamental principles of LSP1 are as follows:

- Providing a robust planning framework capable of delivering development that is compatible with, and capitalises on, the site's strategic location north of the Perth metro area;
- Developing a structure plan design capable of delivering industrial land in a staged manner, guided by the provision of service infrastructure and access to the transport network that is responsive to the industrial land market;
- Maximising the excellent opportunities afforded the site due to its location abutting key regional transport infrastructure (GNH / PDNH / Brand Highway) and the RTAA;
- Allowing for a first stage of development that delivers a road house and land uses necessary to support the RTAA;
- Establishing a local road network and overall design capable of delivering a range of lot sizes within the initial stages of development to provide flexibility to accommodate a wide range of land uses and potential industrial operators;
- Developing a clear interim and ultimate access strategy to manage and facilitate the future development of PDNH, the RTAA and future deviation of GNH;
- Identifying key environmental assets to be retained and establishing appropriate strategies for their management;
- Acknowledging the land as one precinct within the larger MENSP area and the need to allow for its future integration with the adjoining land;

- Developing a comprehensive drainage system that recognises the pre-development hydrology of the site and minimises the need to import fill; and
- Addressing the requirements of TPS6 as they relate to the Industrial Development zone and the Muchea Employment Node Special Control Area.

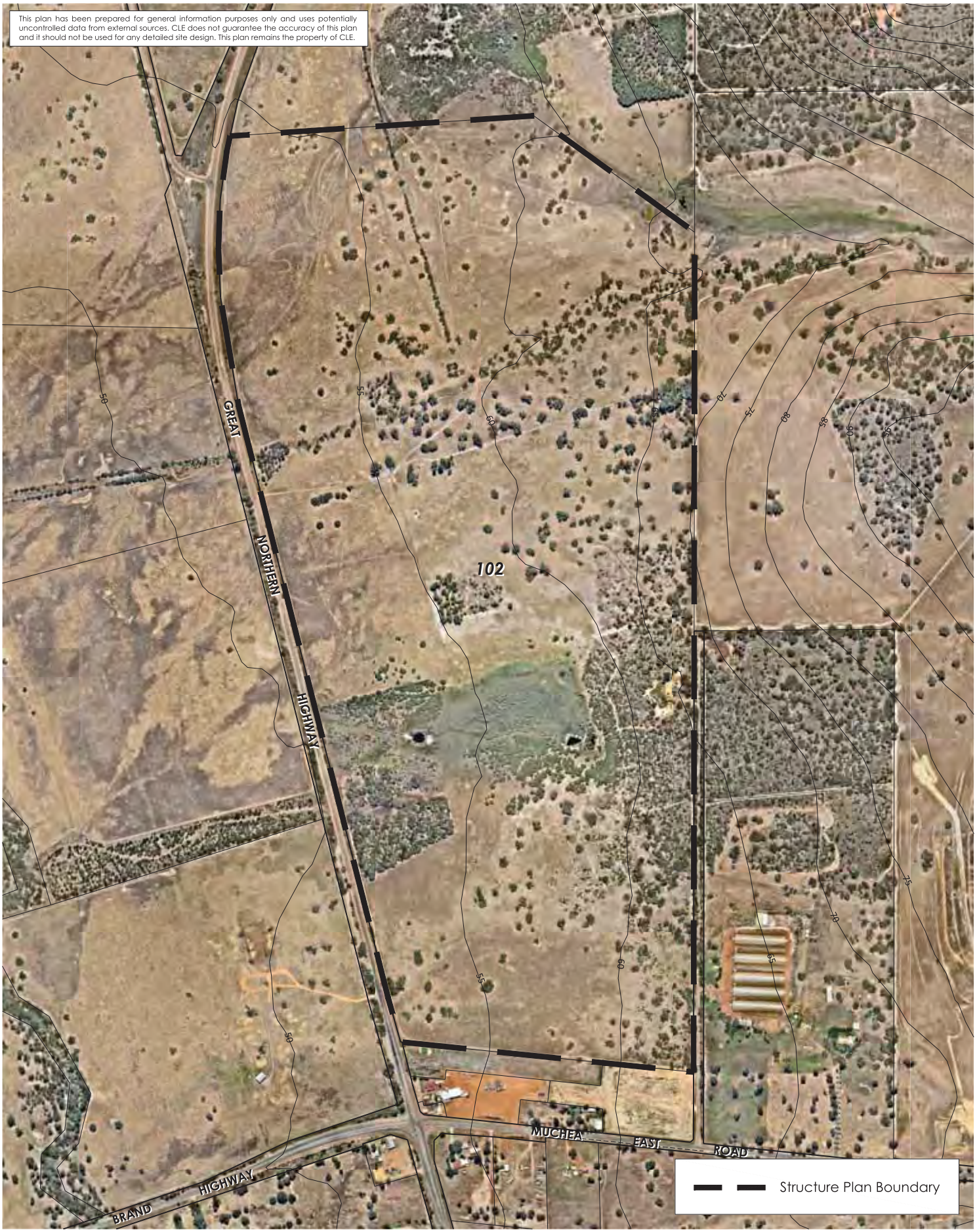
LSP1 has been prepared with the above principles in mind, resulting in a comprehensive planning document that provides the framework for:

- Approximately 109ha of 'General Industrial' zoned land serviced by an overall road network and design capable of accommodating a wide range of lot sizes and land uses in accordance with the development controls and land use permissibility provisions of TPS6;
- An estimated 500 - 600 new jobs at full development;
- Staged development guided by the site's connection to the regional road network and the provision of service infrastructure. The first stage is capable of accommodating a wide range of land uses with initial development anticipated to abut the RTAA and accommodate a road house and other supporting industrial land uses;
- An ultimate road network that facilitates lot sizes and, by effect, land uses that are compatible with the RTAA;
- The coordinated provision of service infrastructure as required for the Muchea Employment Node Special Control Area under Schedule 15 of TPS6 via a detailed Servicing Strategy;
- The inclusion of Resource Enhancement Wetlands and their associated buffers within local Conservation Reserves and establishing appropriate interface management strategies for these;
- Retention of the site's highest quality vegetation within local Conservation Reserves and effective strategies for the management of these areas;
- A drainage strategy comprising of on-site detention areas, coupled with a network of roadside swales that treat and convey runoff before discharging into the district drainage network; and
- A permeable road network and hierarchy consistent with the key linkages identified in the MENSP and which recognises the need to accommodate long-haulage vehicles.

This Part Two report supports the Part One – Implementation Report, outlining the background and explanatory information that has informed the preparation the Plan. The format of this report is based on the Western Australian Planning Commission's Structure Plan Framework (August 2015) and responds to the key opportunities and constraints associated with the site. The Structure Plan Map and in turn, this explanatory report, have been informed by a suite of technical reports prepared by a team of consultants that are vastly experienced in planning for large scale industrial areas including:

- Local Water Management Strategy (Emerge Associates);
- Servicing and Infrastructure Report (Cossill and Webley Consulting Engineers);
- Environmental Assessment and Management Strategy (Emerge Associates);
- Transport Assessment (GTA Traffic Consultants); and
- Strategic Odour Assessment and Management Strategy (Emerge Associates).

These technical reports are appended in full to this Part 2 Explanatory Report and are summarised within the proceeding sections.



CLE TOWN PLANNING + DESIGN

21.02.2015 nearmap.com

2322-57A-01 (01.06.2017), Nts

SITE PLAN AND ORTHOPHOTO

Figure 1

1.2 Land Description

The LSP1 area encompasses all of lot 102 Great Northern Highway, Muchea which corresponds to the land zoned 'Industrial Development' zone on the TPS6 Map. A site plan and orthophoto identifying the site is included in this report (refer Figure 1).

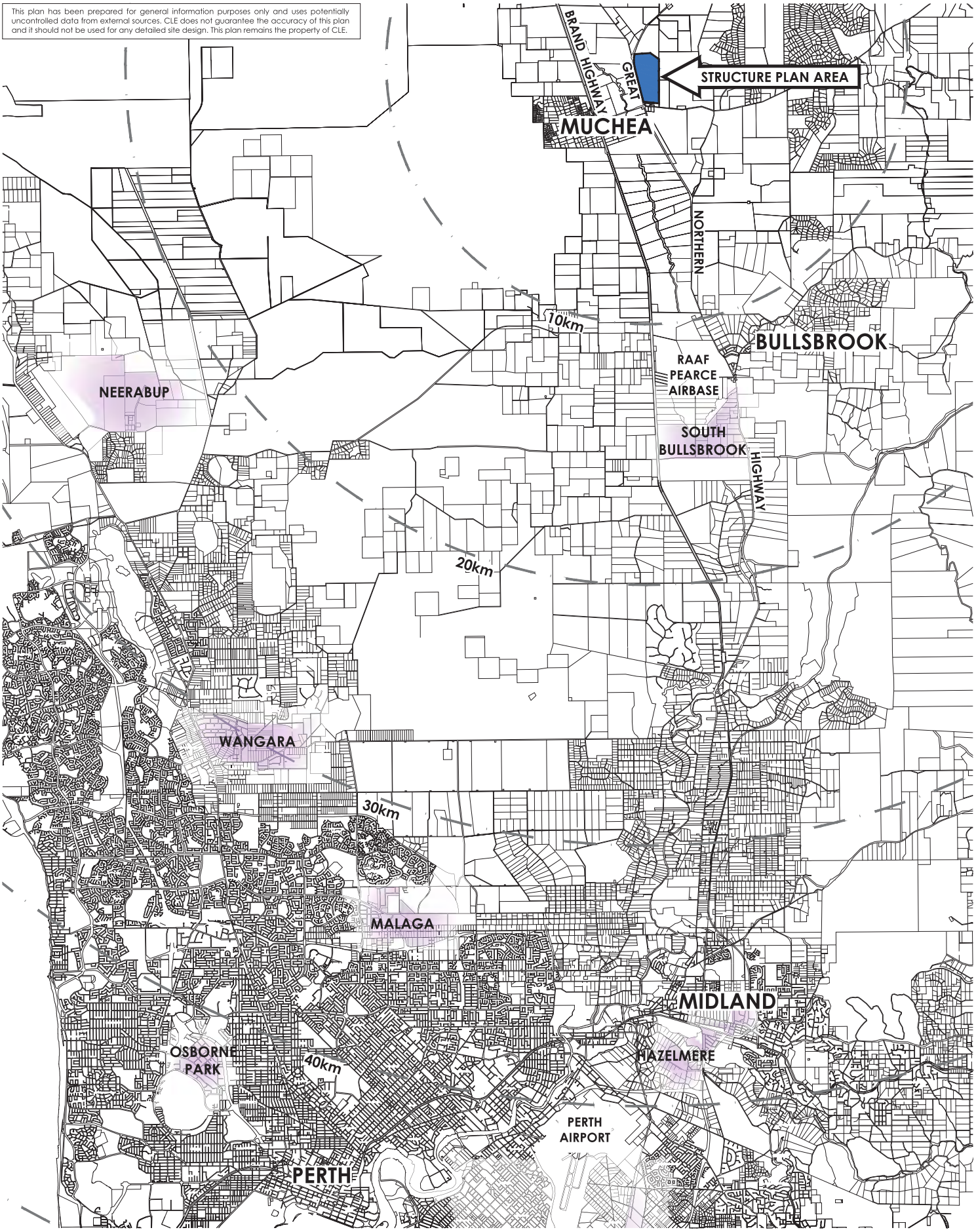
The following sections provide a detailed description of the LSP1 land and its surrounds.

1.2.1 Location

LSP1 is located approximately 45km north of the Perth CBD and 10km north of the Bullsbrook Townsite (refer Figure 2). It directly abuts the eastern side of GNH approximately 150m north of its intersection with Muchea East Road. The site's strategic location north of the metro area and directly abutting GNH makes it an ideal location to accommodate freight/ logistical type land uses as well as other more general industrial-type developments. The future PDNH and the interchange that will service LSP1 will be located approximately 200m west of the site.

The adjoining land uses are characterised by a small-scale transport depot immediately to the south, a poultry farm to the south east and the Western Australian Meat Industry Authority (WAMIA) livestock selling facility due east. All these established land uses are compatible with the future industrial developments to be delivered by LSP1.

The Muchea Town Centre is situated approximately 2km to the west of LSP1 and is the nearest concentration of sensitive land uses.



CLE TOWN PLANNING + DESIGN

2322-58A-01 (01.06.2017), Nts

LOCATION PLAN

Figure 2

1.2.2 Area and Land Use

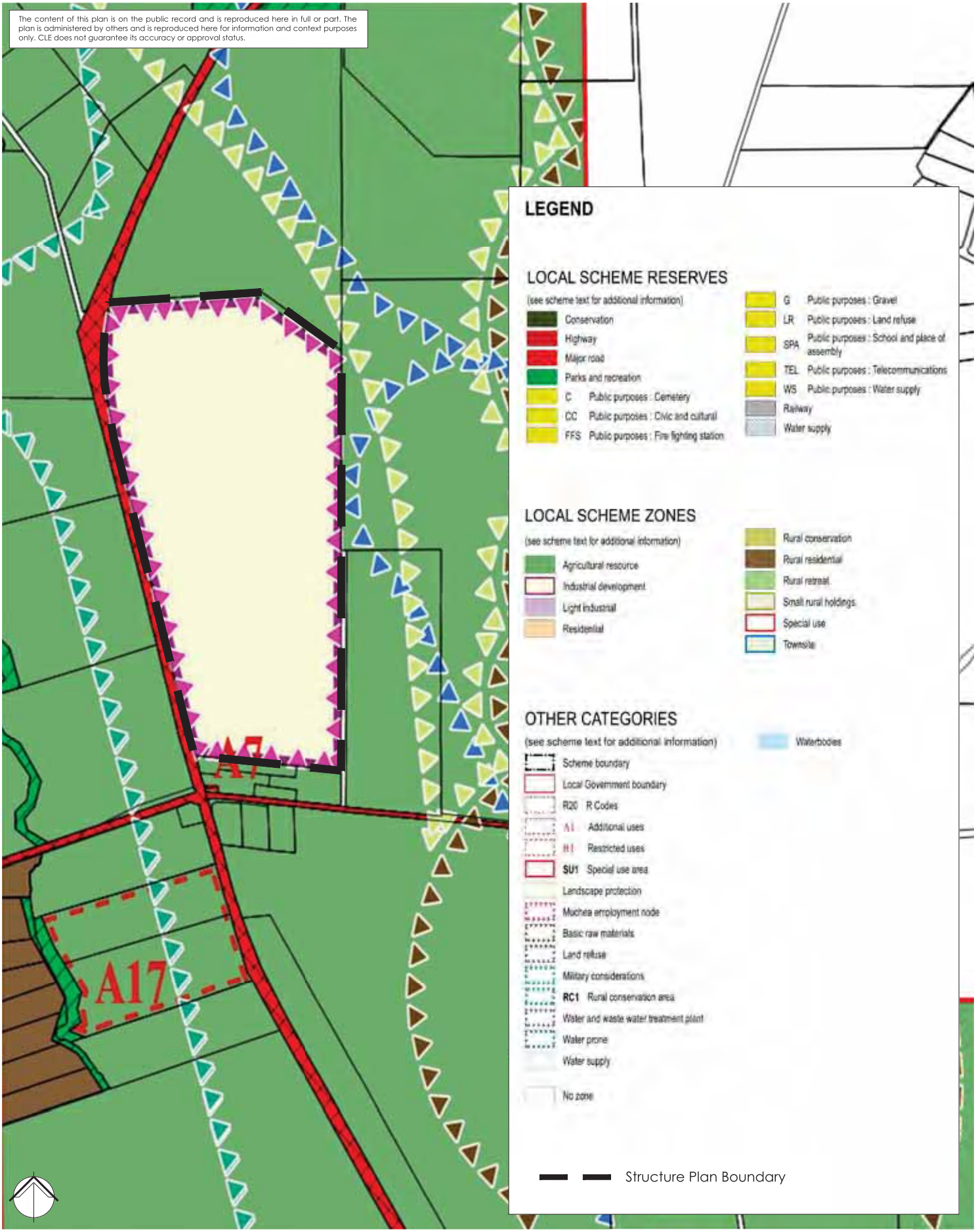
LSP1 comprises all of lot 102 Great Northern Highway, Muchea which has a total area of approximately 149ha.

