



MERU DEVELOPMENT INVESTIGATION AREA

Edward Road, Meru

LOCAL PLANNING SCHEME No. 5 (GREENOUGH) – AMENDMENT No. 18

and

STRUCTURE PLAN

**July 2013
(amended May 2014)**



ENDORSEMENT PAGE

This structure plan is prepared under the provisions of the City of Greater Geraldton Local Planning Scheme No.5

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

SEPTEMBER 2014


In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Date of Expiry: **19 OCTOBER 2030**

And by
RESOLUTION OF THE COUNCIL OF THE CITY OF GREATER GERALDTON ON

TWENTY FOURTH (24) SEPTEMBER 2013 Date

And
PURSUANT TO THE COUNCIL'S RESOLUTION HEREUNTO AFFIXED IN THE PRESENCE OF:



Mayor, City of Greater Geraldton



Chief Executive Officer, City of Greater Geraldton

25 SEPTEMBER 2013 Date

This Structure Plan is prepared under the provisions of the
City of Greater Geraldton Local Planning Scheme No. 5 (Greenough)

Executive Summary

This report has been prepared by the City of Greater Geraldton to describe the proposed Scheme Amendment to the City of Greater Geraldton Local Planning Scheme No. 5 Greenough (LPS5) and the associated Structure Plan for Meru Development Investigation Area (DIA).

The Scheme Amendment proposes to amend LPS5 by rezoning the following lots from 'Rural' to 'Development':

Lot 2 (No. 217), Lot 3 (No. 259), Lot 4 (No. 263), Lot 5 (No. 291), Lot 7, Lot 31 (No. 281), Lot 32 (No. 285), Lot 33 (No. 295), Lot 41 (No. 335), Lot 51 (No. 213), Lot 54 (No. 315), Lot 55 (No. 307), Lot 61 and Lot 101 (No. 279) Edwards Road, Meru.

The purpose of the Scheme Amendment is to facilitate the development of the site for both Rural Residential and Light Industry purposes. Development of the site will be in accordance with an approved Structure Plan. A Structure Plan has been prepared for the DIA and proposes that land within the Narngulu Industrial Estate buffer be subdivided and developed for 'Light Industry' land uses, with an additional use (being a 'Transport Depot') to be permitted for Lot 41 in recognition of its existing use. Land outside the buffer is proposed for subdivision and development for 'Rural Residential' land uses.

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PART ONE – STRUCTURE PLAN STATUTORY SECTION

1.1 STRUCTURE PLAN AREA

This structure plan shall apply to:

- Lot 2 (No. 217);
- Lot 3 (No. 259);
- Lot 4 (No. 263);
- Lot 5 (No. 291);
- Lot 7;
- Lot 31 (No. 281);
- Lot 32 (No. 285);
- Lot 33 (No. 295);
- Lot 41 (No. 335);
- Lot 51 (No. 213);
- Lot 54 (No. 315);
- Lot 55 (No. 307);
- Lot 61; and
- Lot 101 (No. 279).

Edward Road being the land contained within the inner edge of the line denoting the structure plan boundary on the structure plan map (Plan 1).

1.2 STRUCTURE PLAN CONTENT

This structure plan comprises:

- a) Part One – Statutory section. This section contains the structure plan map and statutory planning provisions and requirements.
- b) Part Three – Non-statutory (explanatory) section. This section is to be used as a reference guide to interpret and justify the implementation of Parts One and Two.
- c) Appendices – Technical reports and supporting plans and maps.

Note: Part Two contains the statutory provisions for the Scheme Amendment.

1.3 INTERPRETATION AND RELATIONSHIP WITH THE SCHEME

Unless otherwise specified in this part, the words and expressions used in this structure plan shall have the respective meanings given to them in the City of Greater Geraldton Local Planning Scheme No. 5 (Greenough) including any amendments gazetted thereto.

The structure plan map (Plan 1) outlines land use, zones and reserves applicable within the structure plan area. The zones and reserves designated under this structure plan apply to the land within it as if the zones and reserves were incorporated into the Scheme.

Pursuant to clause 5.17.12 of the Scheme:

- a) The provisions, standards and requirements specified under Part One of this structure plan shall have the same force and effect as if it were a provision, standard or requirement of the Scheme. In the event of there being any variations or conflict between the provisions, standards or requirements of the Scheme and the provisions, standards or requirements of this structure plan, then the provisions, standards or requirements of the Scheme shall prevail.
- b) Part Three of this structure plan and all appendices are to be used as a reference only to clarify and guide interpretation and implementation of Part One.

1.4 OPERATION

In accordance with clause 5.17.12 (a) and (b) of the Scheme, as this structure plan proposes the subdivision of land it shall come into operation on the day on which it is endorsed by the Western Australian Planning Commission (WAPC).

1.5 LAND USE AND SUBDIVISION

The structure plan map (Plan 1) outlines land use, zones and reserves applicable within the Structure Plan area. The zones and reserves designated under this Structure Plan apply to the land within it as if the zones and reserves were incorporated into the Scheme.

1.5.1 Land Use Permissibility

Land use permissibility within the structure plan area shall be in accordance with the corresponding zone under the Scheme. Except for the following:

1.5.1.1 Additional Uses

In accordance with clause 4.5 of the Scheme, Lot 41 (No. 335) Edward Road, Meru may be used for a "Transport Depot" subject to the following condition:

- Any development application relating to a "Transport Depot" must be accompanied by a Detailed Area Plan pursuant to clause 5.17.5 of the Scheme which demonstrates the compatibility of the particular development with the adjacent rural residential area.

1.5.1.2 Restricted Uses

In accordance with clause 4.6 of the Scheme, for land designated as 'Light Industry' the following uses are NOT permitted ("X" uses):

- Consulting Rooms;
- Industry Cottage;
- Lunch Bar;
- Market;
- Motel;
- Recreation Private; and
- Showroom.

1.5.2 Rural Residential

- a) For land designated as 'Rural Residential' the rural residential zones additional requirements, as applicable, for RR2 pursuant to Schedule 11 of the Scheme shall apply.
- b) All habitable buildings shall be located in the building envelope as shown on the structure plan map (Plan 1).

1.5.3 Subdivision

Minimum lot sizes and subdivision shall generally be in accordance with structure plan map (Plan 1) or any variations as approved by the City of Greater Geraldton or the WAPC.

1.5.4 Conditions of Subdivision Approval

At the time of subdivision the City of Greater Geraldton shall recommend to the WAPC the following conditions:

- a) A notification, pursuant to section 70A of the *Transfer of Land Act 1893* is to be placed on the certificate of title of the proposed lots. Notice of this notification is to be included on the deposited plan. The notification is to state as follows:

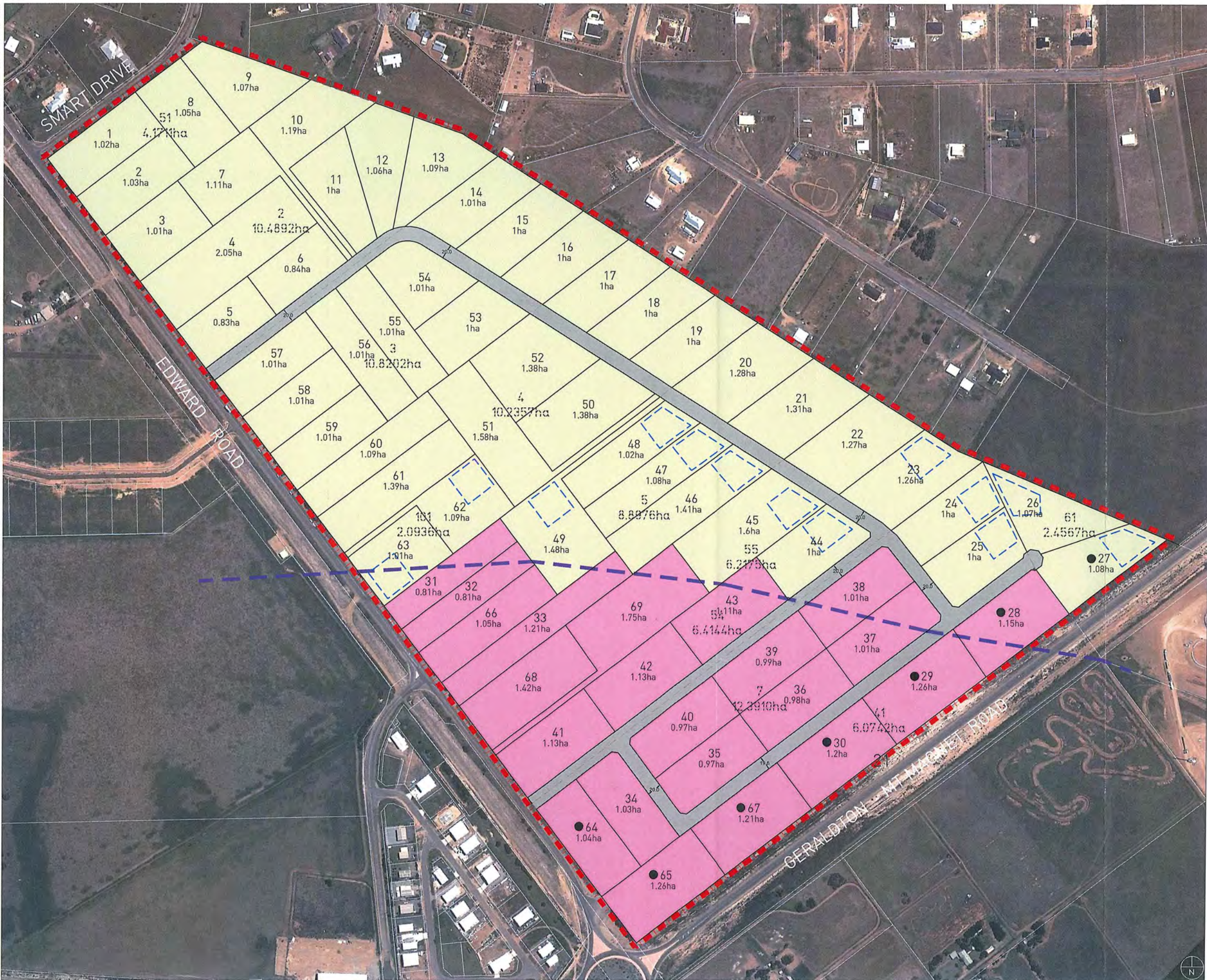
"No habitable development is to take place outside the defined building envelope, unless otherwise approved by the local government."

- b) A notification, pursuant to section 70A of the *Transfer of Land Act 1893* is to be placed on the certificate of title of any proposed lots that are wholly or partially within the Narngulu Industrial Estate buffer. Notice of this notification is to be included on the deposited plan. The notification is to state as follows:

"The lot is situated in the vicinity of the Narngulu Industrial Estate and is currently affected, or may in the future, be affected by virtue of odour, noise dust and/or light emissions from that land use."

- c) Urban Water Management Plan including more detailed geotechnical assessment demonstrating soil permeability.