The land is unimproved rural land which is currently used for livestock grazing and is predominantly cleared of vegetation in association with this use. Two pockets of consolidated vegetation exist consisting of one revegetated area within the central-western portion of the site and an area of Banksia woodland within the central-eastern portion, some of which is in degraded condition due to the impacts of cattle grazing. The cleared and unimproved nature of the land makes it ideally suited to industrial development without the need to undertake substantial clearing of vegetation or existing buildings.

1.2.3 Legal Description and Ownership

Lot 102 Great Northern Highway is in the single ownership of Sirona Capital, the proponent of LSP1.

The single ownership of the site provides numerous advantages in the development process and simplifies matters such as the distribution of roads, the location of local reserves and the siting of drainage infrastructure. Single ownership also allows for much simpler delivery of service and road infrastructure as no cost-sharing arrangements are necessary.



1.3 Planning Framework

1.3.1 Zoning and Reservations

Region Schemes

The LSP1 area is outside the boundary of the Metropolitan Region Scheme and does not fall within the jurisdiction of any other operational region scheme. As such, the Shire of Chittering TPS6 is the primary statutory planning instrument applicable to the LSP1 area.

Town Planning Scheme No.6 – District Zoning Scheme

The LSP1 area is appropriately zoned to support industrial development of the type envisaged by this structure plan. The LSP1 area is zoned 'Industrial Development' under TPS6. The Scheme Map also identifies the site within the 'Muchea Employment Node Special Control Area' (refer Figure 3). These zoning provisions were recently established upon gazettal of Amendment No. 52 to TPS6. Amendment No. 52 applied only to the LSP1 area, with the surrounding land within the MENSP area remaining in the 'Agricultural Resource' zone. The site is also located within the 'Military Considerations (RAAF)' and 'Water Prone Area – Ellen Brook Palusplain' Special Control Areas of TPS6, neither of which have any significant implications for the development of LSP1.

Schedule 15 of TPS6 sets out specific provisions for the Muchea Employment Node Special Control Area and requires the preparation of a structure plan over the site. The process for the lodgement, assessment and determination of the structure plan is set out under the *Planning and Development (Local Planning Schemes) Regulations 2015* ('the Regulations').

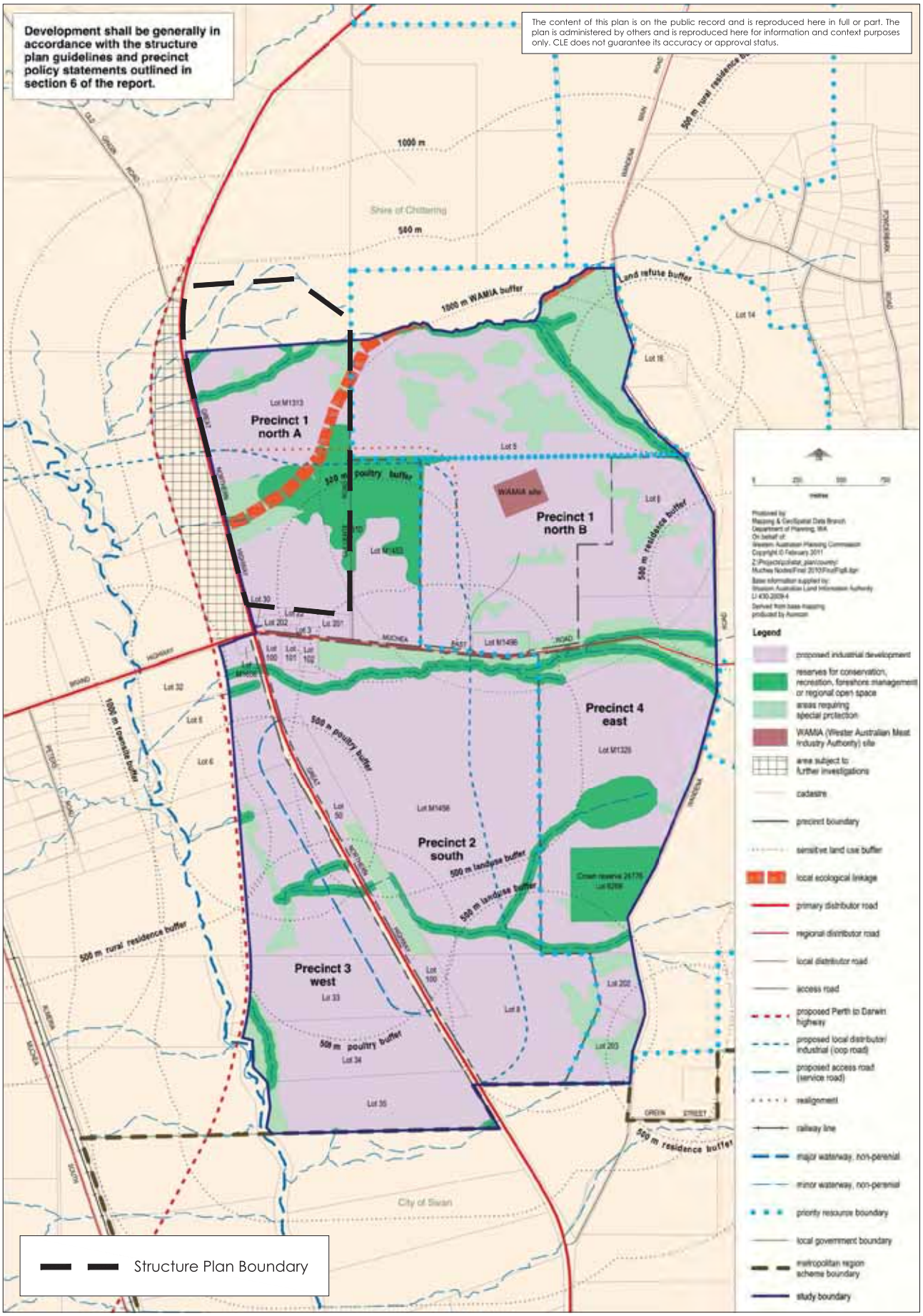
Schedule 15 of TPS6 sets out the necessary Environmental Management Plans which are to accompany structure plans within the Muchea Employment Node Special Control Area as follows:

- Local Water Management Strategy;
- Environmental Assessment and Management Strategy;
- Strategic Noise Assessment and Management Strategy; and
- Strategic Odour Assessment and Management Strategy.

In addition to the Environmental Management Strategies listed above, Schedule 15 of TPS6 also requires an Infrastructure and Servicing Strategy to accompany LSP1 and states that the Shire may also require a Transport Assessment and Management Strategy as an additional detail of a structure plan. Consistent with the requirements of Schedule 15 a Transport Assessment and Engineering Servicing Report have been prepared and accompany this structure plan.

The 'Water Prone Area – Ellen Brook Palusplain' Special Control Area ('the Water Prone Area') designation on the Scheme Map identifies the land as subject to inundation or flooding and requires planning approval for any development in relation to this. The purpose of the Water Prone Area, as outlined under clause 6.3.2 of TPS6 is:

a. *To manage development in areas where there is a high risk of inundation so as to protect people and property from undue damage and where there is a potential risk to human health.*


Development shall be generally in accordance with the structure plan guidelines and precinct policy statements outlined in section 6 of the report.
The content of this plan is on the public record and is reproduced here in full or part. The plan is administered by others and is reproduced here for information and context purposes only. CLE does not guarantee its accuracy or approval status.
Precinct 1 north A
Precinct 1 north B
Precinct 2 south
Precinct 3 west
Precinct 4 east
1000 m
500 m
1000 m WAMIA buffer
Land refuse buffer
320 m poultry buffer
WAMIA site
500 m residence buffer
500 m poultry buffer
500 m landuse buffer
1000 m townsite buffer
500 m rural residence buffer
Shire of Chittering
City of Swan
Legend
proposed industrial development
reserves for conservation, recreation, foreshore management or regional open space
areas requiring special protection
WAMIA (Western Australian Meat Industry Authority) site
area subject to further investigations
cadastre
precinct boundary
sensitive land use buffer
local ecological linkage
primary distributor road
regional distributor road
local distributor road
access road
proposed Perth to Darwin highway
proposed local distributor/ industrial (loop road)
proposed access road (service road)
realignment
railway line
major waterway, non-perenial
minor waterway, non-perenial
priority resource boundary
local government boundary
metropolitan region scheme boundary
study boundary
Structure Plan Boundary

b. *To preclude development and the use of land which may increase the amount of nutrients from entering the surface and/or sub-surface water systems.*

c. *To ensure that wetland environmental values and ecological integrity are preserved and mentioned.*

These matters are comprehensively addressed in the Local Water Management Strategy at Appendix 2. Further detail with regards to potential flooding and the structure plan response to this is contained within the Engineering Servicing Report at Appendix 3 and summarised within Section 3.10 of this report.

The 'Military Considerations (RAAF)' Special Control Area ('the Military Considerations Area') designation on the Scheme Map identifies the land as affected by flight paths in association with the Royal Australian Air Force Base Pearce. The purpose of the Military Considerations Area, as outlined under clause 6.5.2 of TPS6 is:

- *To protect the integrity of the operations of the RAAF Air Base Pearce and its flight paths and to provide conditions on development on land within the designated Special Control Areas which may be affected by noise.*
- *To minimise the number of people residing in the delineated flight path subject to significant levels of aircraft noise.*

The requirements listed under clause 6.5 for the Military Considerations Area relate to development applications and matters to be considered in their determination and do not specifically relate to the preparation of structure plans. Notwithstanding, the 'General Industrial' zone identified on the Structure Plan map and the land uses permitted (and prohibited) in the zone under Schedule 2 – Zoning Table of TPS6 are consistent with the purpose of the Military Consideration Area in that no sensitive land uses are permitted. The industrial land uses that are permitted within the LSP1 are entirely consistent with aircraft noise and the building heights generally associated with industrial development are not sufficient so as to impact on aircraft operations. Any potential building height issues that may arise however, can be appropriately addressed under the existing provisions of TPS6 at the development application stage. This is referenced under clause 5.5 of the Part 1 - Implementation Report although no further response within LSP1 is necessary in this regard.

1.3.2 Regional and Sub-regional Structure Plans

Muchea Employment Node Structure Plan (2011)

The MENSP was prepared by the Western Australian Planning Commission (WAPC) in consultation with the Muchea Employment Node Steering Committee, comprising representation from a number of key stakeholders including the local authorities of Swan and Chittering, environmental agencies, government departments, Landcorp, and MRWA.

The purpose of the MENSP is to elaborate on and refine the potential employment node identified in the North East Corridor Extension Strategy (WAPC 2003) and provide a more in-depth analysis of the boundaries of the employment node, the types of land uses within the node and any physical constraints to development.

The MENSP divides the structure plan area into five precincts, identifying LSP1 within Precinct 1 (north) A (refer Figure 4). Section 6.3.1 *'Precinct 1 (north A and B)* sets out the precinct policy statement in relation to the LSP1 area. Table 1 outlines these precinct policy statements and the LSP1 response to each.

CLE TOWN PLANNING + DESIGN

2322-69A-01 (01.06.2017), Nts

CONCEPT PLAN

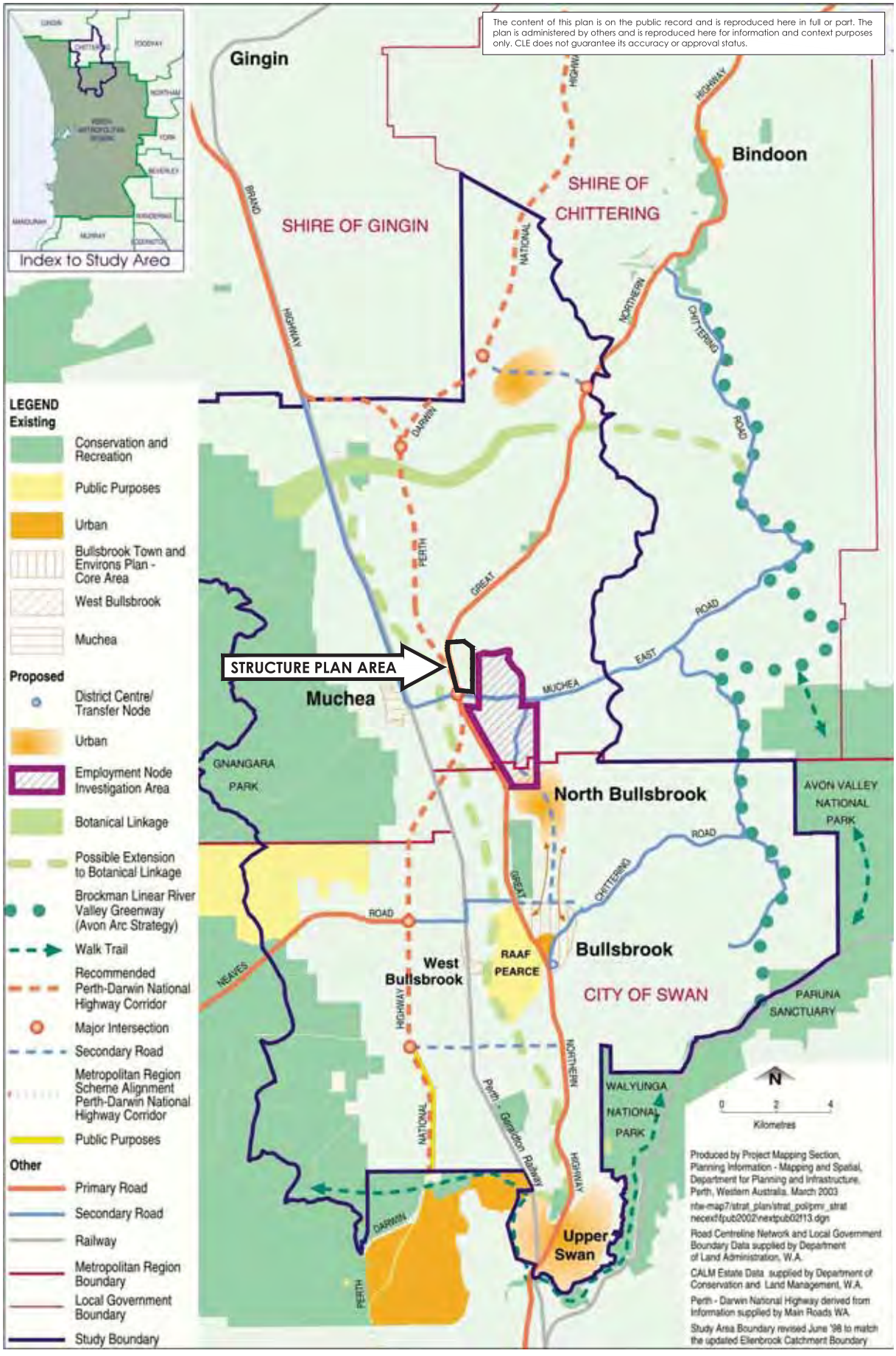
Figure 5

Table 1: Muchea Employment Node Structure Plan – Precinct 1 Policy Statement

	Policy Statement	Planning Response
1	*The waterways (plus 30m buffer), resource enhancement wetland (plus 50m buffer) and good quality remnant vegetation shall be protected within a reserve for Conservation, Recreation, Foreshore Protection or Public Open Space.*	The waterways, wetlands and significant vegetation within LSP1 are described in detail within the Local Water Management Strategy and Environmental Assessment Management Strategy at Appendices 1 and 3 respectively. The findings and management strategies in relation to the waterways and wetlands within LSP1 are outlined under Sections 2.1 and 3.5 of this report. Importantly, the findings of the technical reports in relation to the wetlands and waterways have been incorporated and reflected in the LPS1 map. Specifically, all existing REWs and waterways are located within local reserves for Conservation or Drainage / Waterways. A substantial portion of good quality vegetation is also retained with a local Conservation Reserve, as envisaged by the MENSP.
2	*Low water use type industries with a minimum lot size of 10,000m² may be established in this area unless the developer can demonstrate that wastewater generated can be adequately managed as per the requirements outlines in the water management strategy (April 2008) or a more detailed local water management strategy.*	Schedule 15 - clause 4.4 'Water Supply and Wastewater Disposal' of TPS6 generally limits land use within LSP1 to a Transport Depot, Storage, Warehouse or Landscape Supplies in the absence of a reticulated water scheme being available, thereby ensuring this objective of the MENSP is fulfilled. Further, Schedule 15 - clause 3.3 'Water Supply and Wastewater Disposal' requires that a "*reticulated water supply and wastewater disposal systems will be required at the first stage of subdivision*" adding further weight to this objective of the MENSP. The provision of a reticulated water supply and wastewater system are outlined within the Engineering Servicing Report at Appendix 3 and summarised under section 3.10 of this report. Minimum lot sizes will be confirmed at subdivision stage, although it is anticipated that the majority of lots will be a minimum of 10,000m² as demonstrated by the Concept Plan (refer Figure 5).
3	*For lots that do not require subdivision prior to development occurring, primary wastewater treatment shall be via aerobic treatment units followed by secondary treatment in evaporation ponds due to high groundwater levels.*	The waste water management strategy is outlined in the Engineering Servicing Report, refer Appendix 3. Consistent with this policy statement, wastewater treatment and management is proposed via aerobic treatment units within each lot.

This page has been left blank intentionally

	Policy Statement	Planning Response
4	*Development shall not conflict with the proposed Perth-Darwin National Highway road reserve and requirements external to it such as the interchange embankment build up and ramp constructions.*	The Concept Plan (refer Figure 5) demonstrates that development in accordance with LSP1 will not compromise the planned PDNH or associated interchange. LSP1's proximity to the future PDNH is a core principle in its preparation including extensive consideration of an interim and ultimate access scenario for the site. LSP1's relationship to PDNH is addressed in detail within the Transport Assessment at Appendix 5 which is summarised under Section 3.4 of this report.
5	*The district distributor A loop road shall be designed with provision for potential use as a high wide load route (to MRWA standards). The road shall be constructed as a median separated two-lane road, with an appropriate road reserve to provide for a future four-lane dual carriage way.* • The design vehicle shall be a triple road train and shall cater for nominated high wide load trailers and/or platforms. • The design shall be for an operating speed of 60km/h. • Drainage of the road shall be through the use of swales. • Consideration shall be given to avoidance of identified conservation reserves in the alignment of the loop road. • The developer shall construct appropriate access roads, which tie into the loop road, and suit the lot size and layout of the development.	LSP1 identifies the District Distributor road on an east-west alignment consistent with its location under the MENSP and allows for its extension beyond LSP1 as part of the development of surrounding areas. A 40m road reserve has been allowed within LSP1 consistent with the MESNP which includes provision for road side drainage swales. The design of the road will be addressed as part of the detailed subdivision process in association with the Shire of Chittering.
6	*Structures higher than 15, 45 and 90m across the precinct require referral to the RAAF.*	Clause 6.5.2 of TPS6 already provides statutory provisions for the consideration of development within proximity of the RAAF base. No further response within LSP1 is necessary in this regard as it would be a duplication of existing provisions.


The content of this plan is on the public record and is reproduced here in full or part. The plan is administered by others and is reproduced here for information and context purposes only. CLE does not guarantee its accuracy or approval status.
Index to Study Area
Gingin
Bindoon
SHIRE OF GINGIN
SHIRE OF CHITTERING
STRUCTURE PLAN AREA
Muchea
North Bullsbrook
Bullsbrook
West Bullsbrook
RAAF PEARCE
CITY OF SWAN
Upper Swan
GNANGARA PARK
AVON VALLEY NATIONAL PARK
PARUNA SANCTUARY
WALYUNGA NATIONAL PARK
BRAND HIGHWAY
NORTHERN HIGHWAY
GREAT NORTHERN HIGHWAY
CHITTERING ROAD
MUCHEA EAST ROAD
NEAVES ROAD
DARWIN
PERTH
Perth - Geraldton Railway
LEGEND
Existing
Conservation and Recreation
Public Purposes
Urban
Bullsbrook Town and Environs Plan - Core Area
West Bullsbrook
Muchea
Proposed
District Centre/ Transfer Node
Urban
Employment Node Investigation Area
Botanical Linkage
Possible Extension to Botanical Linkage
Brockman Linear River Valley Greenway (Avon Arc Strategy)
Walk Trail
Recommended Perth-Darwin National Highway Corridor
Major Intersection
Secondary Road
Metropolitan Region Scheme Alignment Perth-Darwin National Highway Corridor
Public Purposes
Other
Primary Road
Secondary Road
Railway
Metropolitan Region Boundary
Local Government Boundary
Study Boundary
N
0 2 4
Kilometres
Produced by Project Mapping Section, Planning Information - Mapping and Spatial, Department for Planning and Infrastructure, Perth, Western Australia. March 2003
ntw-map7/strat_plan/strat_pol/pmi_strat necext/pub0002/newtpub02f13.dgn
Road Centreline Network and Local Government Boundary Data supplied by Department of Land Administration, W.A.
CALM Estate Data supplied by Department of Conservation and Land Management, W.A.
Perth - Darwin National Highway derived from information supplied by Main Roads WA.
Study Area Boundary revised June '98 to match the updated Ellenbrook Catchment Boundary

1.3.3 Planning Strategies

North East Corridor Extension Strategy (2003)

LSP1 and the wider MENSP area are identified as an 'Employment Node Investigation Area' within the North East Corridor Extension Strategy (NECES), published by the WAPC in 2003. The NECES was prepared to provide a context with which to determine the most appropriate use of land and guide future urban growth within the North East Corridor and is the pre-cursor to the MENSP (refer Figure 6).

The NECES identifies the importance of an employment node to provide employment opportunities for the increasing urban population in the southern part of the Corridor. The NECES identifies an area of approximately 1,170 ha across the Swan and Chittering local government areas as an 'Employment Node Investigation Area'. The principles of the Employment Node Investigation Area are refined in more detail as part of the MENSP which is generally consistent with the NECES.

The relevance of the NECES is limited given the completion of the MENSP in 2011, which refined the vision established by the NECES. From its strategic identification within the NECES, the preparation and submission of LSP1 signifies the next step in the planning process for the MEN, providing a statutory framework to coordinate subdivision and development.

1.3.4 Planning Policies

State Planning Policy 4.1 – State Industrial Buffer

The WAPC's State Planning Policy 4.1 (SPP 4.1) provides a framework for protecting strategic industrial areas and essential infrastructure from potential land use conflicts related to surrounding sensitive land uses.

SPP 4.1 requires that new industry be located to provide and maintain an appropriate buffer between the proposed industrial land uses and nearby sensitive land uses. The SPP notes that 'core' industries should be located towards the centre of industrial areas, with industries with a lesser potential for offsite impacts to be located at the periphery. SPP 4.1 makes specific reference to the EPA's Guidance Statement 3, which defines 'sensitive land uses' and provides separation distances between them and industrial uses.

As outlined previously under part 1.2.2 of this report, LSP1 is surrounded by rural land zoned 'Agricultural Resource' under TPS6. The number of existing or proposed 'sensitive land uses' as defined in the EPA's guidance statement is therefore limited and comprises of not more than 2-3 residential dwellings, which are already within other land use buffers associated with existing industrial uses (poultry farms, WAMIA site).

There is no proposed urban development or intensification of sensitive land uses in the area which would give rise to the need for off-site buffers and no response is warranted in this regard. The alignment of PDNH immediately to the west of LSP1 will serve as a major buffer to any potential sensitive land uses to the west whilst the MENSP identifies the land to east and south as future industrial development. The land is therefore ideally suited to accommodate industrial development in accordance with its recent rezoning and does not have the potential to impact on sensitive land uses in the area.

Table 2: Agency Consultation

Agency	Date	Method	Agreed Outcomes
Main Roads WA (Wheatbelt North Region)	16/09/2015	Meeting to discuss Transport Assessment Scoping.	• Interim access from GNH agreed in principle subject to detailed design; • Primary access to LSP to be provided from PDNH interchange; • Direct lot access permitted to GNH once downgraded; • Traffic demand to be based on data extracted from MRWA IRIS datatbase and SCATS with growth factors to be applied; • Traffic distribution data will originate from available Northlink modelling; • Any distribution not modelled to be extrapolated between existing flows and modelled flows.
NorthlinkWA	17/09/2015	Meeting to discuss Transport Assessment Scoping.	As per above.
Shire of Chittering	21/10/2015	Meeting with Shire of Chittering to discuss LSP and traffic considerations.	• Confirmed likely staging of access and development of the site. • Discussed and confirmed RAV networks for the area. • Confirmed that GNH will be handed over to the Shire as a Local Distributor road once PDNH becomes operational. • LSP should identify the extent of redundant GNH to be re-used. • Confirmed that direct lot access to GNH will be permitted post-downgrading. • All roads within the LSP area will be designed and built generally in accordance with the standards specified in the MENSP.
Main Roads WA (Metro)	4/11/2015	Email confirmation from Justin McKirdy – Urban Road Planning Manager.	• Provided indicative intersection volumes around 2031 at the Northlink Interchange to Muchea which have informed the Traffic Assessment that accompanies LSP1.
Chittering Landcare Group	14/12/2015	Meeting with Chittering Landcare Group (Rosanna Hindmarsh) to discuss LSP and environmental matters.	• Existing water flows into Ellen Brook are already of a poor quality due to upstream impacts/activities. Development based on the LSP is therefore unlikely to have any additional impact on water quality flows into the Ellen Brook; • Emphasis should be placed on retaining the best areas of Banksia woodland abutting the eastern boundary. The revegated area abutting the western boundary is less significant as it was planted with foreign trees which are now significantly degraded.

1.3.5 Other Approvals and Decisions

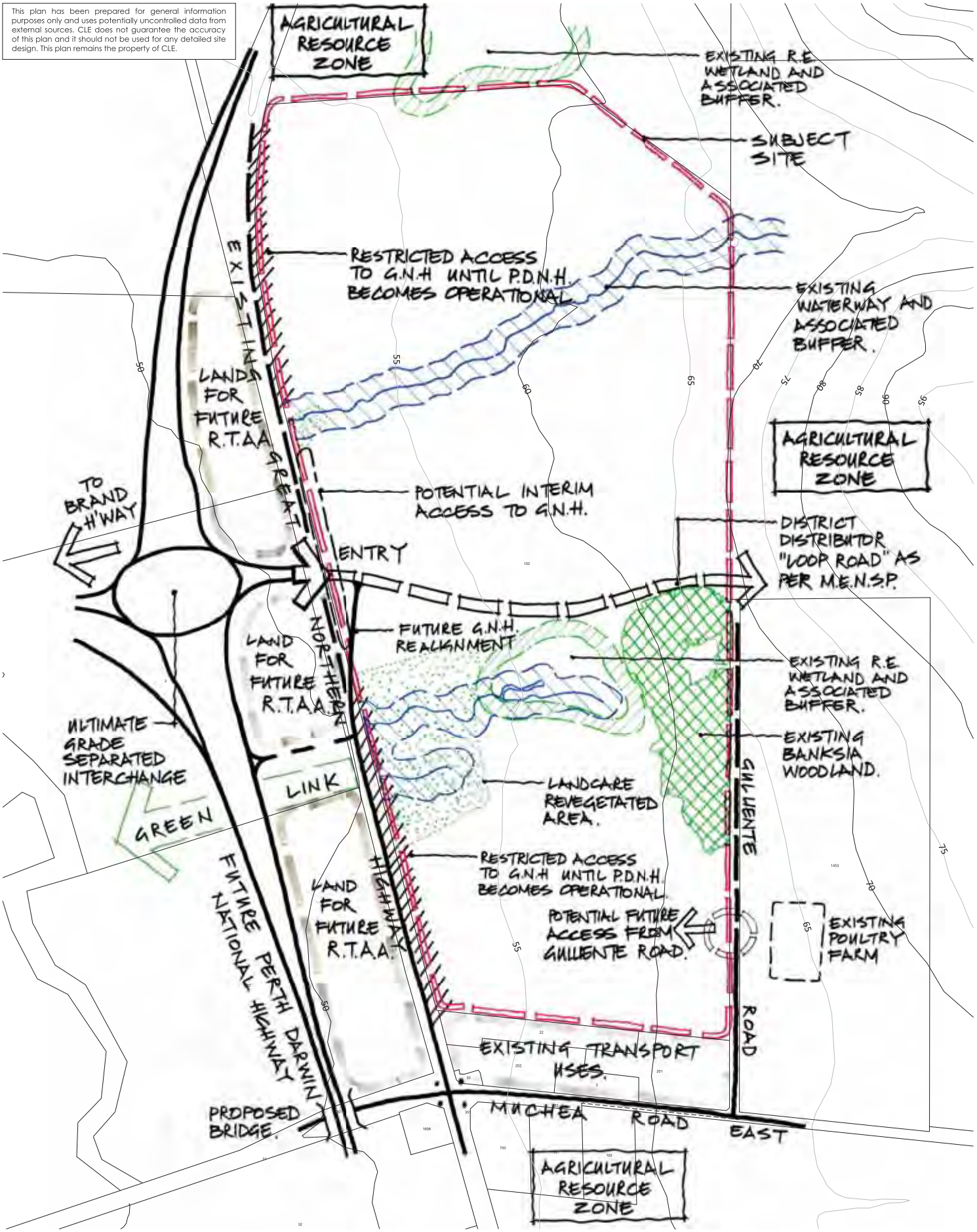
Amendment No. 52 to TPS6 was gazetted on 26 June 2015 and rezoned the land from 'Agricultural Resource' to 'Industrial Development'. As part of the Amendment No.52 process, the Environmental Protection Authority determined that the Amendment should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986.*

1.3.6 Pre lodgement Consultation

The preparation of LSP1 has included extensive consultation and liaison with key stakeholders and agencies, with feedback being incorporated into the design and technical analysis of the Structure Plan.

Of key influence to the Structure Plan was the project team's consultation with the Chittering Landcare Group, which resulted in modifications to the final version of the Plan. As a result of the Chittering Landcare Group consultation the Local Conservation Reserve has been extended to allow for the retention of an additional 0.6 ha of Banskia woodland and an additional 1.7ha of the revegated area abutting the western boundary. These modifications to the Plan represent a considered response to the local community's environmental values of the site.

Table 2 outlines the various agency consultation undertaken in the preparation of LPS1.



CLE TOWN PLANNING + DESIGN

OPPORTUNITIES & CONSTRAINTS PLAN

2322-66A-01 (01.06.2017), Nts

Figure 7

2.0 SITE CONDITIONS AND CONSTRAINTS

The LSP1 project team has undertaken a comprehensive review of the land and the surrounding area in order to understand and address all necessary characteristics and features associated with the land. This has included addressing all reporting requirements listed under Schedule 15 of TPS6 including environmental, water, traffic and servicing strategies. This section of the report outlines the key opportunities and constraints associated with the site and the LSP1 response to these. The 'Opportunities and Constraints' Plan (refer Figure 7) provides a visual representation of the key pre-development land use considerations for the LSP area.