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Planning Design Delivery



- LEGEND
- RURAL RESIDENTIAL
 - INDUSTRY LIGHT - RESTRICTED USES
 - SUBJECT SITE
 - NARNGULU INDUSTRIAL ESTATE BUFFER
 - EXISTING BOUNDARIES
 - BUILDING ENVELOPES
 - NO ACCESS WILL BE PERMITTED ONTO THE GERALDTON-MOUNT MAGNET ROAD OR EDWARD ROAD

0 125 250 Metres

REVISIONS		
Rev	Date	Drawn
B	2013.07.01	S.Blanchard



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Date Drawn:	2013-07-01
Job Ref:	7587
Scale:	1:5000 @ A3
Client:	City of Greater Geraldton
Designer:	H. Graham
Drawn:	S.Blanchard
Projection:	MGA50 GDA94
Plan ID:	7587-CSP-01-B
Aerial Photography captured and supplied by GOOGLE EARTH PRO	

Meru Development Investigation Area Structure Plan

Lots 2,5,7,31-33,41,51,54-55 & 61
Edward Road

PART TWO – SCHEME AMENDMENT STATUTORY SECTION

**PLANNING AND DEVELOPMENT ACT 2005
RESOLUTION DECIDING TO AMEND A LOCAL PLANNING SCHEME**

**CITY OF GREATER GERALDTON
LOCAL PLANNING SCHEME No. 5 (Greenough)**

AMENDMENT No. 18

RESOLVED that the Council, in pursuance of Section 75 of the Planning and Development Act 2005, amend the above local planning scheme by:

1. Rezoning Lot 2 (No. 217), Lot 3 (No. 259), Lot 4 (No. 263), Lot 5 (No. 291), Lot 7, Lot 31 (No. 281), Lot 32 (No. 285), Lot 33 (No. 295), Lot 41 (No. 335), Lot 51 (No. 213), Lot 54 (No. 315), Lot 55 (No. 307), Lot 61 and Lot 101 (No. 279) Edward Road, Meru from "Rural" to "Development"; and
2. Amending the Scheme Maps accordingly.

Dated this TWENTY SIX day of FEBRUARY 2013.



CHIEF EXECUTIVE OFFICER

PLANNING AND DEVELOPMENT ACT 2005
CITY OF GREATER GERALDTON
LOCAL PLANNING SCHEME No. 5 (Greenough)

AMENDMENT No. 18

The City of Greater Geraldton under and by virtue of the powers conferred upon it in that behalf by the Planning and Development Act 2005 hereby amends the above local planning scheme by:

1. Rezoning Lot 2 (No. 217), Lot 3 (No. 259), Lot 4 (No. 263), Lot 5 (No. 291), Lot 7, Lot 31 (No. 281), Lot 32 (No. 285), Lot 33 (No. 295), Lot 41 (No. 335), Lot 51 (No. 213), Lot 54 (No. 315), Lot 55 (No. 307), Lot 61 and Lot 101 (No. 279) Edward Road, Meru from "Rural" to "Development"; and
2. Amending the Scheme Maps accordingly.

ADOPTION

Adopted by resolution of the Council of the City of Greater Geraldton

at the ORDINARY meeting of the Council held on the
TWENTY SIX day of FEBRUARY 2013.

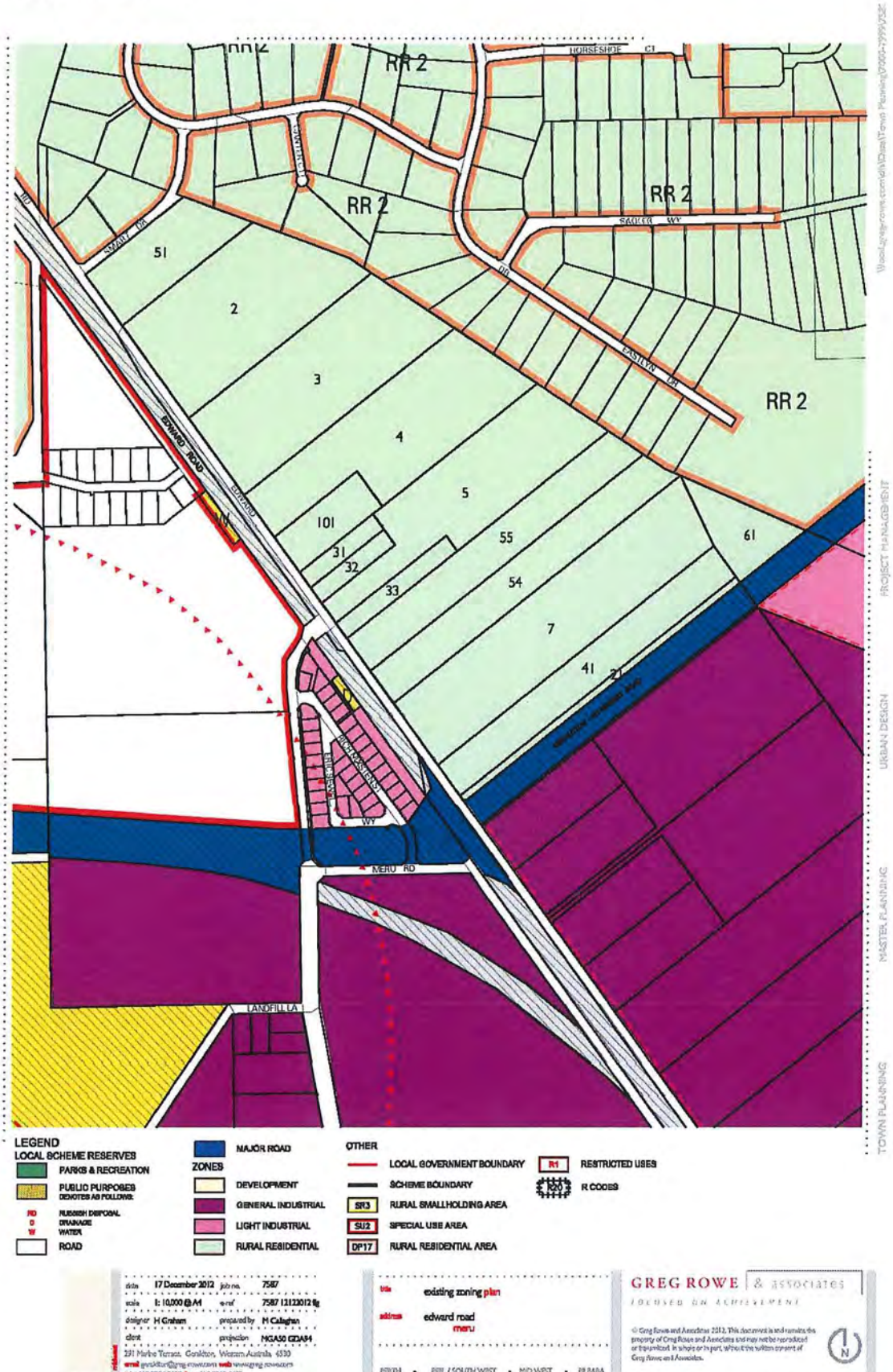


MAYOR



CHIEF EXECUTIVE OFFICER

Existing Zoning Map



Scheme Amendment Map



<p>date: 17 December 2012 job no: 7587 scale: 1:10000 @ A4 sheet: 7587/12123012 Rg designer: H Graham prepared by: H Callaghan client: project no: NG450/02/004 201 Melba Terrace, Gardenvale, Western Australia 6150 email: graham@gregrowe.com.au web: www.gregrowe.com.au tel: +618 9993 0672 fax: +618 9353 9635</p>	<p>site: proposed zoning plan address: edward road meru</p> <p>PORTH • PETH/SOUTH WEST • MID WEST • KIMBA</p>	<p>GREG ROWE & ASSOCIATES FOCUS ON DEVELOPMENT</p> <p>© Greg Rowe and Associates 2012. This document is the property of Greg Rowe and Associates and may not be reproduced or transmitted in any form or by any means, without the written consent of Greg Rowe and Associates.</p>
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FINAL APPROVAL

Adopted for final approval by resolution of the City of Greater Geraldton

at the ORDINARY meeting of the Council held on the
TWENTY FOURTH day of SEPTEMBER 2013.

and the Common Seal of the City of Greater Geraldton was hereunto affixed by the authority of a resolution of the Council in the presence of:





 MAYOR



 CHIEF EXECUTIVE OFFICER

Recommended/Submitted for Final Approval

 Delegated under S.16
 of the PD Act 2005

 Date

Final Approval Granted

It is hereby certified that this is a true copy of the
~~Schema/Amendment~~, final approval to which was
 endorsed by the Minister for Planning on 11/12/13

 Minister for Planning

Certified by 

Officer of the Commission duly authorised pursuant to
 Section 24 of the Planning and Development Act 2005
 and Regulation 22(3) of the Town Planning Regulations
 1967.

 Date

PART THREE – EXPLANATORY SECTION

3.1 INTRODUCTION

The proposed Scheme Amendment seeks to amend the City of Greater Geraldton Local Planning Scheme No. 5 Greenough (LPS5) by rezoning the following lots from 'Rural' to 'Development':

- Lot 2 (No. 217);
- Lot 3 (No. 259);
- Lot 4 (No. 263);
- Lot 5 (No. 291);
- Lot 7;
- Lot 31 (No. 281);
- Lot 32 (No. 285);
- Lot 33 (No. 295);
- Lot 41 (No. 335);
- Lot 51 (No. 213);
- Lot 54 (No. 315);
- Lot 55 (No. 307);
- Lot 61; and
- Lot 101 (No. 279).

The intention is to facilitate the subdivision and development of the abovementioned lots in accordance with a Structure Plan for the purposes of 'Light Industry' and 'Rural Residential' uses. The Structure Plan will coordinate subdivision and development within the Meru Development Investigation Area (DIA) and its preparation has been guided by the following objectives:

- To facilitate light industrial development within the portion of the subject land located within the Narngulu Industrial Estate (NIE) buffer as recommended in the Greater Geraldton Structure Plan 2011;
- To limit the permissible light industrial uses to ensure that the amenity of adjacent rural residential areas is not compromised; and
- To allow for rural residential development on portions of the subject land located outside the NIE buffer which is of a type and scale consistent with adjacent rural residential development in the locality.

3.1.1 History

In October 2008, the then City of Geraldton-Greenough prepared a draft Subdivision Guide Plan and scheme provisions for the abovementioned lots (herein referred to as 'subject land') and referred this to affected landowners and the Department of Planning. The draft Subdivision Guide Plan received general support during advertising, subject to minor modifications.

On 11 December 2008 the City received advice from the Department of Planning advising that due to inconsistent zoning with the Geraldton Region Plan 1999 progress of the Subdivision Guide Plan should be deferred pending finalisation of the Narngulu Policy Directions Plan and LPS5. More so, the letter detailed doubts on the accuracy of the identified industrial buffers, which were also reiterated within the finalised Narngulu Industrial Area Strategic Land Use Directions.

With the gazettal of LPS5 in April 2010, the completion of the Narngulu Industrial Area Strategic Land Use Directions in May 2010, and the endorsement of the Greater Geraldton Structure Plan 2011 which identifies the subject land as a DIA, the City engaged Rowe Group to undertake the preparation of a Scheme Amendment and Structure Plan for the subject land.

3.1.2 The Structure Plan

In May 2012 Rowe Group was commissioned to produce a Concept Plan demonstrating how the subject land could be developed following one-on-one consultation with all landowners. The Concept Plan formed the basis of the Structure Plan which is proposed to be endorsed concurrently with the rezoning of the subject land to 'Development'.