2.1 Biodiversity and Natural Assets

Pursuant to Schedule 15 – clause 2.2.2 of TPS6, an Environmental Assessment and Management Strategy (EAMS) has been prepared by Emerge Associates in support of LSP1 and is included in full at Appendix 4. Importantly, the EAMS confirms that beyond the natural environmental features that are to be retained as part of the LSP, the site is relatively devoid of any other natural features worthy of retention and no Environmentally Sensitive Areas as prescribed under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* are declared as occurring within the site.

The EAMS refines the level of detail and the volume of work undertaken through the scheme amendment process in the preparation of the Environmental Assessment Report. The investigation undertaken as part of the scheme amendment process found that "*the environmental attributes and values within the site can be accommodated and/or managed through the preparation of an appropriate local structure plan and environmental management framework proposed through the scheme provisions. As such there are no significant environmental issues or constraints within the site to the extent that it would preclude the site from being rezoned to Industrial Development.*"

The Amendment was referred to the Environmental Protection Authority (EPA) as part of the Shire's assessment process, where it was determined that the Amendment should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986*. The recommendations of the EPA referral and the LSPs response are discussed in further detail under section 3.5 of this report.

The majority of the site has been historically cleared of native vegetation to support agricultural land uses. Remnant vegetation within the site is generally limited to areas adjacent to waterways and wetlands, in addition to scattered paddock trees. Some revegetation works have historically been undertaken in the western portion of the site.

A spring flora and vegetation survey was undertaken in October 2012, which identified a significant level of disturbance to vegetation with most of the site identified to range from a 'Completely Degraded' to 'Degraded' condition. Importantly, no occurrences of Threatened or Priority Flora were identified within the site during the survey. The central portion of the site was identified as containing the most extensive areas of remnant vegetation, extending in an east-west corridor to which the LSP recognises and responds.

The spring flora and vegetation survey identified eight plant communities within the site. Whilst none of these are classified as Threatened Ecological Communities, one Priority 3 Ecological Community (PEC) was identified in association with the Banksia Woodland. The LSP makes provision for the retention of a substantial portion of the Banksia Woodland which is discussed in further detail under section 3.5 of this report.

Fauna, habitat values within the site are limited given the significant historical disturbance to remnant vegetation. In order to identify fauna habitat values, a site specific assessment was undertaken in January 2013 which included a desktop assessment and a site survey. The site survey identified foraging evidence of two fauna species of conservation significance being the Forest Red-tailed black cockatoo and the Carnaby's black cockatoo. It is important to note that no direct observations of these species occurred and that only foraging evidence was encountered. No evidence of black cockatoo roosting or breeding was observed within the site and no other species of conservation significance were identified as occurring. A number of trees were identified as potential cockatoo breeding habitat trees and the LSP's response to this is discussed in further detail under section 3.5.

Opportunities exist for the LSP to respond to the existing fauna, flora and vegetation values of the site through the the provision of strategically located and aligned local reserves, which are consistent with the location of remnant vegetation and associated fauna habitat (including black cockatoo habitat). Specifically, a number of remnant plant communities, including an area of Banksia woodland and a portion of the revegetated areas could be retained, limiting the environmental impacts of the proposed industrial development and maintaining the ecological linkage functionality of the site.

2.2 Land form and Soils

The landform and soil conditions are highly suited to industrial development and the site does not require extensive fill or excavation to accommodate development or to address poor soil quality conditions. This is a significant advantage as it minimises dust issues and sedimentation of waterways. It also allows for minimisation of civil costs during construction, ensuring that the land can be delivered to the market at a cheaper rate than other planned industrial estates elsewhere.

The site is situated in the eastern extent of the Swan Coastal Plain, at the base of Gingin Scarp and is generally flat with a gentle westerly slope, with an elevation ranging from 70 m AHD in the east to 51 m AHD in the west. The surface geology of the site is dominated by colluvial processes of the Gingin Scarp, comprising pebbly silt and sand. Based on landform and soil characteristics, the site is suitable for industrial development.

2.3 Acid Sulfate Soils

Acid Sulfate Soil (ASS) risk mapping provided by the Department of Environment Regulation indicates the site is classified as having no known risk of ASS occurring within three metres of the natural soil surface. Contrary to the Department of Environment's mapping, Chittering Landcare advised that ASS is present in the locality. Irrespective, any future ASS considerations can be identified and suitably managed during the subdivision process according to the WAPC's *Acid Sulfate Soils Planning Guidelines* (2008).

2.4 Groundwater and Surface Water

Consistent with the requirements of TPS6 and the WAPC's Better Urban Water Management Guidelines, LSP1 is supported by a comprehensive Local Water Management Strategy, prepared by project hydrologists Emerge Associates (refer Appendix 2). The following summarises the key hydrological considerations for the LSP1 area, as set out in the LWMS.

Groundwater

Maximum recorded groundwater levels across the site are between 0 and 1.18m below ground level (BGL) and are conducive to industrial development. The LSP1 earthworks and site level response to groundwater is comprehensively addressed in the LWMS and Engineering Servicing Report (refer Appendices 2 & 3) which demonstrate that existing groundwater levels can be adequately managed as part of the development of the site.

Surface Water

The site is situated within the Ellen Brook catchment with the Ellen Brook located approximately 650m to the west of the site.

There are a number of surface water features within the site including wetlands, some minor man-made drains and natural waterways. There are opportunities to recognise and enhance wetlands and waterways as part the Structure Plan design, which will seek to mimic the existing hydrological regime as closely as possible with minimal disturbance to the natural features.

There are two Resource Enhancement Wetlands (REW) located either wholly or partly within the site. The REWs and their associated buffers are recognised and retained within Conservation Reserves as depicted on the Structure Plan Map, consistent with the recommendations of the EAMS and LWMS. The LSP1 response to the retention of the hydrological features and the strategies for their ongoing management are discussed further under section 3.5 of this report.

There are three main drainage channels that convey surface water through the site comprising a southern waterway, central waterway and northern flow path. All three hydrological features flow from east to west across the site and are contributed to by flows from upstream catchments as well as from runoff generated within the site. The most significant of the three are the southern and central channels which have been retained on their existing alignments and appropriate management measures incorporated as part of LSP1. The northern flow path is less significant and poorly defined and is proposed to be diverted to accommodate development, discharging from the site in the same location/ volumes as currently exists. The three drainage features are described as follows:

- The southern waterway is a natural channel that is not well defined. It receives flows from a small upstream catchment via overland flow and is contained within an Ecological Linkage which also contains an REW. There are opportunities to retain and improve this flow path through appropriate use of buffers, reservations and ongoing management strategies.

- The central waterway is a clearly defined, highly eroded natural channel with steep side slopes and minimal vegetation within the channel and adjacent banks. The waterway runs across the width of the site and is fed by a large upstream catchment with significant flows observed following large rainfall events. Due to the clearly defined nature of the flow path there are opportunities to retain the waterway within a local reserve on its existing alignment, which includes appropriate land use buffers.
- The northern flow path is not clearly defined and is identified by natural depressions in topography along the northern boundary of the site. Flows within the northern flow path are seen in response to large rainfall events due to surface runoff from the small contributing catchments. Due to its poorly defined nature, the LSP can potentially refine the flow path, allowing for greater land efficiency and improved water quality.

Surface water flows are conveyed downstream of the site via a number of culverts beneath GNH along the western boundary of site, with all surface water flows ultimately discharging into the Ellen Brook.

2.5 Heritage

A review of local, state and federal databases undertaken as part of the EAMS did not identify any European heritage values as occurring within or in proximity to the site.

The Department of Aboriginal Affairs (DAA) online database identifies one Registered Aboriginal Heritage Site and one Other Heritage Place as occurring over a large area that includes the site, the details of which are outlined in Table 3.

Table 3: Aboriginal Heritage Site

NAME	DAA ID	Status	Area	Type
Gingin Brook Waggyl Site	20008	Registered	108,061 ha	Historical, mythological
Ellen Brook: Upper Swan	3525	Lodged	20,819 ha	Mythological

Both heritage sites are known to cover extensive areas of the greater Perth region, generally associated with the Ellen Brook watercourse and upstream catchment areas. On this basis existing environmental values within the site which may represent Aboriginal heritage values are likely to be limited to existing waterways and associated riparian vegetation, if they are confirmed to be present within the site.

A request will be submitted to the DAA prior to subdivision to seek clarity on this matter to support the subdivisional phase of the project. In the interim, a conservative approach to the accommodation of potential Aboriginal heritage values has been taken in the preparation of LPS1. Given that Aboriginal heritage values are likely to be limited to existing waterways and associated riparian vegetation, these areas have been incorporated into local reserves affording them a level of protection. Further refinement of the local reserves may be required at subdivision stage following the outcomes of any future Aboriginal heritage investigations, subject to the advice provide by DAA.

2.6 Bushfire Hazard

Whilst there is no requirement for the preparation of a Bushfire Hazard Assessment or Bushfire Management Plan in association with industrial development, the EAMs has considered potential bushfire management strategies in association with the development of LSP1.

The majority of the site has been historically cleared for livestock grazing and general agricultural uses thereby significantly reducing potential bushfire hazards within the site. Vegetation that may have the potential to pose a bushfire hazard is subsequently limited to remnant areas of bushland within the site adjacent the proposed local reserves and surrounding the site associated with wetlands located to the north and west. The LSP1 response to potential bushfire hazards is discussed further at section 3.6 of this report.

2.7 Context and other Land use Constraints and Opportunities

2.7.1 Transport and Access

The site's location immediately adjacent the existing GNH and the future PDNH / Brand Highway interchange makes it a prime location to accommodate large scale freight and logistics type land uses. These uses rely on the regional road network as a core component of their business to access the agricultural and mining / resource regions in the north of the State. This strategic location was a fundamental component in the site's identification for industrial development in the MENSP and its subsequent rezoning to 'Industrial Development' under TPS6.

The key existing external roads that will provide access to and from LSP1 are outlined and described as follows:

Great Northern Highway

GNH is currently under the control of MRWA and is classified as a Primary Distributor road. GNH is limited to Network 7 Restricted Access Vehicles (RAV) where it abuts LSP1 and for its length between Perth and Wubin. GNH is currently subject to an upgrade programme which will enable the movement of Network 10 RAV vehicles (road trains) to travel between Wubin and Muchea, which is a significant opportunity to deliver large scale freight, logistics and transport uses within the LSP area.

GNH plays a strategic role in the movement of freight between Perth and northern regions of WA. It is a two-lane, two-way undivided road with a 9m wide carriageway set within an approximate 47m wide road reserve and currently carries approximately 4,300 vehicles per day.

Until such times as PDNH construction is completed in 2019, GNH will function as the primary road connection for LSP1 providing limited access to the site. Once the PDNH is operational, GNH will be downgraded to a Local Distributor road and will fall under the management of the Shire of Chittering. The Shire and MRWA have both confirmed that direct lot access to GNH will be permissible once PDNH is operational.

Brand Highway

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

Brand Highway is a two-lane, two-way undivided road with a 9m wide carriageway set within an approximate 30m wide road reserve (approx). Current traffic counts indicate an average daily volume of 4,200 vehicles west of GNH.

As part of the construction of the PDNH, it is proposed to create a new bypass extending west from PDNH and connecting to the existing Brand Highway on the north side of the Muchea townsite. The future upgrading of Brand Highway has limited implications for LSP1, however does allow for more direct access to the site for users of the Brand Highway.

Muchea East Road

Muchea East Road is under the control of the Shire of Chittering and classified as a Regional Distributor road. It is listed as a Network 7 RAV road for approximately 1.2km of its length immediately east of GNH. Whilst it will not provide direct access to LSP1, Muchea East Road does provide access to Gulliente Road which abuts the eastern boundary of the site.

Muchea East Road is a two-lane, two-way undivided road with an approximate 8m wide carriageway set within a 20m wide road reserve (approx) and carrying approximately 900 vehicles per day. The role it plays in terms of the access strategy for LSP1 is limited to the extent that it provides access to Gulliente Road.

Gulliente Road

Gulliente Road is under the control of the Shire of Chittering and classified as an Access Road. It is sealed for the first 310m north of Muchea East Road with a width of between approximately 6.5m to 7m wide. Gulliente Road is a two-lane two-way undivided road set within an approximate 20m wide road reserve.

Although LSP1 does not rely on it for access, Gulliente Road provides an opportunity to access developable land within the south east corner of LSP1 without the need to fully construct the internal road network.

2.7.2 Main Roads WA Road Train Assembly Area

The planned RTAA abutting the western boundary of the site creates further opportunities for LSP1 to accommodate land uses that support the RTAA. It is understood that the RTAA will serve as a breakdown area for large RAV 10 (road train) freight vehicles heading south along PDNH which are required to convert into shorter RAV 7 vehicles before continuing into the Perth metro area. This RTAA provides a unique opportunity for a wide range of compatible service based industries to locate within LSP1, with the RTAA serving as the 'anchor tenant'. Conversely, these supporting land uses immediately adjacent will provide a substantial benefit to the planned RTAA operation by enabling essential services such as repairs and maintenance to occur in immediately proximity. This provides a high level of convenience and efficiency for the RTAA operations which will assist to minimise downtimes resulting in significant time and cost savings to industry.

2.7.3 Servicing

LSP1 is capable of being provided with all essential service infrastructure required to facilitate industrial development, as demonstrated by the Engineering Servicing Report (refer Appendix 3). Potential servicing considerations and suitable responses were identified by the proponent during the scheme amendment process and conditions requiring local structure plans to include details regarding the provision of reticulated water, waste water and power infrastructure were subsequently implemented. LSP1 addresses all service infrastructure requirements as discussed in further detail at section 3.10 of this report.

The timely delivery of service infrastructure to the site could potentially serve as a catalyst to encourage further development of currently unserviced areas within the MENSP.

2.7.4 Odour

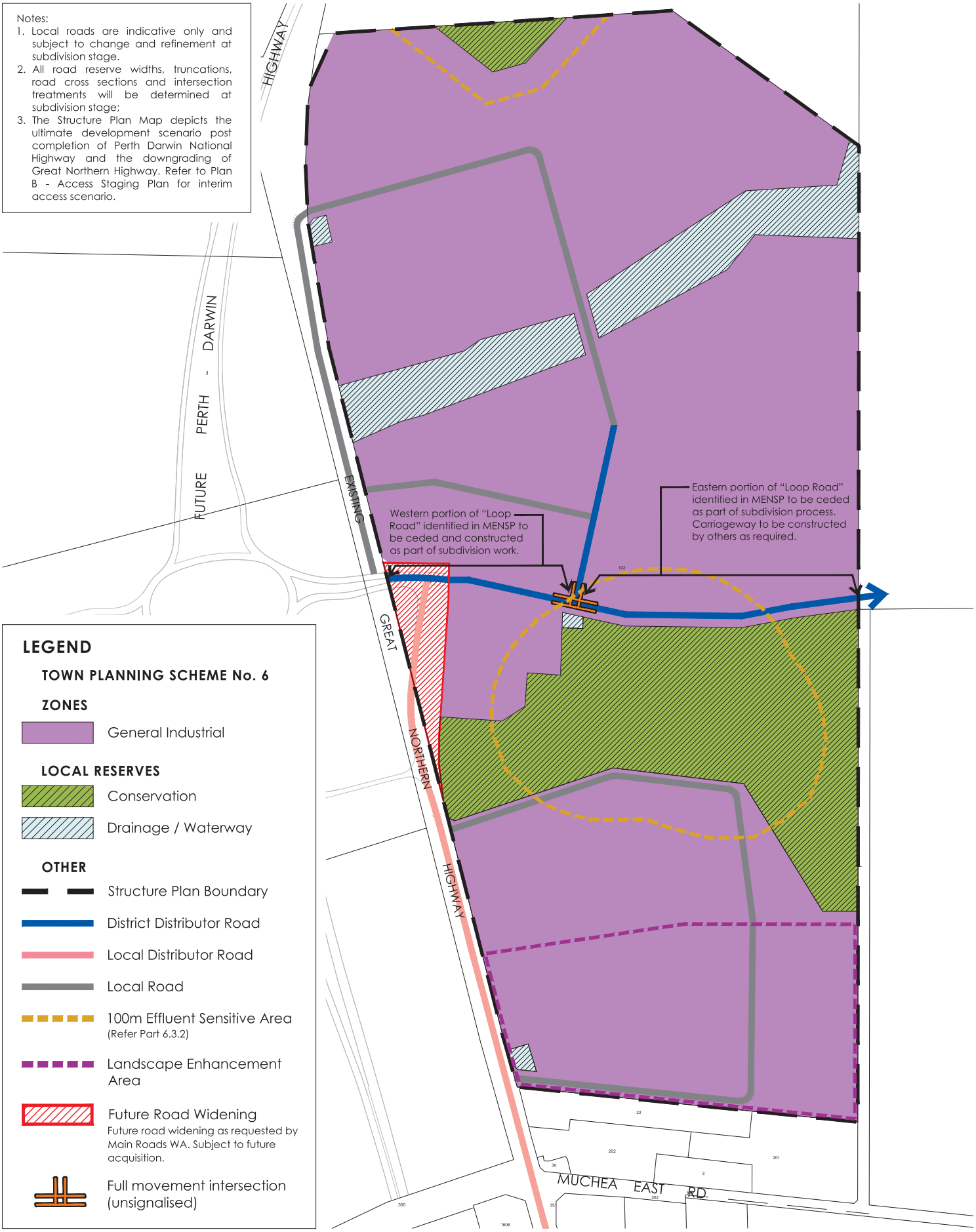
Pursuant to Schedule 15 of TPS6, a Strategic Odour Assessment and Management Strategy ('the Strategy') has been prepared by Emerge Associates to accompany LSP1 (refer Appendix 6). The Strategy has been prepared as a framework to manage and minimise the potential odour impacts associated with industrial development within LSP1 on sensitive land uses in the locality. The LSP1 response to managing potential odour in association with future industrial land uses is outlined in further detail under section 3.7 of this report and recognises that, due to the nature of the likely end users and the absence of any nearby sensitive land uses, odour impacts are likely to be minimal.

2.7.5 Noise

Development of LSP1 is not expected to have adverse noise impacts given the locational context of the site, its proximity to a major highway and the substantial separation distances between it and any sensitive land uses. Schedule 15 of TPS6 states that the Shire may require a Strategic Noise Assessment and Management Strategy be prepared to accompany submission of a structure plan within the MEN Special Control Area. Management of potential noise emissions is difficult to address on such a large scale as LSP1 given the highly specific nature of the potential noise source. The most appropriate course of action is therefore that noise assessments should only be required on a case by case scenario as determined by the Shire of Chittering at the development application stage, once the nature of the end use is understood.

Further discussion on the consideration of noise impacts and the LSP1 response is included in section 3.8 of this report.

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 Perth Darwin National Highway and the downgrading of Great Northern Highway. Refer to Plan B - Access Staging Plan for interim access scenario.



3.0 LAND USE AND SUBDIVISION REQUIREMENTS

3.1 Plan Overview and Land Use Description

LSP1 provides a framework that is both robust and flexible, ensuring that subdivision and development can proceed with certainty whilst remaining responsive to the end user's needs.

The LSP1 Concept Plan at (refer Figure 5) indicatively demonstrates how development could occur on the site consistent with the principles and requirements of LSP1. The LSP1 Implementation Plan (refer Figure 8) included in the Part 1 report, provides the implementation framework and development principles based on the Concept Plan. The Concept Plan represents just one way that development could occur within the framework of the Implementation Plan. The final subdivision design will be a further refinement of the Concept Plan, consistent with the principles established via the Implementation Plan.

The fundamental principles of LSP1 are:

- Providing a land use response that recognises the site's strategic location and function within the broader district context.
- Establishing a framework that supports and promotes land uses that capitalise on the site's location in immediate proximity to the planned PDNH and Brand Highway interchange, and recognising the change to the classification of GNH to allow Network 10 RAV vehicles to travel as far south as Muchea.
- Creating opportunities to accommodate large scale, transport based industrial uses through the provision of a robust internal road network and flexible lot sizes that integrate with, and capitalise on, the PDNH / Brand Highway interchange.
- Acknowledging the wetlands, waterways and best quality remnant vegetation that traverse the site and ensuring that adequate interface treatments are provided.
- Developing a comprehensive drainage network that reflects the pre-development hydrology of the site and respects the downstream catchment, including the Ellen Brook.
- Enabling the timely delivery of suitable service infrastructure to support staged industrial development of this scale.
- Addressing the principles and requirements of TPS6 with particular regard to Schedule 15.

Based on the above principles, LSP1 will enable the development of:

- Approximately 111 ha of 'General Industrial' zoned land that is able to accommodate a broad range of land uses.
- A large scale industrial estate that is expected to create an estimated 500 - 600 local jobs and employment opportunities within a catchment of the existing Muchea town site and the planned residential expansion of the Bullsbrook Townsite as identified in the WAPC's Sub-regional Frameworks.
- Land uses that capitalise on and support the planned RTAA and PDNH / Brand Highway interchange immediately to the west of the LSP1 area.

- An integrated and connected internal road network, ensuring that heavy vehicles can move safely and efficiently throughout the estate and integrate with the regional road network, as well as providing opportunities for future industrial precincts to the east to link with LSP1 and connect to PDNH.
- A staged access strategy to GNH based on it being downgraded to a local distributor road once PDNH becomes operational and the opportunities for direct lot access that this will afford.
- The coordinated provision of essential infrastructure in a simplified manner as facilitated by the single ownership of the site.
- A managed interface to the site's environmental attributes, ensuring the provision of adequate buffers, management of introduced weeds and controlled access.
- A series of landscaped detention basins and bio-retention areas on the western periphery of LSP1 designed and landscaped to treat stormwater before discharging into the broader network. These basins are landscaped spaces, specifically designed and sized to meet drainage requirements, whilst also ensuring ongoing maintenance is minimal.
- The management and conveyance of arterial and development drainage in a manner that mimics the pre-development hydrology and is in accordance with the principles of water sensitive urban design.

3.2 Land Use

LSP1 is ideally located to enable a diverse range of general industrial uses, primarily focused on freight / logistics, agricultural service industries and large scale set-down / storage areas. The most appropriate zoning under TPS6 for LSP1 is therefore 'General Industrial'. This zoning is consistent with the intent of the MENSP and will allow for a wide range of industrial development without adversely impacting on surrounding land uses.

Industrial land uses within any given industrial estate are diverse and have differing requirements with respect to lot size, configuration and location. LSP1 has been developed so as to be flexible in responding to industrial land use demands however, it is expected that land use will be predominantly related to freight and logistics based activities given LSP1's strategic geographical location, proximity to major regional transport infrastructure, the planned RTAA adjacent to the site and its ability to deliver large lot sizes.

Land use permissibility within the General Industrial zone will be in accordance with the TPS6 zoning table that was modified by virtue of Amendment No.52.

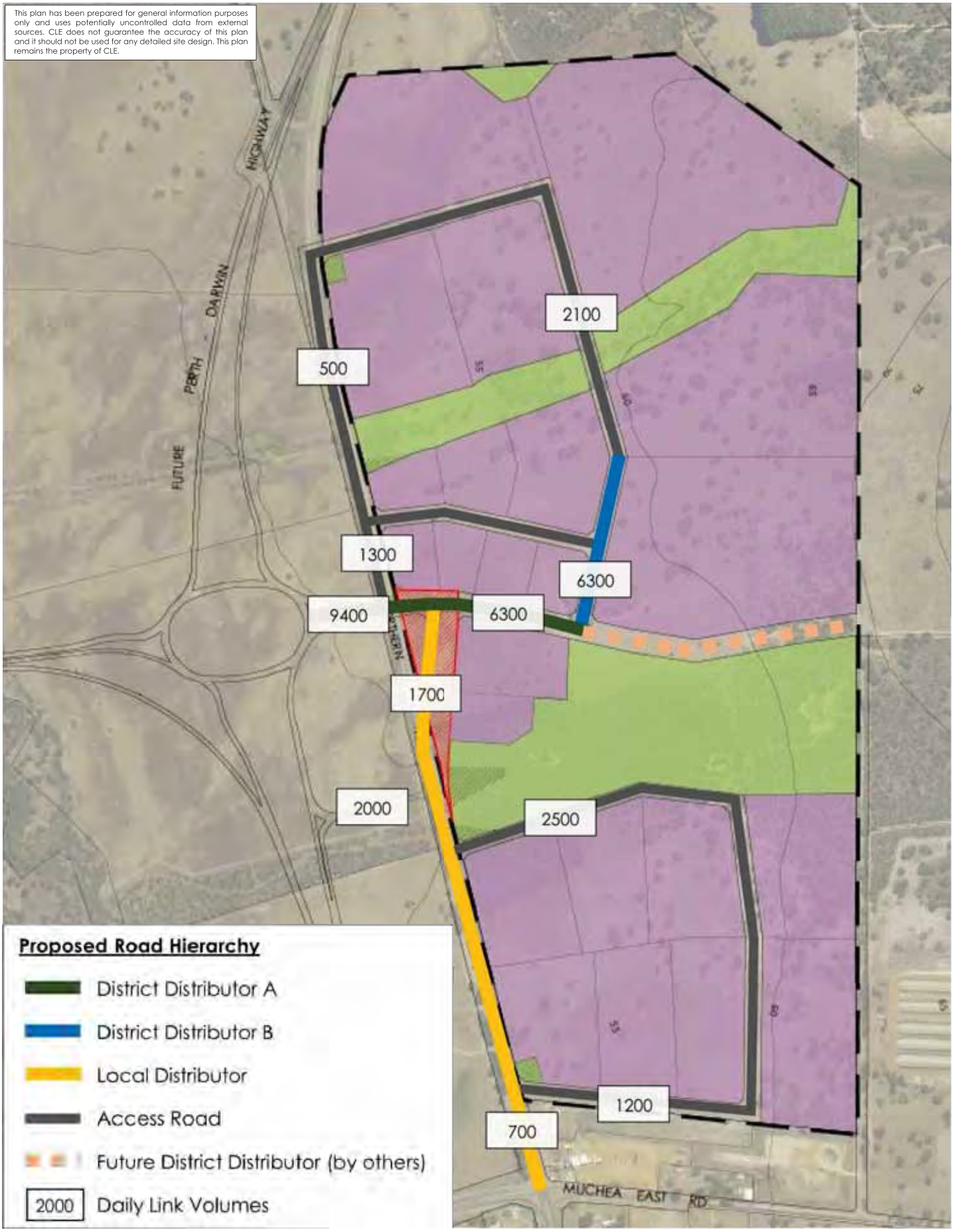
3.3 Built Form and Development Standards

It is essential that any built form control within the MENSP balances amenity expectations without compromising the efficient use of land by imposing unnecessary development controls. There are no specific development controls within TPS6 or the Shire's policy framework that provide guidance for the development of General Industrial zoned land. The Shire may elect to prepare a local planning policy to guide built form within the MENSP, however it is essential that any such policy recognizes the need to allow maximum flexibility and to provide for low cost, large scale industrial operations. As such, development controls should be limited to such matters as building setbacks and minimum landscaping requirements.

In addition to the requirements of any local planning policy, the land owners may choose to implement some basic estate-wide design guidelines at subdivision / development stage to ensure a standard of visual amenity and uniform patterns of development. Design guidelines could potentially address detailed design matters such as:

- Fencing materials / colours;
- Façade treatments / colour schedules;
- Landscaping species; and
- Signage locations / sizes.

It is important to note that these guidelines would be separate from the statutory planning and building approvals processes and would be enforced by the developer as opposed to the City, through contracts of sale and other mechanisms.



Source: GTA Consultants

2322-70A-01 (01.06.2017), Nts

ROAD HIERARCHY

Figure 9

3.4 Movement Network

LSP1 identifies a comprehensive and fully integrated road network which considers interim and ultimate access scenarios from GNH and PDNH, combined with strategic internal routes that allow for the safe and efficient movement of traffic.

A Transport Assessment (TA) has been prepared by GTA Consultants to accompany LSP1 (refer Appendix 5), which considers the site's integration with, and potential impact on, the existing transport networks with a primary focus on vehicular travel, but also including walking, cycling, and public transport opportunities. The TA has been prepared in accordance with the WAPCs '*Transport Assessment Guidelines for Development*' and relevant local policies of the Shire of Chittering and considers:

- Existing traffic conditions proximate to the site;
- Future (non-development) related transport network upgrades proposed in the region including the planned RTAA;
- Adequacy of the proposed internal road network layout and intersection configuration;
- The traffic generating characteristics of the proposal; and
- The anticipated impact of the proposal on the surrounding road network at ultimate development.

The assessment and analysis of traffic implications for LSP1 has included an ongoing dialogue with MRWA (regional and metro offices as well as the Northlink project team) and the Shire of Chittering in order to ensure that the most up to date demographic and land use assumptions are consistently applied and to ensure that the agencies are in agreement with respect to the key traffic principles of LSP1.

3.4.1 Arterial Road Network - Capacity

The existing external road network, including current traffic volumes has been discussed in detail in section 2.6.1 of this report.

As part of the TA, GTA has undertaken comprehensive traffic forecasting in order to ensure that the capacity of the external road network is sufficient to accommodate the traffic generated from the LSP area. This forecasting confirms that there is sufficient capacity within the planned upgrades to the external road network, without the requirement for any additional works as part of LSP1.

3.4.2 Arterial Road Network - Access

LSP1 provides a comprehensive access strategy to the arterial network for both the interim and ultimate scenarios. Safe, efficient and direct access between the regional road network and LSP1 is essential to the successful development of the MEN. Significant changes to the regional transport network in proximity to LSP1 are planned in the form of the Northlink WA project and the proposed construction of PDNH and Brand Highway bypass approximately 200m to the west of the site. Key to the preparation of LSP1 is the need to 'future proof' the access scenario and planned road/intersection locations so that they seamlessly integrate with PDNH whilst also providing interim access from GNH. Given these major infrastructure works, commencement of any significant development within the LSP1 area is likely to be deferred by the proponent until such time as PDNH is constructed and the interchange to the west is operational.

Interim Access Scenario

LSP1 allows for interim access to/from GNH, recognising opportunities for the realisation of some low-scale interim uses (most likely limited to an unmanned fuel pumping station) that will ultimately be removed upon completion of PDNH and Brand Highway interchange. The interim access scenario is likely to comprise of an unsignalised 'T' intersection on GNH, approximately 1km to the north of the current Brand Highway intersection. The access will be designed to cater for the vehicle types that are expected to use it which will be determined at the development application stage in consultation with MRWA and the Shire of Chittering. GTA's analysis concludes that the land uses that may be accommodated under the interim scenario are not expected to generate significant additional traffic volumes and that users of the facility will mostly be limited to existing passing traffic along GNH.

Ultimate Access Scenario

A key element of LSP1's ultimate road network is the delivery of a large-scale interchange adjacent the western boundary of the LSP1 area, linking west towards Brand Highway. It is understood that the PDNH and the associated interchange is likely to be operational by 2019. LSP1 provides direct access to the planned interchange from the east in the form of a 40m wide District Distributor Road.