LPS5 and Clause 4.8.2 identifies the planning requirements under the 'Development' zone that a structure plan is recommended prior to subdivision of the lot(s). The Structure Plan provides more control over the development of the subject land and ensures that incompatible land uses do not occur within the Narngulu Industrial Estate buffer.

The Structure Plan provides the statutory framework for planning within the subject land and demonstrates the preferred land uses and movement network. It proposes a total of 69 lots, 22 lots for 'Light Industry' use and 47 for 'Rural Residential' use.

3.1.2.1 Light Industry

The Narngulu Industrial Area Strategic Land Use Directions 2010 identifies portion of the subject land as being suitable for light industrial uses. The 'Light Industry' precinct is intended to provide for light industrial development; which demonstrates compatibility of the particular development with the adjacent rural residential area.

The Structure Plan provides a variety of lot sizes with excellent road infrastructure which is sufficiently robust to provide the opportunity for a range of different light industry lot sizes (ranging from 0.8 – 1.2 hectares).

3.1.2.2 Rural Residential

The 'Rural Residential' precinct contains that land that is not affected by the Narngulu Industrial Estate buffer and reflects the surrounding zoning to the north and east. The Structure Plan shows 43 of the 47 Rural Residential lots ranging in size from 1 to 2 hectares with only 4 lots slightly smaller than 1 hectare.

The Structure Plan has designated specific locations for building envelopes for those lots closest to the 'Light Industry' precinct in order to maximise the separation distance between future industrial and residential uses.

Although Lot 63 is located within the Narngulu Industrial Estate buffer, this lot currently contains an existing residence and the building envelope shown on the structure plan merely reflects the location of the house.

3.1.3 Landowner Consultation

Prior to preparing the initial Concept Plan, Rowe Group in conjunction with the Local Government staff undertook one-on-one consultation with landowners within the subject land. Consultation took place between 10 July 2012 and 8 November 2012. These discussions took the form of in-person meetings or telephone conversations. To help guide the discussions, landowners were given background information about the site's current zoning and were presented with the Draft Concept Plan which had been prepared for the area in 2009.

In summary, landowners generally agreed that the existing 'Rural' zone was ineffective as the lots are too small for large scale rural activities and the current zoning also does not allow any further subdivision potential for the larger lots.

With respect to future aspirations for the subject land, landowners who planned to remain on their property were more likely to favour a type of land use that most closely corresponds to what they have at present, such as 'Rural Residential' (three landowners). Those who had purchased the property as an investment or who planned to move away were generally more interested in maximising value, which they considered could be done through transitioning the area to 'Light Industrial' zone in which larger scale home businesses could operate in conjunction with residences, similar to the Glenfield Special Use area (seven landowners).

It was generally acknowledged that land within the Narngulu Industrial Estate buffer would transition either to 'Light Industrial' or 'Special Use' as described above in accordance with the existing strategic planning framework. For land falling outside the NIE buffer, there was some support for 'Light Industrial' / 'Special Use' on lots with direct frontage to Edward Road and 'Rural Residential' lots to the east to complement the adjoining Eastlyn Estate.

Main Roads Western Australia also provided comment as the landowner of Lot 61 and advised that they would like direct access to the Geraldton-Mount Magnet Road restricted. They were also concerned about the current location of the access to Patience Bulk Haulage (Lot 41 Edward Road), as it has the potential to result in stacking where heavy vehicles exit the roundabout onto Edward Road. However, it was acknowledged that Patience has historic approval for the current access configuration.

From the landowner interviews it was evident that Patience does not plan on leaving the site, and would like to expand by building an office complex and additional parking area. Patience also expressed interest in installing a landscaping buffer in the Geraldton-Mount Magnet Road verge to improve the amenity of the site.

Despite repeated attempts, Rowe Group was not able to make contact with the owners of Lots 101 and 31 Edward Road. However it is noted that Lot 31 has an area of 8,093m² (hence no further subdivision potential) and Lot 101 has a total area of 2.09 hectares and is shown on the Structure Plan as being able to be subdivided into two lots.

3.2 LOCATION

The subject land is located within the locality of Meru, approximately 8km south east of the Geraldton Central Area.

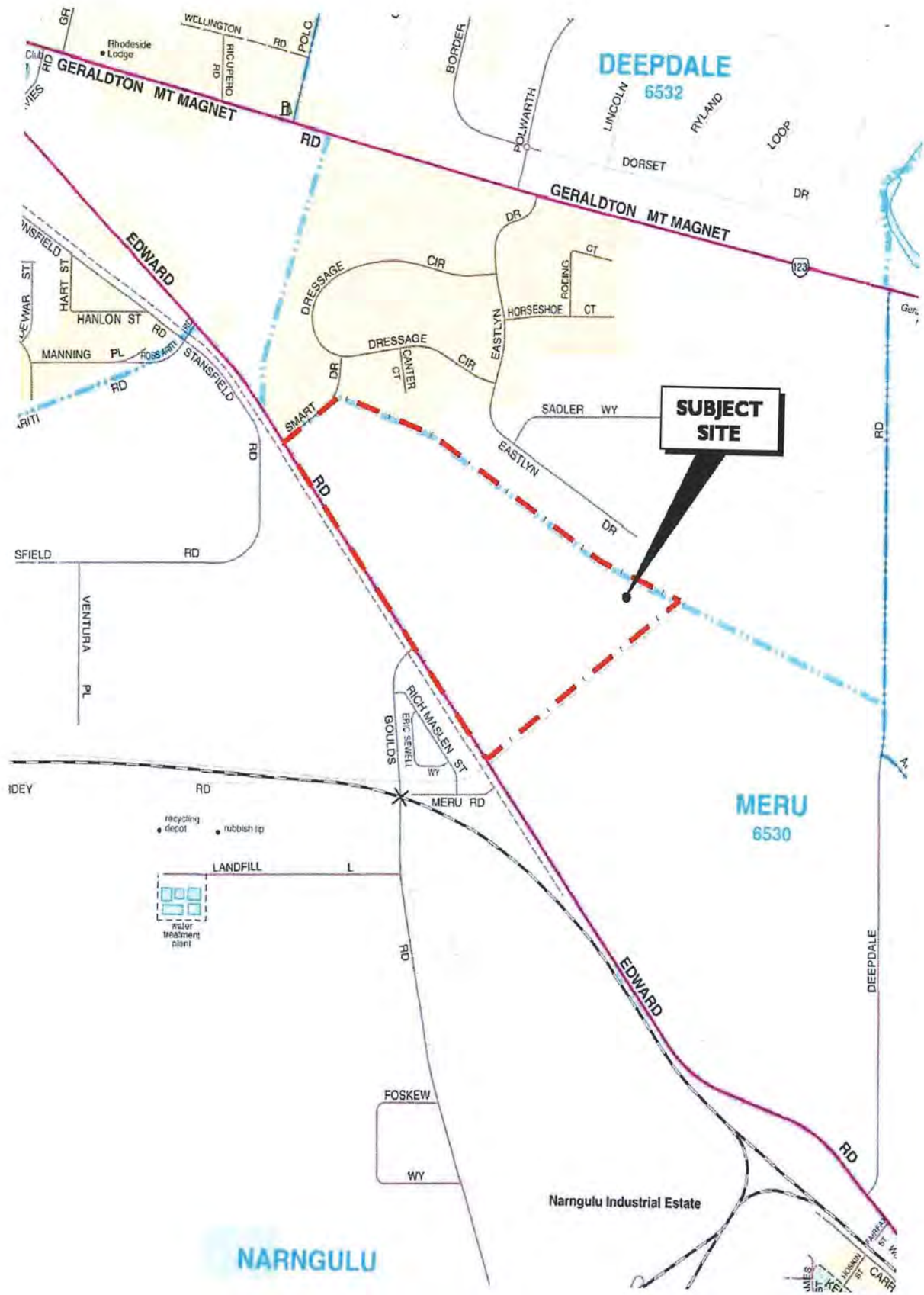
The subject land is bound by Smart Drive to the north, by Edward Road to the west, by the Geraldton Southern Transport Corridor to the south, and by the rear boundaries of rural residential lots with frontage to Eastlyn Drive and Dressage Circle to the east. The Geraldton Airport is located approximately 3.8km east of the subject land.

Figure 1 depicts the subject land in its regional location and Figure 2 depicts the subject land in a local context.

Figure 1 – Regional Location



Figure 2 – Local Context



3.3 SITE DESCRIPTION

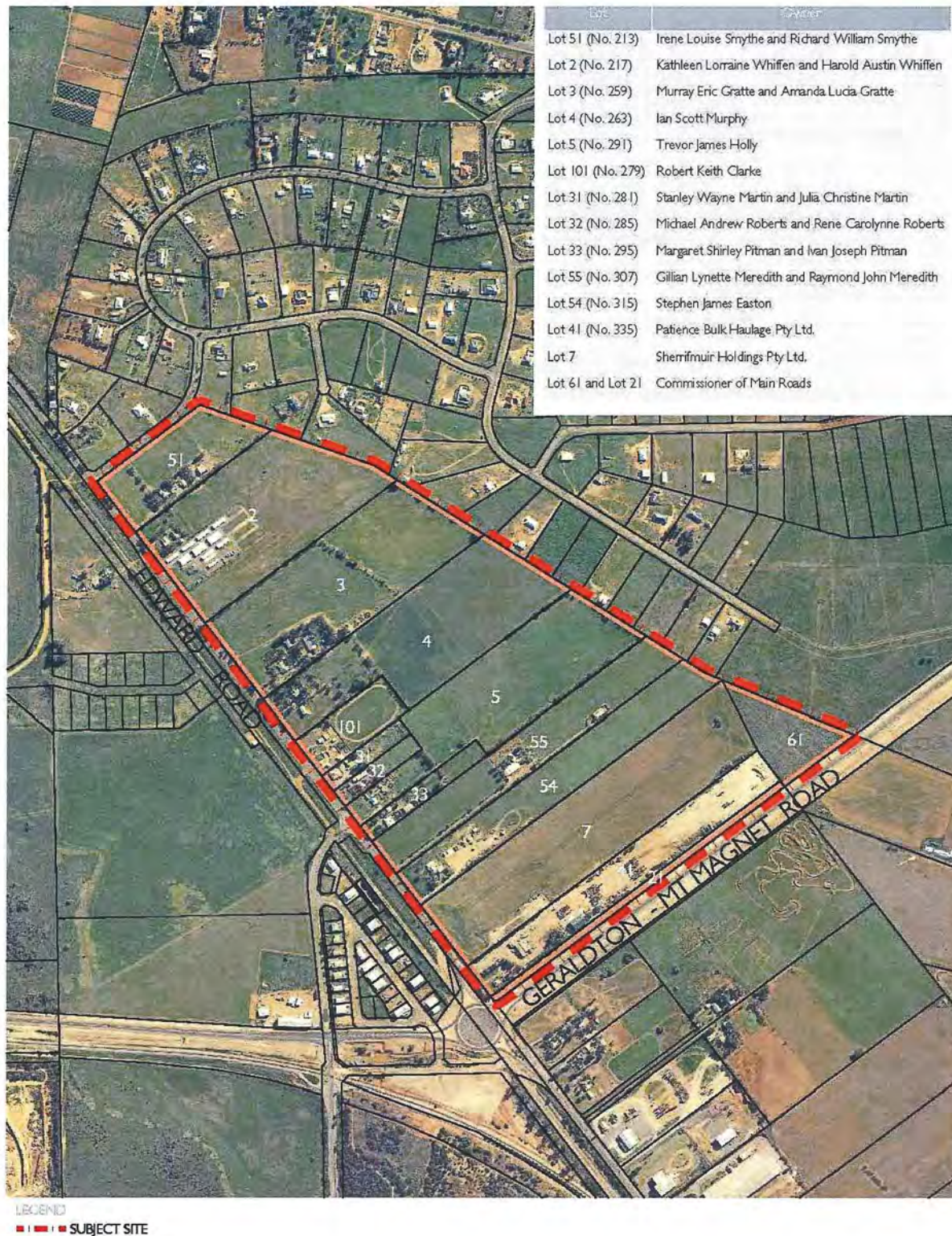
3.3.1 Legal and Cadastral Information

All lots within the subject land are under the private ownership or the ownership of the Commissioner of Main Roads. In summary, these affected parcels are:

- Lot 51 Edward Road, which has a total area of 4.1693 hectares, is held in Certificate of Title Volume 1636 Folio 687;
- Lot 2 Edward Road, which has a total area of 10.485 hectares, is held in Certificate of Title Volume 1113 Folio 945;
- Lot 3 Edward Road, which has a total area of 10.8160 hectares, is held in Certificate of Title Volume 1113 Folio 948;
- Lot 4 Edward Road, which has a total area of 10.232 hectares, is held in Certificate of Title Volume 1979 Folio 993;
- Lot 101 Edward Road, which has a total area of 2.0927 hectares, is held in Certificate of Title Volume 1979 Folio 992;
- Lot 31 Edward Road, which has a total area of 8,093m², is held in Certificate of Title Volume 1176 Folio 537;
- Lot 32 Edward Road, which has a total area of 8,093m², is held in Certificate of Title Volume 1176 Folio 539;
- Lot 5 Edward Road, which has a total area of 8.9801 hectares, is held in Certificate of Title Volume 1176 Folio 536;
- Lot 33 Edward Road, which has a total area of 1.2139 hectares, is held in Certificate of Title Volume 1784 Folio 596;
- Lot 55 Edward Road, which has a total area of 6.2169 hectares, is held in Certificate of Title Volume 1893 Folio 304;
- Lot 54 Edward Road, which has a total area of 6.4071 hectares, is held in Certificate of Title Volume 1893 Folio 303;
- Lot 7 Edward Road, which has a total area of 12.3890 hectares, is held in Certificate of Title Volume 1211 Folio 893;
- Lot 41 Edward Road, which has a total area of 6.0731 hectares, is held in Certificate of Title Volume 149 Folio 145A; and
- Lot 61 Geraldton Mount Magnet Road, which has a total area of 2.4553 hectares, is held in Certificate of Title Volume 2592 Folio 587.

The total area of the subject land, encompassing all of the above parcels, is 84.3125 hectares.

Figure 3 – Site Plan



3.3.2 Existing Development

The subject land is made up of 15 individually owned allotments with a mixture of uses. The majority are either vacant or utilised for rural lifestyle lots and are improved with a single residence and sheds. Lot 2 is currently improved with rental sheds as well as a caretaker residence while Lot 41 is currently utilised as a truck transport depot for Patience Bulk Haulage.

3.3.3 Vegetation

The subject land is cleared of vegetation and contains only sparse planted or retained vegetation mainly located along the boundaries of the individual lots and road frontage. As the lots have been utilised for rural purposes a large area of the subject land is cleared, fenced and pastured. A desktop review of the Geraldton Regional Flora and Vegetation Survey and the Geraldton Natural Areas Bushland Condition Assessment has been undertaken and did not reveal any vegetation of significance within the subject land.

3.3.4 Topography

The topography of the subject land is relatively flat and unchanging across the whole area. The subject land is approximately 30m AHD.

3.4 SURROUNDING LAND USES

The subject land is bordered to the east by lots which are zoned 'Rural Residential' under LPS5. Existing development on these lots primarily consists of single houses and sheds with some lots currently vacant.

The subject land is bordered to the north by Smart Drive and is adjacent to lots also zoned 'Rural Residential' under LPS5. These lots are improved with single houses.

The subject land is bordered to the west by Edward Road, and is adjacent to lots which are zoned 'Special Use' under LPS5, and are part of the Narngulu Industrial Estate buffer Precinct D. These lots are not yet developed and consist of vacant land except Lot 2 which is improved with a single residence and sheds.

A Subdivision Guide Plan has been endorsed for the buffer Precinct D which depicts light industrial lots with an average size of 5,000m². Lot in Rich Maslen Street, near the south-western corner of the subject land are zoned 'Light Industry' with an average size of 1,000m². These lots are improved with single high truss sheds.

The subject land is bordered to the south by the Southern Transport Corridor formally known as the Geraldton-Mt. Magnet Road which connects the Geraldton Port to Mullewa.

The subject land is a transitional area as it is located with Industrial zoned land to the west and south and Rural Residential zoned land to the north and east. Other surrounding land uses include the Geraldton Airport and CBH grain storage to the south east of the subject land, as well as the Narngulu Industrial Estate located south of the subject land.

3.5 TOWN PLANNING CONSIDERATIONS

Outlined below are various statutory and policy considerations, at both a state and local level, which should be taken into account with respect to the proposed Scheme Amendment and Structure Plan.

3.5.1 State Planning Strategy

The State Planning Strategy (SPS), which was published by the WAPC in 1997, was prepared to assist with long-term strategic land use planning throughout Western Australia. In short, the SPS contains a vision and associated principles and actions that aim to ensure that forecast population and economic growth is planned for in an appropriate matter.

The proposed Scheme Amendment accords with all five key principles that have been formulated to guide future decision-making, particularly the 'Economic,' 'Community,' and 'Regional Development' principles.

The proposed Scheme Amendment will assist in the facilitation of vibrant, accessible, and self-reliant communities, and will actively assist in the creational regional wealth through the development of new industries and economic activity.

The proposed 'Development' zone will allow for further coordinated planning in the form of the Structure Plan. It is envisaged that the mix of uses will provide an interface between the surrounding Rural Residential and Industrial land uses. This will enable current and new industries to operate in the area while ensuring the existing community is protected from adverse amenity impacts.

3.5.2 Geraldton Region Plan

The Geraldton Region Plan (GRP) was published by the WAPC in 1999 and is designed to supply a regional planning framework to provide guidance for government agencies and the private sector. It contained two components – a policy framework and regional strategies for the then City of Geraldton, then Shire of Greenough and the Shires of Chapman Valley, Northampton, Mullewa and Irwin, and a Structure Plan for Greater Geraldton (refer Section 3.5.3, below).

The subject land is dissected by the Narngulu Industrial Estate buffer and therefore this Scheme Amendment proposes a 'Development' zone over the subject land which will then require a Structure Plan to be prepared. The Structure Plan prepared ensures that there is no new residential development within the buffer and that uses allowed within the buffer will provide for a transition area between the surrounding rural residential and industrial development.

The Structure Plan also allows the appropriate light industrial use of land within the buffer area which is a recommendation of the Region Plan. Outside the buffer the Structure Plan provides for Rural Residential development, which is consistent with development in adjacent areas and provides increased choice and variety in housing styles. Given the above it is considered the proposed Scheme Amendment and Structure Plan are in accordance with the Geraldton Region Plan.

3.5.3 Greater Geraldton Structure Plan

The Greater Geraldton Structure Plan shows the portions of the subject land within the buffer to be 'Future Industrial and Service Commercial' while the area outside the buffer area is shown as 'Development Investigation Area 9.' The 'Development Investigation Area 9' is described as:

- *This area is currently 'rural' and the most appropriate future land use for it is yet to be identified.*
- *Interface issues between the adjacent 'industrial and service commercial' and 'rural living' areas will be a critical consideration in the determination of the most appropriate land use. Any future uses will need to be compatible with the adjoining land uses.*
- *Any eventual change in zoning will require an amendment to the local planning scheme. Depending on the sensitivity of the proposed land use, the rezoning of land may require an environmental assessment to be undertaken by the Environmental Protection Authority.*

The proposed Scheme Amendment is consistent with the objectives of the 'Development Investigation Area 9', as the 'Development' zone allows the preparation of the Structure Plan to ensure compatible uses between industrial and rural residential areas.

3.5.4 Narngulu Industrial Area Strategic Land Use Directions

The Narngulu Industrial Area Strategic Land Use Directions was completed in May 2010. The aim of this study was to review the current strategic planning framework for the Narngulu industrial area and to provide direction for future planning and development, taking into account:

- the existing planning framework that applies to the area;
- existing and proposed regional infrastructure;
- buffers and emissions;
- the need for additional industrial land; and
- recent statutory planning considerations.

The subject land is included within 'Precinct D' which states the following:

- *Land in this precinct is suitable for light industrial uses and uses as defined in the city's Local Planning Scheme;*
- *The north-west portion of this precinct that lies outside of the industrial area buffer may have potential for rural living uses if it is demonstrated that these uses are compatible with noise, emissions and other industrial buffer issues;*
- *Given there will be no direct access to the Geraldton Southern Transport Corridor, access will be subject to coordinated planning to determine local road access points from Edward Road, taking into account factors such as proposed vehicle types and numbers, Main Roads Western Australia guidelines for driveway designs, and the existing road geometry. Development should preferably present frontages to major roads and take advantage of the visual exposure to the transport corridor.*

The proposed Structure Plan is consistent with these recommendations as it proposes a combination of 'Light Industry' and 'Rural Residential' uses. The proposed movement network is consistent with the above as access to the internal lots is provided via a loop road with two access points onto Edward Road, and all lots with frontage to Edward Road will continue to have access via this road.

3.5.5 Local Planning Scheme No. 5 (Greenough)

The subject land is currently zoned 'Rural' and is proposed under this Scheme Amendment to be rezoned to 'Development'. The objective of the 'Development' zone is:

'To provide for comprehensive planning of large scale/broad acre development including residential, industrial and/or commercial through a structure plan to facilitate subdivision and development'.

The proposed 'Development' zone will allow for the development of a Structure Plan to facilitate further subdivision. The proposed Structure Plan shows a mixture of Rural Residential and Light Industry uses.

3.6 LOCAL WATER MANAGEMENT STRATEGY

A Local Water Management Strategy (LWMS) has been prepared for the Narngulu Industrial Estate buffer Precinct D (Precinct D) which is located opposite the subject land on the western side of Edward Road. The catchment area and soil types of Precinct D are closely comparable to the subject land. The subject land is proposed to be developed for a mixture of rural residential and industrial uses which are also comparable with the proposed development of Precinct D. The overall recommendations and principles of the LWMS for Precinct D can also be applied to the subject land.

An Urban Water Management Plan will be required at the subdivision stage and this must include further detailed geotechnical investigations to confirm site specific infiltration rates and the most appropriate areas for infiltration locations. The geotechnical assessment should be undertaken at depths greater than 300mm and for areas where drainage basins or swales are proposed, greater than 500mm. In the absence of any geotechnical assessment an infiltration rate of zero must be assumed.

Following on from the LWMS, at the Urban Water Management Stage the following items are recommended for action:

- Identify areas susceptible to erosion and implement best management practices;
- Minimise the discharge of effluent and provide management plans for potential; spillages or flood transported discharges;
- Detailed water supply assessment and discussions with the Water Corporation regarding required infrastructure upgrades;
- Detailed assessment of drainage swale sizes and required storage volumes, which may impact on the proposed road reserve widths;
- Detailed assessment of potential for swales to be located within existing road reserves.

Also at this stage, the developer should confirm the assumption of the LWMS report by undertaking the following studies:

- Geotechnical testing to confirm the permeability and suitability of the site for onsite wastewater treatments and disposal;
- A Detailed Site Investigation for the potential of site contamination;
- An investigation to confirm the absence, or otherwise, of Acid Sulphate Solis.
- Geotechnical investigation to confirm storm water disposal on site will meet current Health Department Disease Vector and Nuisance insect management.

The following information is based on the recommendations from the LWMS for Precinct D.

3.6.1 Groundwater

The subject land falls within the Arrowsmith Groundwater Area which is a large groundwater resource which is broken into eight sub-areas. The subject land is located within the Dongara sub-area, being north of the Irwin River. The Dongara sub-area is not highly allocated; however, groundwater is generally brackish in the surrounding vicinity.

In 2010 groundwater mapping within the LWMS shows groundwater levels of 7m AHD over the subject land. The subject land is approximately 30m AHD. Based on this information it is assumed that the groundwater table across the subject land is at a low level of approximately 23m below natural ground level. This assumption is also confirmed by Water Information System monitoring bores for the Department of Water located within proximity to the subject land showing average groundwater levels of 3.3 AHD and 11.9m AHD. One of these bores is located just north of the subject land within a 1km radius. In order to maintain groundwater quality and protection a minimum separation distance of 2m is recommended and is considered to be easily achievable within the subject land given the considerable depth to groundwater resources.

3.6.2 Water Management

Water supply within the subject land is anticipated to be via potable supply as Water Corporation infrastructure already exists along Edward Road. It is also considered that rainwater tanks can be utilised to collect water as a supplementary water source. Lot owners can also be encouraged to install grey water reuse systems and efficient fixtures and fittings to reduce potable water usage.

The Structure Plan does not propose Public Open Space as part of the development so no irrigation will be required for this purpose, and it is envisaged that any landscaping within the road verges will include suitable native species which do not require irrigation.

3.6.3 Wastewater Management

Sewer infrastructure is not available within proximity to the subject land and would require collaboration with the Water Corporation to upgrade/extend existing infrastructure. The Structure Plan proposes lot sizes of a minimum of 8,099m² which is anticipated to allow for the use of on-site effluent disposal systems. Wastewater treatment methods for individual sites and uses can be determined at the development application stage.

3.6.4 Stormwater Management

The subject land is considered to be similar to Precinct D and is therefore anticipated to generate minimal runoff due to the flat topography. Due to the size of the lots proposed in the Structure Plan stormwater is anticipated to be contained within each lot. Additional drainage infrastructure can be located within the road reserves and can be designed to contain overflow in the case of a 1:100 year storm event.

Specific details of flow paths and drainage will be assessed in more detail at the subdivision stage; however it is considered that all stormwater can be contained within the subject land area.

3.6.5 Contaminated Sites

Lot 54 (No. 315) Edward Road, Meru is classified by the Department of Environment Regulation as a contaminated site. The Department considers that the remedial works undertaken have sufficiently restricted access to the contaminated soil such that it does not pose an unacceptable risk to human health, the environment and environmental values under the current use (industrial with a single residential dwelling). However, further assessment of potential contamination should be undertaken before any change to a more sensitive land use.

3.7 SERVICING AND ENGINEERING CONSIDERATIONS

Servicing and engineering considerations will be assessed in more detail at the subdivision stage although information regarding the current servicing infrastructure within proximity to the subject land based on 'Dial Before You Dig' data is described below.

3.7.1 Electricity

High voltage (HV) underground power is currently available along Edward Road to Lot 41, Lot 7, Lot 54 and Lot 55. Low voltage (LV) underground power is available along Edward Road for the remaining lots. It is considered that the HV and LV underground power will be extended and/or upgraded as required as a condition of subdivision.

3.7.2 Water

The subject land is surrounded by existing Water Corporation mains water services being a 200mm diameter PVC mains pipe along Smart Drive and a 200mm diameter Asbestos Cement pipe along Edward Road which then converts to a 150 PVC pipe from approximately the Lot 4 frontage and continues along Edward Road. There is also a pump station located on the west side of Edward Road opposite Lot 4. A mild steel cement lined critical pipeline runs on the west side of Edward Road having a 600mm diameter. It is considered that due to the proximity of these mains water services that water could be extended and/or upgraded to service the subject land.

3.7.3 Gas

A high pressure gas pipeline is located on the west side of Edwards Road known as the Dampier to Bunbury gas pipeline. No other gas infrastructure appears to be within proximity to the subject land boundary. The proposed uses of the subject land are not anticipated to require a reticulated gas supply.

3.7.4 Sewer

The subject land is not located within proximity to mains sewer services. Surrounding land uses currently utilise septic tanks.

The Draft Country Sewerage Policy 2003 (DCSP) outlines permissible development in areas not connected to reticulated sewer. With respect to the Structure Plan, the DCSP states that reticulated sewerage does not have to be required for large lot subdivision or density development that does not involve the creation of lots less than 2,000m², as long as the statutory authority is satisfied there is no opportunity for further subdivision without sewerage.

The Structure Plan proposes a minimum lot size of 8,099m² which is anticipated to allow the use of on-site effluent disposal systems. Further subdivision of lots within the Structure Plan will not be supported and therefore the minimum lot size within the Structure Plan area will remain to be 8,099m². Given this it is considered that the proposed Structure Plan is consistent with the DCSP.

3.7.5 Road Networks

The Structure Plan has two main roads on the perimeter of the subject land being the Geraldton – Mt. Magnet Road and Edward Road. Both these roads will provide some commercial 'visibility' to the light industrial component of the site.

The Structure Plan identifies two possible future controlled intersections that enter onto Edward Road.

A simple and permeable road network has been provided which can accommodate any future interconnected pedestrian and cycle network, as well as any public transport system. Whilst there is currently no bus service through this area, as surrounding urban areas develop it is expected that in the medium term a bus service may be introduced.

The Structure Plan road network and layout for the light industrial area has been designed to maximise ground level legibility by conforming to a modified grid pattern. Street blocks aim to maintain relatively continuous and consistent street frontage for safe, efficient circulation of vehicles. Roundabouts have been avoided in order to ensure that larger vehicles (such as RAVs) can access all road systems.

A Transport Impact Assessment (attached) has been undertaken for the structure plan and concludes that intersections will operate at satisfactory service levels and that the internal transport network will have sufficient capacity to carry the daily traffic volumes expected on the transport network.

3.8 CONCLUSION

This report has outlined the proposal to amend the City of Greater Geraldton LPS5 by rezoning the subject land from 'Rural' to 'Development'. The 'Development' zone then requires a endorsed Structure Plan for the subject land which has also been prepared as part of this report as per the requirements of LPS5.

The Structure Plan proposes that land within the Narngulu Industrial Estate buffer be earmarked for 'Light Industry' land use, with an additional use (being a 'Transport Depot') to be permitted for Lot 41 in recognition of its existing use. Land outside the buffer will be earmarked for 'Rural Residential' land use. The proposed road and indicative lot layout will complement the proposed land uses and integrate with the surrounding land uses.

The Meru DIA Structure Plan provides greater clarity to the recommendations made in the Greater Geraldton Structure Plan with respect to the 'Development Investigation Area 9' and in summary:

- Is consistent with key regional guidelines and recommendations of the Geraldton Region Plan;
- Is consistent with the subject land's designation as 'Future Industrial and Service Commercial' and 'Development Investigation Area 9' within the Greater Geraldton Structure Plan 2011;
- Is consistent with the Narngulu Industrial Area Strategic Land Use Directions;
- Will accord with the objectives of the 'Development' zone under LPS5; and
- Will ensure that there are no incompatible land uses within the Narngulu Industrial Estate buffer.

Transport Impact Assessment

Meru Local Structure Plan

CEP02278

Prepared for
City of Greater Geraldton

May 2014



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Executive Summary

This Traffic Impact Assessment outlines the transport aspects of the proposed Meru Local Structure Plan focussing on traffic operations, road reservation widths and potential safety issues.

This assessment has been prepared in accordance with the WAPC *Transport Assessment Guidelines for Developments: Volume 2 – Structure Plans (2006)* for lodgement with the Meru Local Structure Plan.

The following conclusions have been made in regards to the proposed Meru Local Structure Plan:

- > The proposed LSP area, containing 50.83ha of service commercial land use, a total of 27.52ha of residential land use of varying densities (resulting in an estimated 47 Rural Residential lots), will provide accommodation and employment to support the economic growth in the area.
- > The land uses within the LSP area will generate an estimated 784 two-way trips during the AM peak hour and 848 two-way trips during the PM peak hour.
- > SIDRA analysis of the nominated intersections indicates that all intersections will operate at a Level of Service A, B and C at all times.
- > The road cross-sections for the internal transport network will have sufficient capacity to carry the daily traffic volumes expected on the network.
- > Due to the proximity of the intersection of Edward Road / Road 2 to the existing intersection of Edward Road / Galleon Drive, a reduction to the posted speed limit on Edward Road to 70km/h will be required (existing posted speed limit of 90km/h) once Road 2 is constructed in order to satisfy the relevant AustRoads standards for the minimum separation distances of staggered T intersections.
- > LATM measures to promote safety should be put in place on Road 2 to also deter use by heavy vehicles.

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1 Introduction

1.1 Background

Cardno has been commissioned by City of Greater Geraldton to prepare a Traffic Impact Assessment which outlines the transport aspects of the proposed Meru Local Structure Plan (LSP).

This Traffic Impact Assessment has been prepared in accordance with the WAPC Transport Assessment Guidelines for Developments: Volume 2 – Structure Plans and outlines the transport aspects of the proposed LSP, focussing on traffic operations, road reservation widths and potential safety issues.

The checklist form included in these guidelines is enclosed in **Appendix A**.

1.2 Structure Plan Location

The subject site is located in the locality of Meru which is situated approximately 8 km east of the Geraldton City Centre and 4km to the east of Geraldton Airport.

The subject site is bounded by Smart Drive to the north, Edward Drive to the west and Geraldton Mount Magnet Road to the south.

The location of the proposed development site is illustrated in **Figure 1-1**.

Figure 1-1 Meru Local Structure Plan Area



Source: Nearmap 2013

1.3 Specific Issues

The southern section of Edward Road that forms the boundary of the Meru LSP site is proposed to have its RAV restriction increased from RAV 7 to RAV 10. As a result, any intersections constructed as part of this structure plan would be required to be constructed in accordance with the relevant MRWA standards for RAV10 vehicles.

2 Structure Plan Proposal

2.1 Proposed Land uses

An indicative outline of the proposed Meru LSP is shown in **Figure 2-1** (and in A3 format in **Appendix B**) and includes the proposed land uses as shown in **Table 2-1**.