The planned interchange with PDNH will provide the primary access to the site and will drive the first stages of the ultimate development within LSP1.

The key principles of the ultimate access scenario are:

- Primary access to the site from the north and south via PDNH and the future planned interchange immediately west of LSP1;
- Access from the PDNH interchange via the planned east-west District Distributor road, depicted in the MENSP as a 'loop road';
- Land set aside for the planned RTAA and the road network designed to suit;
- The opportunity to accommodate a roadhouse and service-based industrial uses on suitable lot sizes in closer proximity to the interchange and RTAA;

- Local road and direct lot access to GNH once it has been downgraded and transferred to the care of the Shire; and
- Access to lots via local roads that create a logical and permeable network with reserve widths and intersection designs to accommodate expected vehicle types.

The Concept Plan (refer Figure 5) demonstrates the ultimate access scenario and a potential network of local roads based on the principles described above.

3.4.3 Internal Road Network

LSP1 provides a robust internal road network that follows a logical hierarchy determined by a combination of higher order planning, forecast traffic volumes and intersection capacity, as outlined below.

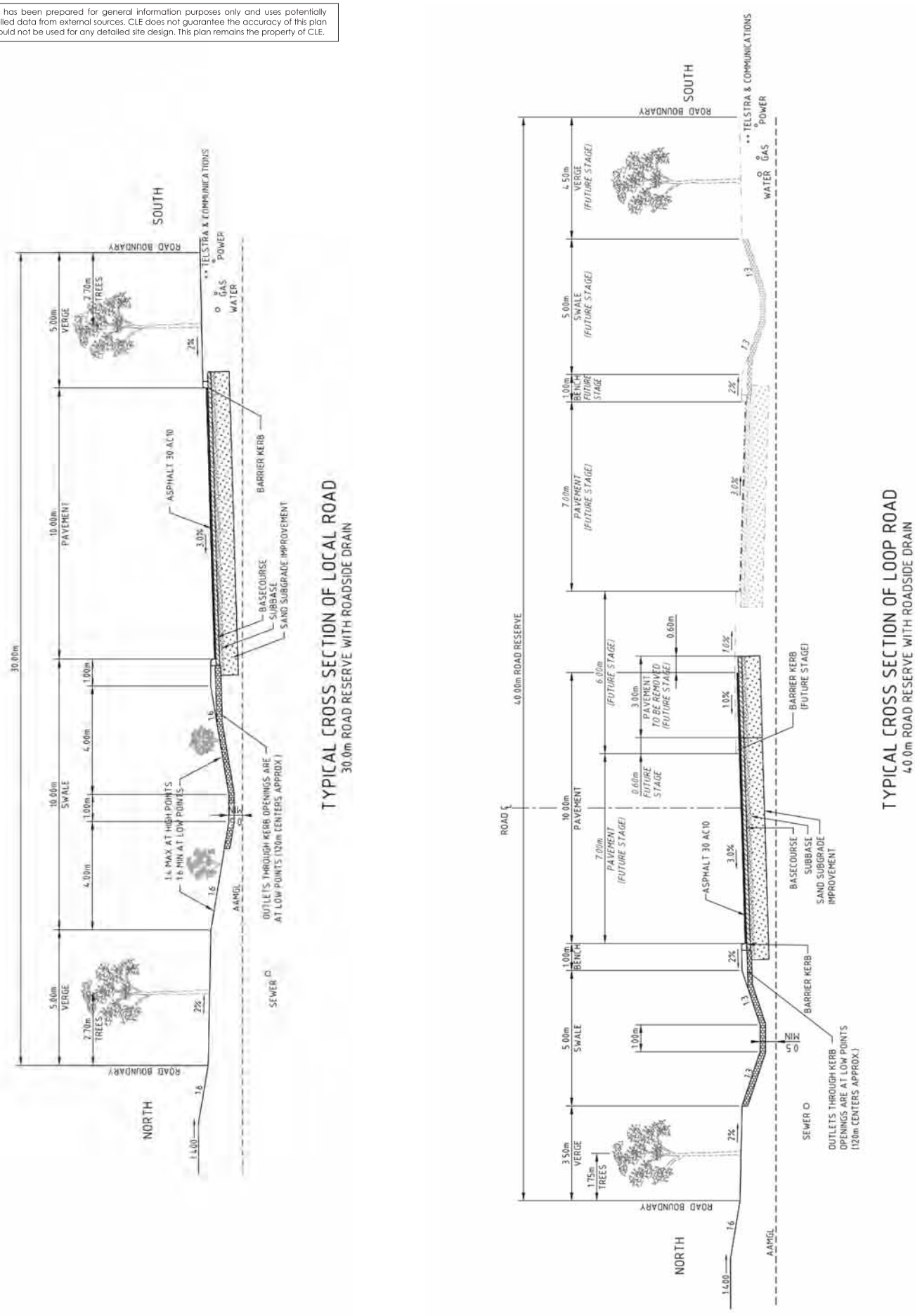
District Distributor (Industrial Loop Road)

A key feature of the LSP internal road network is the east-west road that connects directly to the PDNH / Brand Highway interchange to the west. The east-west road is identified as a 'proposed local distributor – industrial loop road' in the MENSP (refer Figure 4) which is intended to service the wider MEN. LSP1 refines the detail of this loop road and ensures that it will integrate seamlessly with the future network.

Consistent with the TA, LSP1 identifies the loop road as a District Distributor Road (refer Figure 9). The District Distributor classification is cognisant of the forecast traffic volumes generated by the development of LSP1, which are anticipated to be in the order of 9,400 vpd at the western end adjacent to the interchange (District Distributor A), decreasing to approximately 6,300 vpd (District Distributor B) further to the east.

Consistent with the MENSP, a 40m road reserve will accommodate the District Distributor road as a single carriageway road and will allow future duplication of the road (4 lanes) should future demand warrant it as surrounding areas develop (refer Figure 10). It is important to note that the traffic generated by the development of LSP1 can be easily accommodated within a single carriageway (2 lanes), and therefore there is no need for the Loop Road to be constructed to its ultimate standard as part of the development of LSP1. The 40m reserve and the District Distributor classification will ultimately provide capacity for approximately 30,000 vpd. Whilst the MENSP contains indicative cross-sections for the 40m wide loop road, final designs will be resolved as part of the detailed subdivision design process in liaison with the Shire of Chittering.

LSP1 allows for the future connection of the loop road beyond its eastern boundary although it is important to note that only the portion of road necessary to service developable land within LSP1 will be constructed. The eastern portion of the loop road which is not required to service LSP1 will be constructed by other landowners who need access to the road to service their land. Whilst the eastern portion will not be constructed by LSP1, the road reserve will be ceded to allow for the future extension of the road when necessary.



Source: Cossill & Webley

INDICATIVE LOCAL ROAD AND LOOP ROAD CROSS SECTIONS

2322-68A-01 (01.06.2017), Nts

Figure 10

Great Northern Highway

As noted previously, upon the PDNH being completed in 2019, GNH will be downgraded to a Local Distributor road with its northern termination at the east-west loop road described above. The future classification of this portion of GNH has been discussed and agreed with the Shire of Chittering and MRWA during the preparation of LSP1 (refer Table 2). GNH will continue to function within its existing reserve of 47m and there is no requirement for further widening or upgrades in association with LSP1, other than localised works at planned intersections.

This portion of GNH is forecast to carry approximately 1,700 vpd at its northernmost extent, with volumes likely to be considerably lower at the southern extent of the LSP area (approx 700 vpd). LSP1 includes two intersections onto this portion of GNH, being two Local Roads planned within the southern precinct. These intersections will operate as unsignalised T intersections with priority to GNH. GTA's analysis concludes that these intersections can operate at an adequate level of service without any formal intersection control.

As discussed and agreed with MRWA and the Shire of Chittering, direct lot access to the downgraded portion of GNH is permissible.

Local Road Network

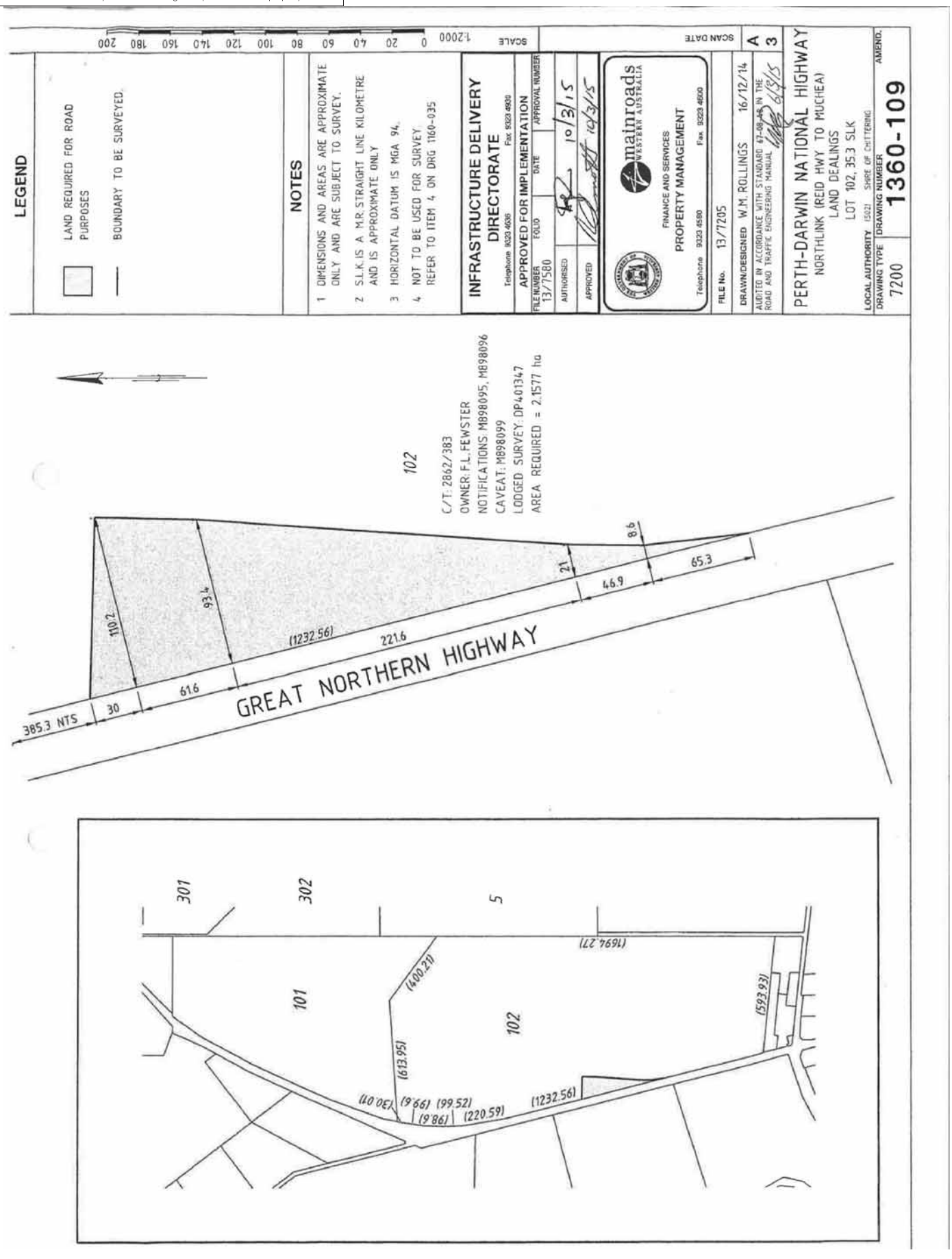
The Concept Plan (refer Figure 5) depicts a network of local access streets that allow for efficient circulation of internal traffic, whilst also minimising intersections and recognising the need to accommodate roadside drainage. All local road reserves are likely to be 25m-30m and capable of accommodating a 10m wide pavement, verges and roadside drainage swales (refer Figure 10). Precise reserve widths and locations will be confirmed with the Shire of Chittering and WAPC at subdivision stage.

The local road network is premised on two internal 'loop' roads, located to the north and south of the east-west District Distributor, as described below.

- Northern Loop

The northern loop utilises a portion of the redundant GNH reserve to the north of the interchange, with a parallel road located further to the east. These two north-south roads are connected by a short east-west link to the north and the District Distributor road to the south. A portion of the easternmost north-south road is forecast to carry higher volumes of traffic in the order of 6,300 vpd, and as such is classified as a District Distributor B road. GTA has confirmed that a single carriageway (two lanes) within a 30m reserve is sufficient to accommodate this volume of traffic.

GTA's analysis confirms that the intersection of the two District Distributor B roads can perform at a suitable level of service without signalisation at ultimate development. In the short to medium term it is anticipated that the easternmost extent of the east-west District Distributor B road will not be constructed as it is not required to facilitate development of LSP1. This will enable the priority movement to continue to the north unobstructed. When the District Distributor B loop road is ultimately extended (by others), any modifications to this intersection will need to be considered at this point and possibly funded via a Development Contribution Plan or similar arrangement.



Source: Main Roads WA

2322-67A-01 (08.06.2017), Nts

MAIN ROADS WA LAND TAKE PLAN

Figure 11

- Southern Loop

The southern loop is premised on two intersections to GNH along the western edge of the LSP area, with a loop road connecting the two. This loop is forecast to carry relatively low volumes of traffic and is intended to provide local access to the southern precinct.

Intersections to GNH will be delivered as warranted by demand and will be funded by the proponent.

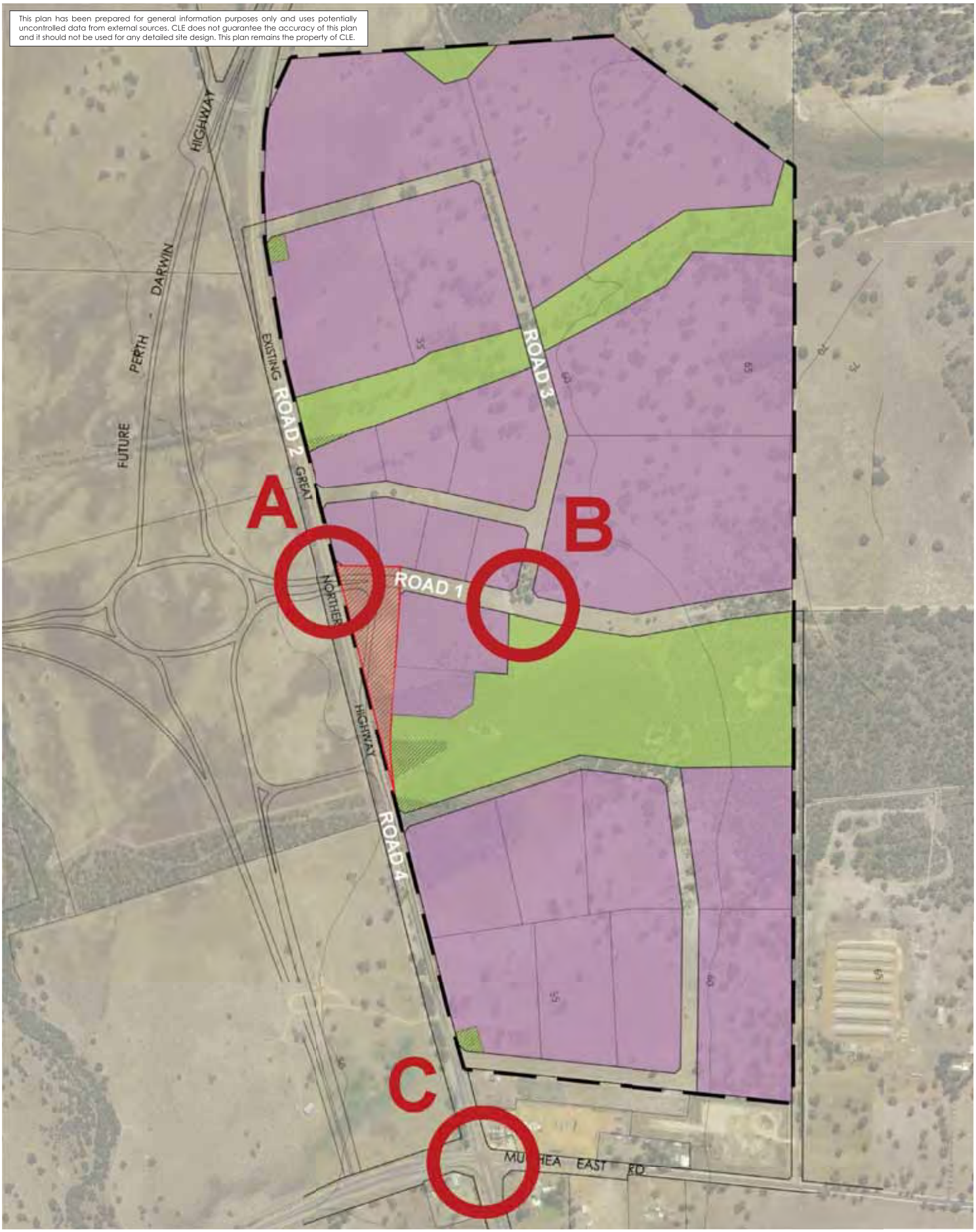
- Gulliente Road

The existing Gulliente Road reserve provides an opportunity to access the south-east corner of the site via existing constructed road reserves in addition to or in lieu of GNH, however, whether this occurs or not will be dictated by development staging and market demand. Whilst the road reserve can accommodate future access if required, it is acknowledged that the road carriageway and Muchea East Road intersection may require minor upgrades to accommodate vehicles greater than RAV 2. Further detail in this regard is provided within the TA at Appendix 5.