Table 2-1 Proposed Land Uses for Meru LSP

Land Use	No. of Lots	Total Area (ha)
Rural Residential	47	50.83
Industrial	22	27.52

Figure 2-1 Proposed Land Uses for Meru LSP



3 Existing Situation

3.1 Existing Land Uses within Structure Plan

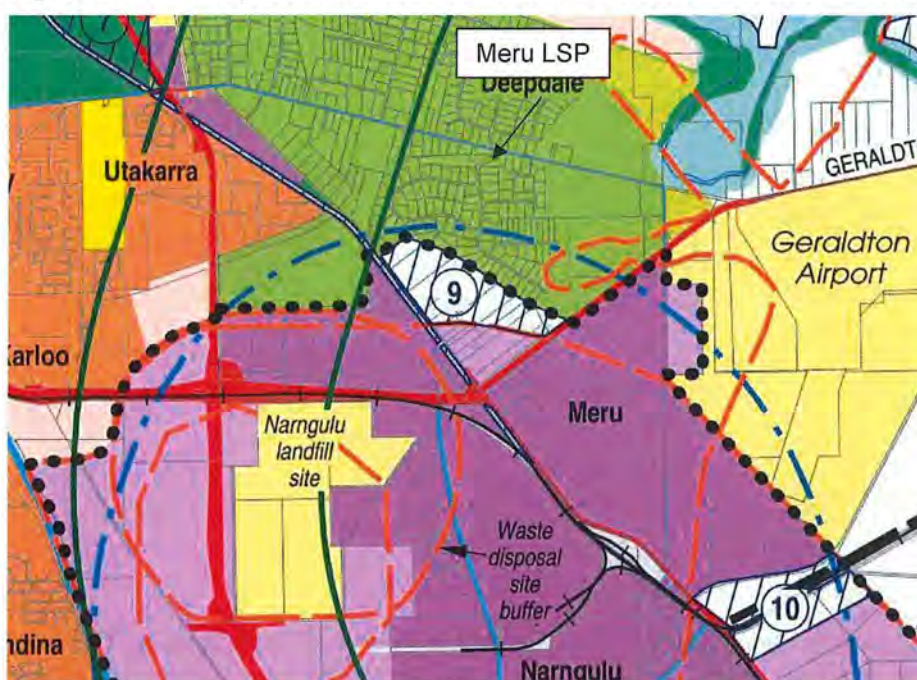
Currently the majority of the existing lots in the proposed site are either vacant or utilised for rural purposes, although it is noted that the south-eastern section of the site (approximately 6.4ha) is currently used as a heavy haulage site depot.

3.2 Existing Land uses within 800 meters of Structure Plan Area

According to the LPS 5, the LSP is directly adjacent to "Rural Residential" zoned lots to the east and is bordered to the north by Smart Drive and is adjacent to lots also zoned as "Rural Residential" and is bordered to the west by Edward Road, and is adjacent to lots which are zoned 'Special Use' under LPS5 and "industrial and commercial services" under Greater Geraldton structure Plan updated on June 2011.

Apart from Geraldton CBD all the surrounding area is currently undeveloped. Different proposed land uses of Geraldton and the surrounding area is illustrated in **Figure 3-1**.

Figure 3-1 Proposed land uses in Greater Geraldton Structure Plan Report



Source: Greater Geraldton Structure Plan

3.3 Existing Road Network within LSP

No internal road network currently exists within the proposed subject site.

3.4 Existing Road networks surrounding the LSP

The existing road network surrounding the subject site is shown in **Figure 3-2** and consists of Edward Road to the west, Geraldton Mount Magnet Road to the south and Smart Drive to the north. Road classifications are defined in the Main Roads Functional Hierarchy as follows:

Primary Distributors: These provide for major regional and inter-regional traffic movement and carry large volumes of generally fast moving traffic. Some are strategic freight routes and all are National or State roads. They are managed by Main Roads.

District Distributor A: These carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.

District Distributor B: Perform a similar function to District Distributor A but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with a traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and generally not through them, forming a grid which would ideally space them around 1.5 kilometres apart. They are managed by Local Government.

Local Distributors: Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local government.

Access Roads: Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local government.

Figure 3-2 Main Roads Functional Hierarchy



Source: Mainroads Western Australia roads Information Mapping

Edward Road, located on the western boundary of the site, connects to Geraldton Mount Magnet Road to the south and connects to the rural living area of Utakarra locality to the north. This road has been classified as a local distributor in Main Roads Western Australia (MRWA) Road Information Mapping (RIM) system with a posted speed limit of 90 km/h. As shown on **Figure 3-2**, Edward Road currently allows for vehicles up to and including RAV7 vehicles.

Geraldton Mount Magnet Road, located on the southern boundary of the site, provides a connection to Geraldton and the Port. Geraldton Mount Magnet Road is classified as a primary distributor MRWA Main Roads Functional Road Hierarchy (MRFH) and has a posted speed limit of 90 km/h, although it should be noted that this reduces to 80 km/hr for the eastern and western approaches to the Edward Road roundabout. As shown on **Figure 3-3**, Geraldton Mount Magnet Road currently allows for vehicles up to and including RAV10 vehicles to use this road.

3.7 Existing Pedestrian/Cycle Networks within the Subject Site

Currently there are no existing pedestrian/cyclist facilities within the proposed subject site.

3.8 Existing Pedestrian/Cycle Networks Surrounding the Subject Site

There is currently no pedestrian or cycling access to the site.

3.9 Existing Public Transport Services within the Subject Site

There are no existing public transport services within the subdivision.

3.10 Existing Public Transport Services Surrounding the Subject Site

No public transport services currently exist in the vicinity of the proposed subject site.

4 Proposed Internal Transport Networks

4.1 Road Reservation Widths

The proposed road hierarchy for the proposed internal transport network is shown in **Table 4-1**. A single type of road reservation width is considered for all local access roads. The layout of the proposed internal roads and new developed intersections are also shown in **Figure 4-1**.

Table 4-1 Road Reservation Width for Proposed Internal Transport Network

Road Name	Desirable Maximum Volume (vpd)	Liveable Neighbourhoods Designation	CGG Designation	Road Reservation Width (m)	Kerb to Kerb Width (m)	Posted Speed Limit (km/h)	RAV Classification
Road 1 & 3	3,000	Local Access Road	Industrial Street	20	7	50	RAV10
Road 2	3,000	Local Access Road	Access Street	25	9	50	None

Figure 4-1 Proposed Internal Road Network

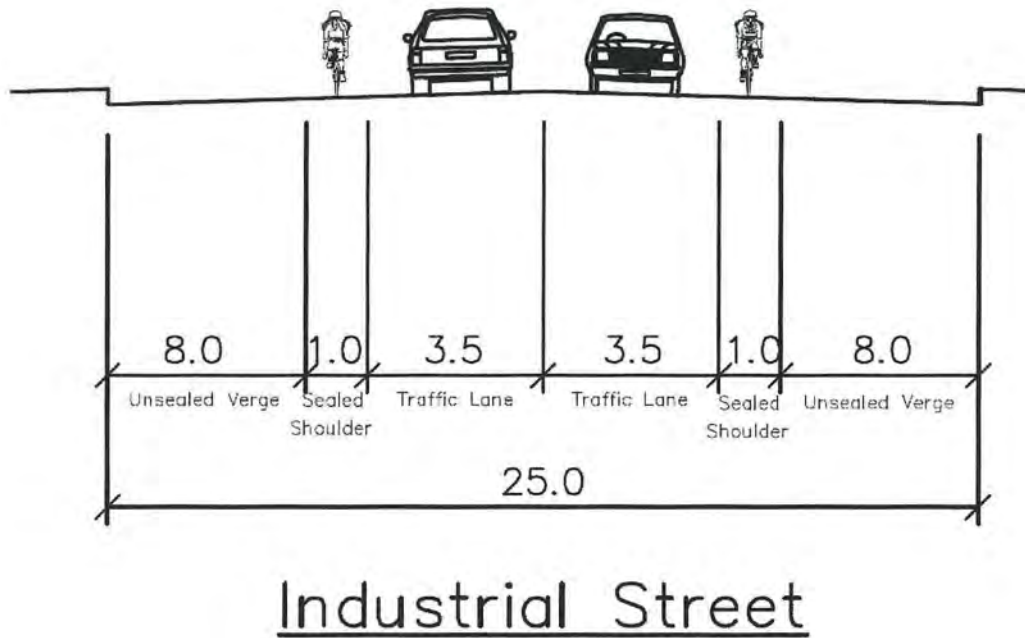


4.2 Road Cross-sections & Speed Limits

4.2.1 Road 1 and Road 3

The proposed cross section for Road 1 and Road 3 (Industrial Street) is shown in **Figure 4-2** and consists of two x 3.5 metre wide traffic lanes, two x 1.0 metre wide sealed shoulders and two x 8.0 metre wide unsealed verges to ensure sufficient roadside space is available for heavy vehicles entering and egressing any potential development accesses.

Figure 4-2 Proposed Road Cross-section for Industrial Streets within Internal Transport Network



As illustrated in **Figure 4-3**, the structure plan includes a proposed change to the Edward Road RAV classification from RAV 7 (existing) to RAV 10.

It is noted that due to the proximity of the intersection of Edward Road / Road 2 to the existing intersection of Edward Road / Galleon Drive, a reduction to the posted speed limit on Edward Road to 70km/h will be required (existing posted speed limit of 90km/h) once Road 2 is constructed in order to satisfy the relevant AustRoads standards for the minimum separation distances of staggered T intersections.

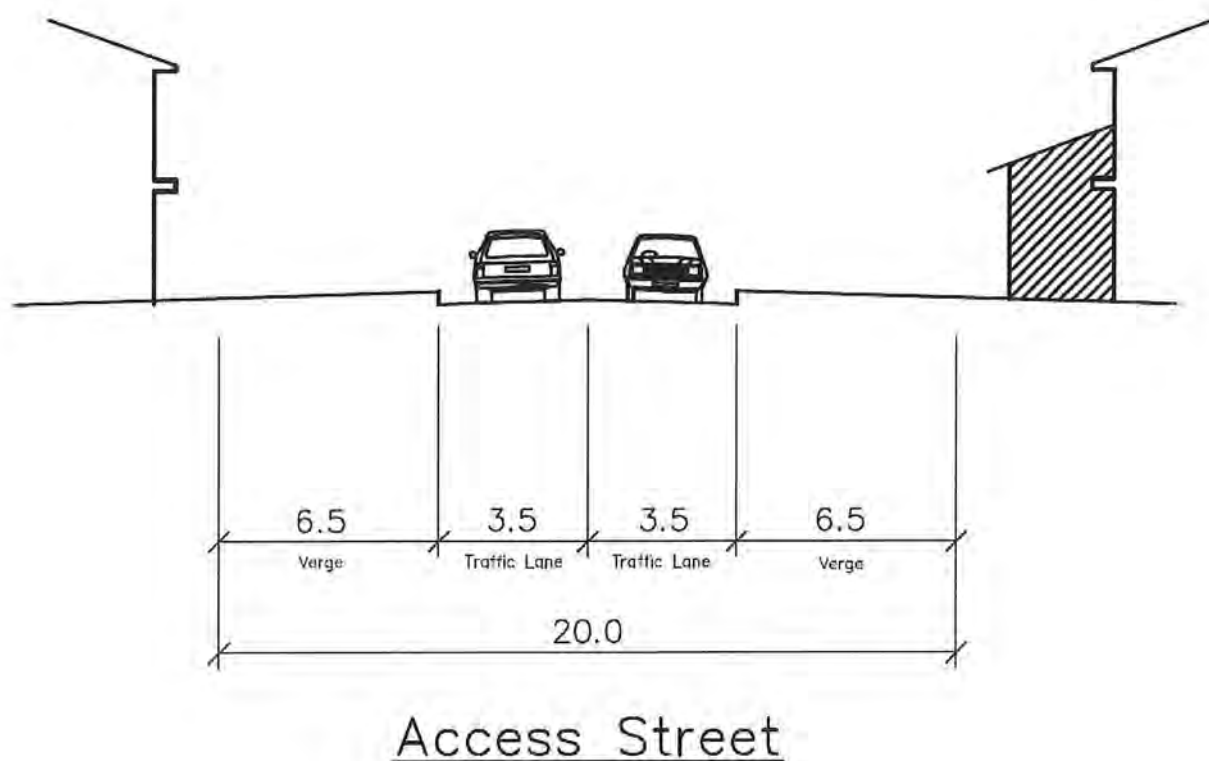
Figure 4-3 Proposed Changes to External RAV Network Classification



4.2.2 Road 2

The proposed cross section for Road 2 (Access Street) is shown in **Figure 4-4** and consists of two x 3.5 metre wide traffic lanes and two x 6.5m verges.