3.4.4 Main Roads WA Road Widening

As noted previously, MRWA has advanced plans to develop an RTAA abutting the western boundary of LSP1. MRWA has issued the landowners of lot 102 with a 'Notice of Intention to Take Land' in association with the RTAA, PDNH, and termination of GNH for the area identified by the MRWA Land Take Plan (refer Figure 11).

LSP1 has been prepared to allow for the land-take and will not prejudice its future occurrence. All expected lot designs, road layouts and drainage infrastructure for LSP1 have been prepared with the ultimate RTAA scenario in mind.



Source: GTA Consultants

2322-71A-01 (08.06.2017), Nts

INTERSECTION LOCATIONS

Figure 12

3.4.5 Intersection Analysis

GTA's traffic assessment includes comprehensive SIDRA modelling of intersection performance for key intersections at both interim (2018) and ultimate (2031) development scenarios. The analysis concludes that:

- In the interim scenario (unmanned fuel pump with direct access to GNH), access on to GNH will function adequately with minimal upgrades to GNH and no requirement for signalisation; and
- In the ultimate scenario, all tested intersections will operate within acceptable levels of service based on the intersection treatments proposed via this structure plan.

GTA's traffic assessment (refer Appendix 5) contains further detail on the SIDRA analysis and intersection performance. The modelled intersections are depicted at Figure 12 of this report.

3.4.6 Pedestrians, Cyclists and Public Transport

Given the existing rural nature of the LSP1 area and surrounds and the relatively long distances to nearest residential areas (in excess of 3km to Muchea and Lower Chittering), it is not anticipated that significant walking or cycling demand will be generated to or from the site. Adequate provision will be made however, for walking and cycling within LSP1 via the provision of shared paths along one side of the internal roads. The specific location and alignment of the shared paths will be determined at subdivision stage.

Public transport bus services currently operate on GNH in the form of long distance regional services. No bus stops currently exist abutting the site however, if the provision of services is deemed necessary in the future a bus stop can be provided on the upgraded section of PDNH, adjacent LSP1. In the event that any local bus services are planned in or through LSP1, the road network and intersection designs will be more than capable of accommodating them given that they have been designed for RAV 7 and RAV 10 vehicles.

3.5 Wetlands, Waterways and Environmental Management

LSP1 achieves a balance between delivering a large scale strategic employment node and respecting the existing envrionmental attributes within the site . Notwithstanding the fact that the site was recently rezoned to 'Industrial Development' in its entirety, the areas of land identified for development by LSP1 have been carefully considered so as to recognise and respect the natural features and attributes. This was achieved via two key approaches:

1. Ensuring that the LSP design responds to key environmental attributes through the inclusion of suitable buffers, interface treatments and appropriate reservations; and
2. Including requirements for further, more detailed environmental reporting and management plans at future subdivision and development stages.

LSP1 is informed by a comprehensive Environmental Assessment and Management Strategy (EAMS) prepared in consultation with key environmental agencies and provides the framework that has informed the LSP response, which is summarised as follows.

Local Ecological Linkage

LSP1 retains the local ecological linkage identified in the MENSP through the central portion of the site within a local Conservation Reserve. The extent of the ecological linkage aligns with the ecological values that contribute to it and retention of this area is consistent with the informal advice of the EPA provided during the scheme amendment process. The ecological linkage contains remnant vegetation as well as the southern waterway, REW and notional 30m buffer. The ongoing management of the remnant vegetation, waterway and REW will be detailed in a subsequent Flora, Vegetation, Wetland and Waterway Management Plan (FVWWMP) which is to be prepared (where relevant) to support subdivision in accordance with Schedule 15 of TPS6.

Recognising the linkage within a local Conservation Reserve maintains the connectivity of remnant vegetation across the site, providing linkage functionality for fauna and flora. The reservation of this key linkage will allow for it to be managed and protected from clearing or development in the long term, meeting the objectives of TPS6. Access for maintenance and management is provided via the local network which directly abuts the Conservation Reserve for all of its northern boundary and the majority of its southern boundary. The abutting roads also serve as an appropriate interface treatment by providing a hard edge which assists to minimise the potential impacts of development on the linkage. The detailed FVWWMP to be prepared during the subdivision design process will address the interface treatments to be implemented where developable land abuts the Conservation Reserve.

The extent of the local ecological linkage and corresponding reserve was the subject of detailed discussions with the Chittering Landcare Group during the preparation of the LSP. The boundary of the Conservation Reserve has since been extended to include an additional 2.3ha of waterways and vegetation on the advice of the Landcare Group.

Resource Enhancement Wetlands

LSP1 ensures a considered and appropriate response to the two REWs mapped as occurring within the site. LSP1 proposes to retain the REWs within local Conservation Reserves, including provision for indicative 30m buffers in accordance with standard management practices. The retention of the REWs within local reserves will maintain the ecological and hydrological assets of the wetlands primarily through the protection of remnant riparian vegetation and maintenance of existing hydrological regimes.

The future management of the REWs will be detailed in the FVWWMP, which will include confirmation of buffer distances, required management actions and maintenance requirements. The implementation of the FVWWMP will facilitate the avoidance and mitigation of impacts from adjacent industrial development on the REWs.

Banksia Woodland

LSP1 enables the retention of the best quality areas of Banksia woodland located centrally within the site through its inclusion in a local Conservation Reserve and provision of a hard edged road interface along the majority of the reserve boundary.

As part of the informal advice provided in association with the scheme amendment process, the EPA recommended that an ecological corridor transecting the central portion of the site be considered as part of the structure plan process. This would serve to retain the Banksia Woodland plant community and Yanga complex which were determined to be in 'good' condition.

The LSP responds to the recommendations of the EPA and the advice of the Chittering Landcare Group, allowing for the retention of the best quality areas of the Banksia woodland and Yanga complex. Given the generally poor condition of vegetation within the site, retention has been prioritised to the areas of vegetation in the best condition, namely the portion of Banksia woodland adjacent the central-eastern boundary.

It is expected that incorporating the Banksia woodland into a local Conservation Reserve will allow for its retention, with the exception of minor clearing for edge treatments, miscellaneous access tracks, bushfire related infrastructure and any required earthworks to facilitate drainage requirements. The FVWWMP will further detail the ongoing management and protection of the woodland in association with subdivision works and future development.

Revegetated Area

An area of the site abutting the western boundary and adjacent the southern waterway has been historically revegetated which is understood to have been undertaken in the 1990's by the local Landcare group. The vegetation condition of this area is mapped as being in a 'Completely Degraded' to 'Degraded' condition and pre-lodgement consultation with the Chittering Landcare Group identified the retention of this revegetated area is a low priority given its degraded nature.

Notwithstanding, the extent of the southern local Conservation Reserve incorporates a substantial portion of the revegetated area into a local Conservation Reserve that will assist to ensure that it is respected and retained.

Remnant Vegetation and Associated Fauna

LSP1 provides a considered response to the existence of potential cockatoo habitat trees consistent with the informal advice provided by the EPA during the scheme amendment process, that management of this habitat should be provided for through the structure planning process.

Whilst the site is zoned 'Industrial Development' in its entirety, LSP1 provides for retention of fauna habitat values through the strategic location of local reserves which intersect remnant vegetation, waterways and wetlands. Areas of intact remnant vegetation have been prioritised for retention, as they provide for higher value fauna habitat given the greater species richness, vegetation condition and habitat linkage compared to the heavily disturbed areas of the site, which contain comparatively low-quality fauna habitat.

With specific regard to black cockatoos, the primary foraging values are associated with the area of Banksia woodland in the eastern portion of the site. As outlined in the previous section, up to 5ha of this habitat is proposed to be retained through the provision of a local Conservation Reserve. In addition, up to 61 potential black cockatoo breeding habitat trees can be retained in association with other reserves. Whilst it is difficult to retain scattered trees in association with development, further consideration will be given to opportunities to retain significant trees at the subdivision design stage whereby concerted efforts will be made to align lot boundaries so that trees may be located within anticipated building setback areas or areas that are unlikely to be developed. This provides further opportunities to retain significant trees where facilitated by earthworks and infrastructure.

The future management of fauna habitat within the site, including black cockatoo habitat, will be addressed within the FVWWMP at subdivision stage, which will provide an interface management framework for developing areas adjacent to retained areas of fauna habitat.

As a separate process post-finalisation of LSP1, the proposed development of the site may be voluntarily referred to the Commonwealth Department of Environment by the landowner pursuant to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). This will allow for any potential impacts to either species as a result of implementing the proposed industrial development of the site to be accurately quantified. Requirements under the EPBC Act are separate to the state statutory planning process and can be progressed concurrently or following the approval of LSP1 by the WAPC.

3.6 Bushfire

As referenced previously in this report, industrial development does not incur a Bushfire Attack Level (BAL) rating under Australian Standard 3959: Construction of buildings in bushfire-prone areas. The Building Code of Australia provides suitable fire suppression and management standards for industrial buildings which are demonstrated and assessed at the building permit stage of development. Notwithstanding, LSP1 is capable of accommodating the following bushfire management provisions in order to minimise the potential risk associated with bushfire:

- Cell layouts and lot sizes that allow buildings to be setback from any potential bushfire hazards;
- An interconnected road network with numerous access points to and from the site providing emergency vehicles with the necessary access and egress points;
- A reticulated water supply for use in fire suppression in addition to any internal lot water supplies (rainwater tanks); and
- Road interfaces or access tracks along local reserves.

Implementation of the above strategies assists to ensure that if there is a bushfire within or near the site, the threat to the public, property and emergency response personnel will be reduced. It is acknowledged that a Bushfire Management Plan may be required as a condition of subdivision approval for areas that are potentially affected. Given the size of the LSP1 area, each stage may be subject to varying degrees of potential risk and this approach will allow for each stage of subdivision to respond to any specific bushfire matters. Importantly, the large lots sizes that will be created under LSP1 can easily accommodate any potential building setbacks or Asset Protection Zones that may be required as part of a subsequent Bushfire Management Plan.

3.7 Odour Management

The potential odour impact of industrial land uses in association with LSP1 is expected to be negligible and limited by:

- The minimal number of sensitive land uses within proximity of the site. Only 10 dwellings are located within 1km of LSP1 and only 3 of these are within 250m;
- The presence of other existing land use buffers in association with established development on nearby properties as depicted on the MENSP (refer Figure 4). A number of the dwellings referenced above are already located within these land use buffers; and
- The anticipated land use that will occur within LSP1. The vast majority of development within LSP1 is likely to be large scale transport/logistics operators which by nature do not generate odour.

Notwithstanding the above, a Strategic Odour Assessment and Management Strategy ('the Strategy') (refer Appendix 6) has been prepared to accompany LSP1 and demonstrates that potential nuisances in association with odour can be appropriately managed. The Strategy outlines:

- A framework to consider the future protection of sensitive land uses from new industrial emissions;
- Specific guidance on how emissions will need to be managed within LSP1; and
- Considerations for future users and the Shire of Chittering as part of subdivision and development.

Given the wide range of potential industrial uses that may occur within LSP1, only those uses that are known to result in nuisance or offensive odour will be required to address the odour management measures as outlined within the Strategy as per clause 5.4.2 of the Part 1 – Implementation Report. Importantly, if these types of land uses are identified by the Shire at the development application stage, the Strategy provides an effective framework for considering these types of developments and their siting within LSP1.

3.8 Noise Management

Clause 5.4.1 of the Part 1 – Implementation Report provides the Shire of Chittering with discretion to require that a Noise Management Plan be prepared to accompany any proposed development applications that may have the potential to cause a nuisance with regards to noise. Management of potential noise emissions is difficult to address on such a large scale as LSP1 given the highly specific nature of the potential noise source and the uncertainty surrounding the nature of future land uses. It is more appropriate to address noise only where it is identified as having the potential to cause a nuisance, the occurrence of which within LSP1 is expected to be minimal based on anticipated land uses.

This approach ensures that potential noise generating land uses are effectively managed so as to not cause a nuisance to surrounding sensitive uses but acknowledges the fact that noise will only be an issue for specific uses in specific locations within LSP1. It is supported by the following factors, which further demonstrate that addressing noise-specific development at a structure plan scale is unnecessary:

- All surrounding land is zoned 'Agricultural Resource' and is not capable of accommodating any concentration of sensitive land uses;
- The MENSP identifies the land to the east and south of LSP1 for industrial development and any future changes in the zoning with regards to this land will be industrial;
- GNH currently abuts the western boundary of LSP1, with the PDNH to be constructed further west (approximately 200m) by 2019. These regional roads generate frequent noise and are considered to be a greater source of noise and potential nuisance than development within LSP1. Based on this, they effectively serve to provide a noise buffer between LSP1 and land to the west; and
- A number of the existing residences within proximity of the LSP1 are already located within land use buffers in association with established land uses.

This page has been left blank intentionally

3.9 Water Management

LSP1 considers and responds to the existing hydrological features and characteristics of the site which has resulted in the integration and retention (where possible) of existing waterways and wetlands into the overall design. The Local Water Management Strategy (LWMS) that accompanies LSP1 (refer Appendix 2) has been prepared based on the principles of best practice water sensitive urban design and seeks to mimic the existing hydrological regime as closely as possible by maintaining existing flow paths, discharge rates and discharge locations. The existing well-defined and direct drainage paths over the site allow for a simple structure plan response which aims to limit the potential impact of development on the natural water cycle consistent with the Better Urban Water Management Guidelines as published by the WAPC.

The LWMS expands on the volume of work undertaken as part of the District Water Management Strategy which accompanied the scheme amendment process and establishes clear water management strategies that will underpin future Urban Water Management Plans in association with future subdivision.

The following outlines the LWMS response to the ongoing management of groundwater and surface water in order to address the requirements of Better Urban Water Management.

3.9.1 Groundwater Management

LSP1 provides a comprehensive response to the management of groundwater within the site utilising the following key principles:

- Finished floor levels of buildings will have a clearance to maximum groundwater level of at least 0.5m; and
- Groundwater quality leaving the site should be the same, or better than the water entering the site.

To maintain the necessary clearance to groundwater in areas with a shallow depth, fill will be imported to ensure that the minimum distance between groundwater and the surface level is met.

Groundwater quality will be maintained or improved by reducing the total nutrient load into groundwater that originates from newly developed areas by reducing the use of fertilisers and treating surface water runoff prior to infiltration to groundwater.

The use of native vegetation for landscaping will be implemented where possible and will be detailed further as part of the subsequent UWMP process. This will assist to minimise fertiliser requirements and therefore the nutrient load that could be transported to the Ellen Brook via surface runoff and/or groundwater.

Treatment of stormwater runoff prior to infiltration to groundwater will also help to reduce nutrient loads added to groundwater. Vegetated BRAs will be used to infiltrate minor storm event runoff (up to 1 in 1 year event) from road reserves. Interaction with the vegetation and infiltration through the soil column will remove a large proportion of contaminants and nutrients before it reaches groundwater.

Source: Emerge Associates

2322-73A-01 (08.06.2017), Nts

STORMWATER MANAGEMENT STRATEGY

Figure 13

3.9.2 Stormwater Management

LSP1 establishes a comprehensive stormwater management strategy consistent with current best practice urban water management. The plan recognises and responds to the hydrological requirements of the site, ensuring that pre-development hydrology is respected and stormwater runoff is managed appropriately.

Development Drainage

All stormwater runoff from impervious areas within lots up to the 1 in 1 year event will be retained and treated within the lot, primarily via the use of BRAs or within soakage/retention areas. Runoff from major events will be detained within lot detention areas (LDAs) prior to discharging from the lots. These areas are designed to detain the 1 in 100 year storm event and can potentially be located within car parks or other open areas. The LDAs are designed to reach maximum capacity in a large storm event and discharge excess runoff at a reduced rate that approximates the pre-development peak flows. The large industrial lots that this Structure Plan has been designed to deliver will facilitate this approach by providing sufficient area to accommodate the LDAs. Stormwater will then be conveyed via road side swales to the flood storage areas (FSAs) (refer Figure 13) before discharging from the site. All storage areas for the detention of stormwater will be appropriately sized to recognise pre-development flow rates.

Stormwater runoff from road reserves up to the 1 in 1 year event will be treated and infiltrated within roadside swales within the road reserve and BRAs within downstream drainage reserves (refer Figure 13). Road reserve widths within LSP1 have been designed with this drainage function in mind and are sufficiently wide to accommodate all necessary drainage swales. Runoff from events greater than the 1 in 1 year event (up to the 1 in 100 year event) that are unable to be detained within roadside swales and BRAs will continue to fill into FSAs (collocated with the BRAs where necessary) where it will be detained prior to discharging from the site, once again ensuring that pre-development flow rates leaving the site are maintained.

BRAs and FSAs

Where necessary, BRAs are collocated with FSAs in an overall drainage basin and are designed to flood first with excess capacity then topping-over into the FSAs. The northern and southern drainage basins depicted at Figure 13 have been designed in this manner. Given their more frequent inundation, BRAs are vegetated with species that are efficient in nutrient removal assisting to maintain water quality. FSAs are designed so as to not be permanently wet and are only inundated in more severe events serving as an overflow area from the BRAs. The design and size of the FSAs are dictated by the need to detain stormwater on site so that all volumes being discharged match the pre-development flow rates.

The location and approximate size of the drainage basins are identified on the Implementation Plan (refer Figure 8) however, the sizing is indicative only and based on preliminary modelling to support the LSP. The sizing and design of the drainage basins are subject to further refinement and detailed design at the subdivision and UWMP stage.

This page has been left blank intentionally

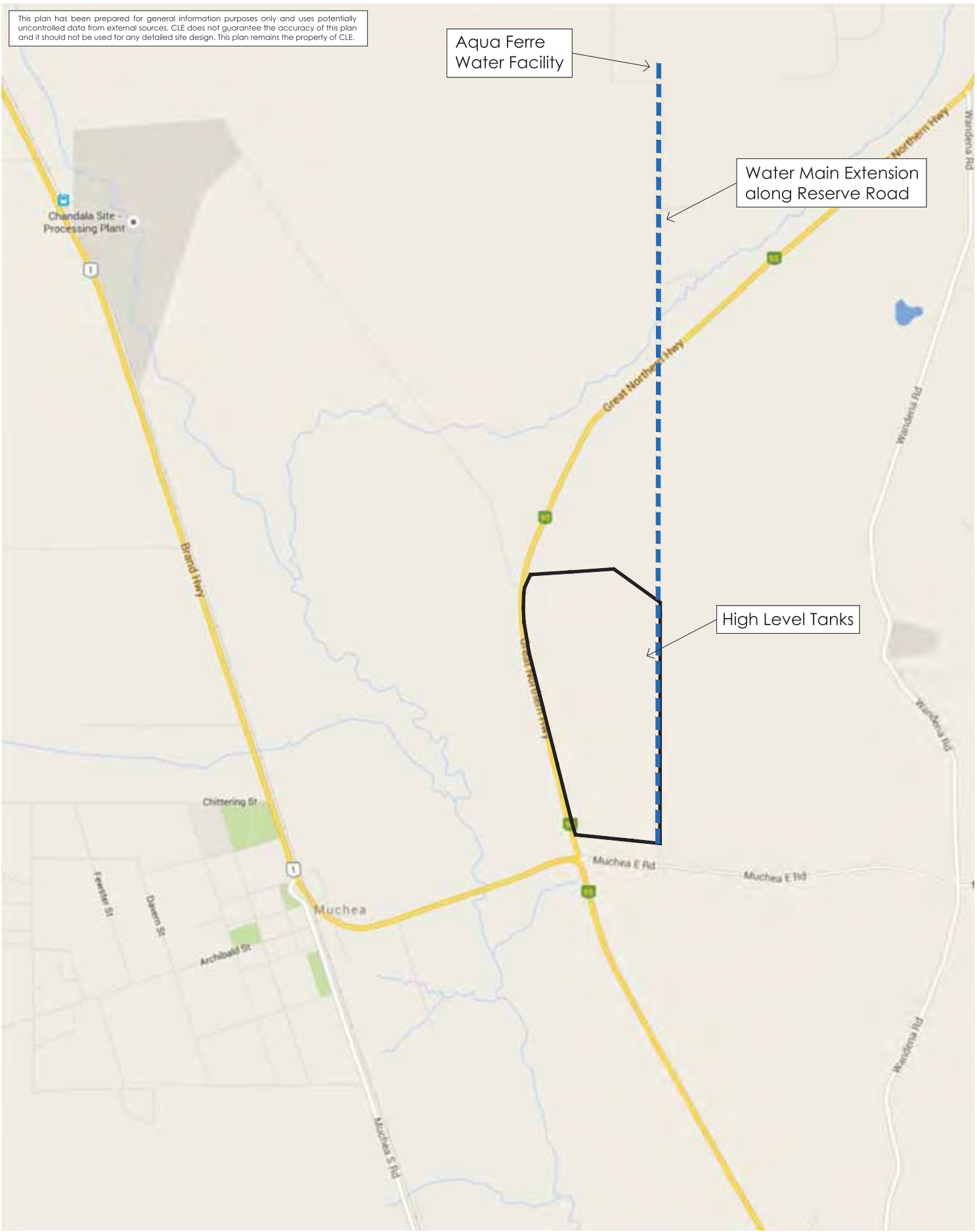
The location of the drainage basins has been determined by existing outflow points from the site, namely a number of existing culverts that discharge stormwater from the site under GNH. Discharge from FSAs that are not located directly adjacent to a waterway or flow path will be routed to existing discharge locations along the western boundary of the site via conveyance swales located in drainage easements (refer Figure 13). The width of drainage easements provided will also allow for an access route along the swales for maintenance purposes and will be confirmed at subdivision stage.

3.9.3 Arterial Drainage

LSP1 maintains the southern and central waterways on their existing alignments within local reserves, thereby maintaining existing flows from upstream catchments through the site with minimal disturbance. Access for maintenance and management of the southern waterway will be provided directly via the adjoining road network. Access to the central waterway where there is no direct road interface will be provided via informal access tracks in locations that aim to minimise the potential impact on existing vegetation. The specific locations of these access tracks will be confirmed as part of the detailed FVMMP to be prepared at subdivision stage.

No modifications to the southern and central waterways are required with the exception of a culvert to be installed to facilitate a road crossing across the central waterway (refer Figure 13). A bed and banks permit will be obtained from the Department of Water prior to undertaking this work.

The northern flowpath is less defined and does not constitute a waterway. Accordingly, it will be directed along the northern boundary of the site within a formal conveyance swale located in a drainage easement and conveyed to the existing discharge location along the northern and western boundary of the site. The large lot sizes planned for this northern portion of LSP1 allow for this drainage easement to be contained within the lot without compromising the ability of the lot to accommodate development. The easement size and alignment will be confirmed at subdivision stage in consultation with the Shire of Chittering.



Source: Cossill & Webley Google maps

WATER SUPPLY STRATEGY

2322-74A-01 (08.06.2017), Nts

Figure 14

3.10 Infrastructure Coordination, Servicing and Staging

LSP1 is capable of being provided with essential service infrastructure from the outset of development, consistent with the requirements of TPS6. A detailed Engineering Servicing Report has been prepared by Cossill & Webley Consulting Engineers which provides a detailed strategy for the provision of essential infrastructure to LSP1 (refer Appendix 3). The Engineering Servicing Report addresses the provision of reticulated water, waste water and power infrastructure for the site as required pursuant to Schedule 15 (part 2.3) of TPS6. A summary of the servicing strategy addressing the requirements of TPS6 and all other associated servicing matters is provided below.

3.10.1 Water Supply

Consistent with the requirements of TPS6 and as envisaged by the MENSP, LSP1 makes provision for delivery of a reticulated water supply from the first stage of subdivision.

LSP1 is not within a current water catchment and the Water Corporation has advised that the catchment boundary will not be extended to the MENSP. An alternative reticulated water supply has therefore been sourced to service the site via a private water solutions company in Aqua Ferre.

Aqua Ferre is currently developing a water project for the Lower Chittering Valley which has progressed through engineering design to the regulatory approval stage. The project proposes to draw water from the Leederville Aquifer which will be treated to meet drinking water quality guidelines. The extraction facility is proposed to be constructed approximately 5km north of LSP1 on Reserve Road, Chittering.

A Memorandum of Understanding has been established with Aqua Ferre to supply reticulated water to LSP1. This will involve construction of a water main from Aqua Ferre's facility on Reserve Road down to the north-east corner of LSP1 (refer Figure 14). The water main will then be extended along the eastern boundary to the highest elevation point within the site, where the water will be stored in tanks for distribution. The storage location will allow the water to be distributed throughout the majority of the LSP1 area via a gravity-fed piped system within local road reserves, with local boosters potentially required to service some of the higher lots. The exact size and location of the land required for the storage tanks will be confirmed at the detailed subdivision design stage with the tanks likely to be situated within lots and covered by easements to the benefit of the water provider.

Rainwater harvesting will be promoted to land purchasers and developers within LSP1 as a viable and sustainable supplement to the reticulated water supply. Given the low water usage land uses that are expected to occur within LSP1 (transport depots, freight and logistics handling, laydown/storage) rainwater would be capable of satisfying a reasonable portion of demand, assisting to reduce the reliance on scheme water.

3.10.2 Waste Water

Given the large lot sizes and expected low waste water generating land uses within LSP1, the only viable and appropriate option for the management and treatment of waste water is 'lot scale' Aerobic Treatment Units (ATUs). ATUs are small water treatment plants, designed to treat waste water to a quality suitable for irrigation. The individual lots will provide sufficient landscaped areas to avoid inundation and surface runoff which is easily accommodated given the expected size of the industrial lots.

The advantages of ATUs as opposed to a more traditional reticulated sewer supply are numerous, and include:

- Minimisation of fill across the site (which would otherwise be required to provide sufficient fall for gravity sewer) allowing for better opportunities to retain pre-development landform, vegetation and drainage;
- Encouragement for larger landscaped areas within the lots in order to receive the treated effluent as irrigation, resulting in a higher standard of visual amenity;
- Improved land efficiency through the avoidance of any waste water pump stations or other infrastructure that requires specific land to be set aside;
- Avoidance of the need to seek and obtain a licence to operate a waste water treatment plant from the State Economic Regulator which is uncertain and cost prohibitive; and
- A reduction in the civil costs associated with delivering the land to market through the avoidance of installation of a reticulated pipe network and associated infrastructure, ensuring that LSP1 can deliver large lots to the market at an affordable price.

The ATUs will be maintained to ensure compliance with the Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units.

It is important to note that LSP1 is sufficiently flexible with respect to road reserves and infrastructure corridors to allow for a reticulated waste water system to be installed in the future as part of a larger sewer project for the MEN, should it be deemed viable and necessary at that time.

3.10.3 Power

The LSP has excellent access to an existing power supply, with an existing 22kV distribution overhead feeder running along GNH that will provide a connection and service initial lots via the existing network. Whilst initial development may be serviced by residual capacity in the existing network, ultimate development of the LPS1 area may require a new feeder from the Muchea Zone substation. Loads will be monitored throughout the development of the LPS1 area to determine when the new feeder will be required, in consultation with Western Power.

3.10.4 Telecommunications

The National Broadband Network (NBN) has committed to the provision of fibre to the MEN. Funding of fibre to the premises will be funded through the NBN, with the developers responsible for funding the associated pit and pipe and a possible contribution to the backhaul costs. The NBN is expected to provide essential internet and telecommunications services to LSP1.

The design of road reserves will make adequate allowance for broadband services in accordance with the agreed Utilities Service Providers handbook. There is expected to be some local land requirements for equipment sites which will be determined at the detailed subdivision design stage.

3.10.5 Gas

There is no gas distribution/reticulation and there are no plans to extend gas infrastructure to the MEN. This is stated within the MENSP which acknowledges that, given the associated costs, it is unlikely that general gas reticulation will occur in the area. The MENSP was subsequently endorsed on this basis and it is generally accepted that industrial development within the MENSP will proceed without a reticulated gas supply.

Any development that requires gas will therefore need to source its own individual gas provision through the installation of natural gas tanks as required.

3.10.6 Siteworks and Earthworks

The LSP has been designed specifically to minimise the amount of fill that is required to be brought in to the site resulting in a considerable reduction in civil construction costs and maximising opportunities for tree and landform retention.

Earthworks levels will match as close as reasonably practical to the natural levels, whilst ensuring a minimum clearance between finished floor levels and the 1 in 100 year flood inundation, as well as clearance to groundwater in low lying areas is maintained.

A bulk earthworks strategy for the development of LSP1 is appended to the Engineering Servicing Report (refer Appendix 3) and depicts the relationship between the existing topography and the potential earthworks design. The earthworks design details indicative earthwork levels and the grading of lots so that water run off is directed towards road reserves and into the public stormwater drainage system consistent with the principles established via the LWMS.

Given the nature of expected development and the potential large laydown areas, some siteworks may need to be carried out by individual developers on each site to suit their requirements, including clearance to stormwater, site classification and on site stormwater detention.

This page has been left blank intentionally

3.11 Development Contributions

The site is not currently subject to a Development Contribution Area under TPS6, nor has any Development Contribution Plan (DCP) been advertised or adopted for the MEN.

There is no specific need or requirement for a DCP as a pre-requisit to subdivision and development within LSP1. All key infrastructure, including internal roads, intersections and services will be provided by the proponent as required.