Figure 4-4 Proposed Road Cross-section for Access Streets within Internal Transport Network



4.3 Pedestrian/Cycle Networks and Crossing Facilities

No pedestrian or cycling facilities is proposed within the LSP. However, if sufficient LATM measures are put in place along Road 2 (as described in **Section 6.9** of this report) to discourage use by heavy vehicles, the sealed shoulder in this road may be used for bicycle access to/from the rural residential dwellings.

4.4 Public Transport Routes

Following liaison with Public Transport Authority (PTA), no bus public transport services have been proposed for the road network surrounding the Meru LSP site due to the estimated low public transport demand for the Meru LSP and surrounding area.

5 Integration with Surrounding Area

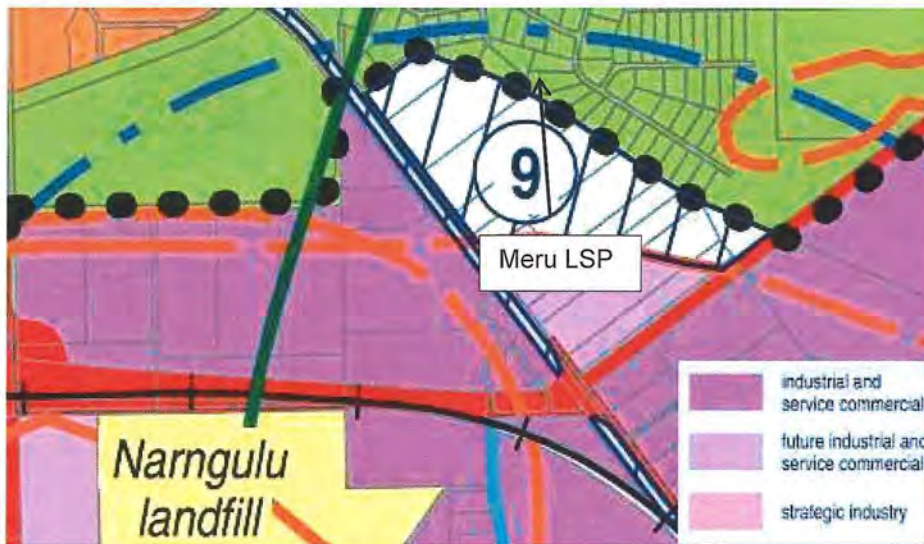
5.1 Surrounding Attractors / Generators

No significant attractors or generated have been identified for the surrounding area.

5.2 Proposed Changes to Surrounding Land Uses

As shown in **Figure 5-1**, the area to the west of the site was previously zoned as special use in City of Greater Geraldton Local Planning Scheme 5 but rezoned to Industrial and Service Commercial in the City of Greater Geraldton Structure Plan (GGSP).

Figure 5-1 Proposed Land uses for western side of the site based on GGSP



Source: GGSP

Figure 5-2 Proposed Land uses for western side of the site based on WAPC



Source: WAPC

6 Analysis of Transport Network

6.1 Assessment Years and Time Periods

Discussions with the CGG Town Planning Services indicate that a full build-out of the subject site is assumed to occur by 2031.

The following model scenarios have therefore been analyzed as part of this assessment:

- > Scenario 1 – 2031 without development; and
- > Scenario 2 – 2031 with development.

Following best industry practices for evaluation of intersection performance, the AM peak hour and PM peak hour were chosen as the assessment time periods.

6.2 Development Generated Traffic

The trip generation rates for the rural residential land uses were sourced from the Institute of Transportation Engineers (ITE) "*Trip Generation Manual*" (7th Edition) while the trip generation rates for light industrial land uses were sourced from the RTA Guide to Traffic Generating Developments. Summaries of the trip generation rates are shown in **Table 6-1** and **Table 6-2**.

The AM and PM trip direction proportions for both Land uses have been calculated according to ITE.

Table 6-1 ITE Trip Generation Rates

Land Use	ITE Land Use Code	Trip Generation Rates	
		AM Peak Hour	PM Peak Hour
Rural Residential	210 (Single – Family Detached Housing)	0.77 per Dwelling Units	1.02 per Dwelling Units

Table 6-2 RTA Trip Generation Rates

Land Use	RTA Use Code	Trip Generation Rates	
		AM Peak Hour	PM Peak Hour
Light Industrial	Industry- Warehouses	109 trips per ha	116 trips per ha

Additionally, the trip direction proportions of the land use type are as shown in **Table 6-3**.

Table 6-3 ITE Direction Proportion Rates

Land Use	AM Peak Hour		PM Peak Hour	
	IN	OUT	IN	OUT
Light Industrial	90%	10%	14%	86%
Rural Residential	26%	74%	64%	36%

Table 6-4 shows the number of trips estimated to be generated by the proposed development after the application of above trip and direction rates.

Table 6-4 Summary of Traffic Generated within LSP Area

Land Use	Generation Unit	AM		PM	
		Incoming	Outgoing	Incoming	Outgoing
Industrial and Commercial services	27.52 ha	656	73	102	627
Rural Residential	47 Lots	9	27	31	17

6.3 Extraneous (Background) Traffic Flows

As it is stated in **Section 3.6** of this report, the existing traffic volumes on Edward Road and Geraldton Mount Magnet Road were sourced from the CGG. As an input to this model, traffic growth rates on surrounding roads were derived from the GSTLUM 2031 scenario, assuming a 3.0% per annum growth in population and employment, an average (non-peak) freight scenario and that the Oakajee Port will not be operational by this scenario year.

6.4 Total Traffic Flows

Total future traffic volumes are derived by adding site generated trips shown in Table 6-5 to future background volumes anticipated for 2031.

Table 6-5 Summary of Total traffic flows on Road Network in the Assessment Year

Road Name	Traffic Flows (2-way)	
	AM Peak	PM Peak
Edward Road	1,006	997
Geraldton Mount Magnet Road	647	589

6.5 Intersection Operation and Method of Control

SIDRA analysis was undertaken at the following intersections to estimate the impact of the development generated traffic on the surrounding transport network:

- > Road 1 / Edward Road;
- > Road 2 / Edward Road; and
- > Edward Road / Geraldton Mount Magnet Road

SIDRA outputs for each approach are presented in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue. These characteristics are defined as follows:

- > **Degree of Saturation (DOS):** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity. The theoretical intersection capacity is exceeded for an un-signalised intersection where $DOS > 0.80$;
- > **95% Queue:** is the statistical estimate of the queue length below which 95% of all observed queues would be expected;
- > **Average Delay:** is the average of all travel time delays for vehicles through the intersection. An un-signalised intersection can be considered to be operated at capacity where the average delay exceeds 40 seconds for any movement; and

Level of Service (LOS): is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in **Table 6-6**.

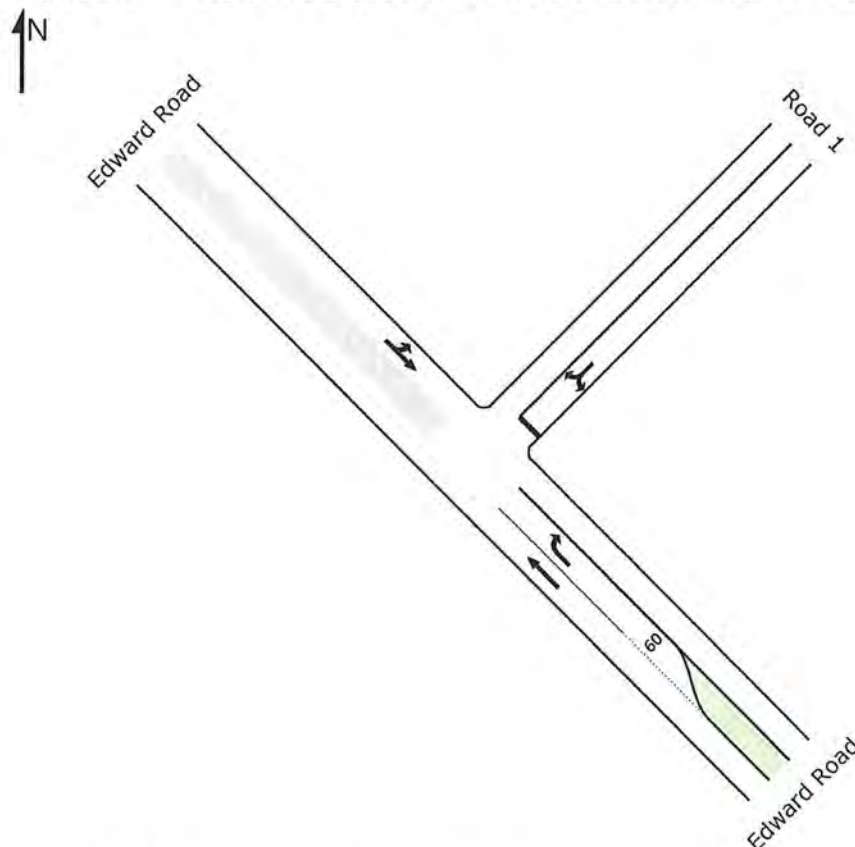
Table 6-6 Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
B	Reasonable free-flow operations	10-20 sec	10-15 sec
C	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	5-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

6.5.2 Road 1 / Edward Road Intersection Assessment

The assessment below analyses the Road 1 / Edward Road intersection for both scenarios (2031, with and without development). **Figure 6-1** below shows the SIDRA layout representation of the intersection at this location. It is noted that 5% of all through movements on Edward Road have been assumed to be heavy vehicles, while 10% of all turning movements to/from Edward Road to/from Road 1 have been assumed to be heavy vehicles. For the purpose of the SIDRA analysis undertaken, it has been assumed that all of the heavy vehicles are RAV10 vehicles.

Figure 6-1 Indicative Layout for the Road 1 / Edward Road Intersection



The results from the SIDRA analysis for both Scenario 1 and 2 (with and without development) are summarised in **Table 6-7** and **Table 6-8** for the 2031 AM and PM peak hour periods respectively.

Table 6-7 Edward Road / Road 1 Intersection Performance – 2031 AM Peak Hour

Intersection Approach		2031 No Development				2031 With Development			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Edward Road (SE)	T	--	--	--	--	0.15	0	A	0
	R	--	--	--	--	0.55	11	B	37
Road 1 (NE)	L	--	--	--	--	0.11	13	B	3
	R	--	--	--	--	0.11	12	B	3
Edward Road (NW)	L	--	--	--	--	0.10	9	A	0
	T	--	--	--	--	0.10	0	A	0
Overall	-	--	--	--	--	0.55	7	--	--

Table 6-8 Edward Road / Road 1 Intersection Performance – 2031 PM Peak Hour

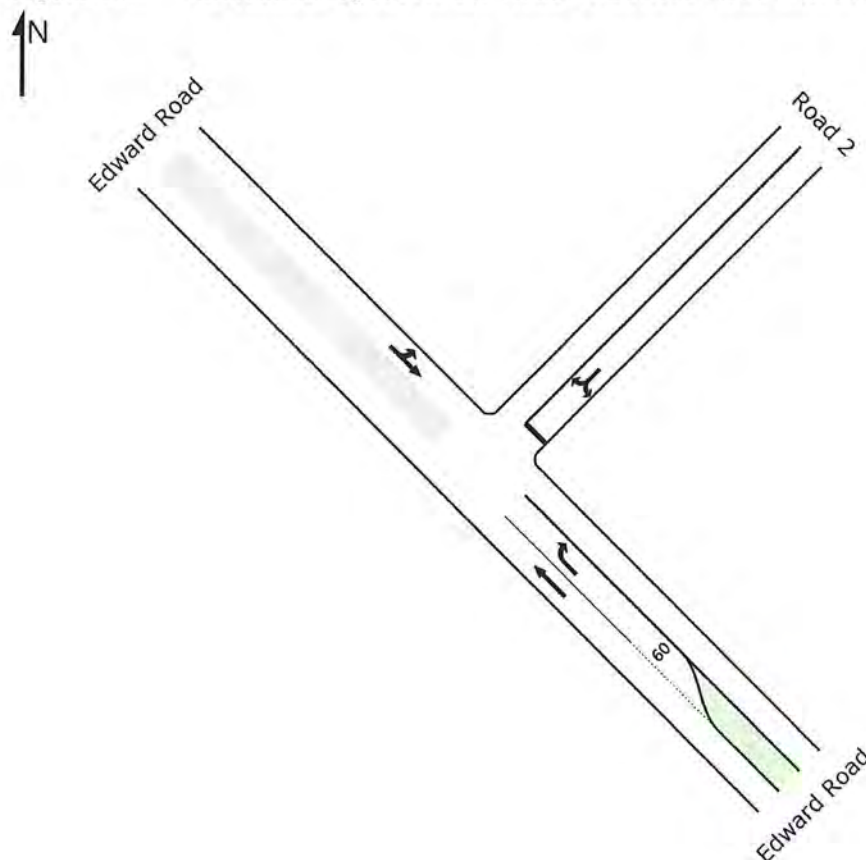
Intersection Approach		2031 No Development				2031 With Development			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South East: Edward Road	T	--	--	--	--	0.12	1	A	0
	R	--	--	--	--	0.09	10	B	3
North East: Road 1	L	--	--	--	--	0.76	19	C	89
	R	--	--	--	--	0.76	19	C	89
North West: Edward Road	L	--	--	--	--	0.12	9	A	0
	T	--	--	--	--	0.12	0	A	0
Overall	-	--	--	--	--	0.76	15	--	--

From **Table 6-7** to **Table 6-8** above show that the intersection is expected to perform adequately in the “with development” scenario. It is also noted that the 95th percentile queue on Edward Road (south east) is only 3m, thereby indicating that it highly unlikely that any build-up of queues on this intersection approach will affect the Edward Road / Geraldton Mount Magnet Road intersection as this intersection is located approximately 230m from the Edward Road / Geraldton Mount Magnet Road intersection.

6.5.3 Road 2 / Edward Road Intersection Assessment

The assessment below analyses the Road 2 / Edward Road intersection for both scenarios (2031, with and without development). **Figure 6-2** is a SIDRA layout representation of the intersection at this location. It is noted that 5% of all through movements on Edward Road have been assumed to be heavy vehicles, while no turning movements to/from Road 2 have been assumed to consist of heavy vehicles. For the purpose of the SIDRA analysis undertaken, it has been assumed that all of the heavy vehicles are RAV10 vehicles.

Figure 6-2 Indicative Layout for the Road 2 / Edward Road Intersection



The results from the SIDRA analysis for both Scenario 1 and 2 (with and without development) are summarised in **Table 6-9** and **Table 6-10** for the 2031 AM and PM peak hour periods respectively.

Table 6-9 Edward Road / Road 2 Intersection Performance – 2031 AM Peak Hour

Intersection Approach		2031 No Development				2031 With Development			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South East: Edward Road	T	--	--	--	--	0.15	0	A	0
	R	--	--	--	--	0.00	10	A	0
North East: Road 2	L	--	--	--	--	0.02	13	B	1
	R	--	--	--	--	0.02	13	B	1
North West: Edward Road	L	--	--	--	--	0.10	9	A	0
	T	--	--	--	--	0.10	0	A	0
Overall		--	--	--	--	0.15	1	--	--

Table 6-10 Edward Road / Road 2 Intersection Performance – 2031 PM Peak Hour

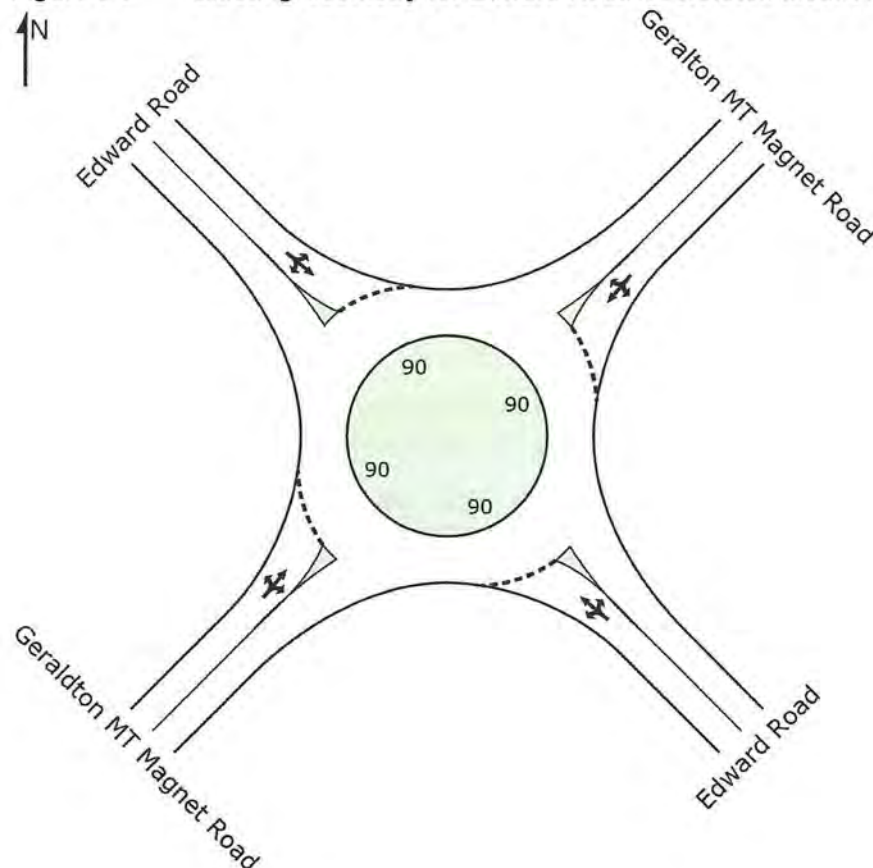
Intersection Approach		2031 No Development				2031 With Development			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South East: Edward Road	T	--	--	--	--	0.13	0	A	0
	R	--	--	--	--	0.01	10	A	0
North East: Road 2	L	--	--	--	--	0.01	13	B	0
	R	--	--	--	--	0.01	13	B	0
North West: Edward Road	L	--	--	--	--	0.12	9	A	0
	T	--	--	--	--	0.12	0	A	0
Overall	-	--	--	--	--	0.13	1	--	--

From Table 6-9 to Table 6-10 above show that the intersection is expected to perform adequately in the "with development" scenario.

6.5.4 Geraldton Mount Magnet Road / Edward Road Intersection Assessment

The assessment below analyses the Road 2 / Edward Road intersection for both scenarios (2031, with and without development). Figure 6-3 is a SIDRA layout representation of the intersection at this location.

Figure 6-3 Existing Geometry for Edward Road / Geraldton Mount Magnet Road Intersection



The results from the SIDRA analysis for both Scenario 1 and 2 (with and without development) are summarised in Table 6-11 and Table 6-12 for the 2031 AM and PM peak hour periods respectively.

Table 6-11 Geraldton Mount Magnet Road / Edward Road Intersection Performance – 2031 AM Peak Hour

Intersection Approach		2031 No Development				2031 With Development			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South East: Edward Road	L	0.12	8	A	5	0.30	10	A	16
	T	0.12	9	A	5	0.30	11	B	16
	R	0.12	18	B	5	0.30	20	B	16
North East: Geraldton MT Magnet Road	L	0.06	9	A	2	0.27	9	A	14
	T	0.06	8	A	2	0.27	8	A	14
	R	0.06	19	B	2	0.27	20	B	14
North West: Edward Road	L	0.09	8	A	3	0.15	8	A	6
	T	0.09	9	A	3	0.15	9	A	6
	R	0.09	18	B	3	0.15	18	B	6
South West: Geraldton Mount Magnet Road	L	0.17	9	A	7	0.38	12	B	23
	T	0.17	8	A	7	0.38	12	B	23
	R	0.17	19	B	7	0.38	23	C	23
Overall	-	0.17	11	B	--	0.38	14	B	--

Table 6-12 Geraldton Mount Magnet Road / Edward Road Intersection Performance – 2031 PM Peak Hour

Intersection Approach		2031 No Development				2031 With Development			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South East: Edward Road	L	0.09	8	A	3	0.12	9	A	5
	T	0.09	10	A	3	0.12	10	B	5
	R	0.09	18	B	3	0.12	19	B	5
North East: Geraldton MT Magnet Road	L	0.08	9	A	3	0.15	11	B	7
	T	0.08	8	A	3	0.15	10	A	7
	R	0.08	20	B	3	0.15	21	C	7
North West: Edward Road	L	0.13	8	A	5	0.48	8	A	28
	T	0.13	9	A	5	0.48	10	A	28
	R	0.13	18	B	5	0.48	18	B	28
South West: Geraldton Mount Magnet Road	L	0.15	8	A	6	0.19	9	A	9
	T	0.15	8	A	6	0.19	8	A	9
	R	0.15	19	B	6	0.19	19	B	9
Overall	-	0.15	12	B	--	0.48	12	B	--

From **Table 6-11** and **Table 6-12** above show that the intersection is expected to perform adequately in the "with development" scenario. It is also noted that the 95th percentile queue on Edward Road (North West) is only 28m, thereby indicating that it highly unlikely that any build-up of queues on this intersection approach will affect the Edward Road / Road 1 intersection as this intersection is located approximately 230m from the Edward Road / Road 1 intersection.

6.6 Access Strategy

No Access Road or/and Driveway should be allowed to Geraldton Mount Magnet Road for the lots adjacent to this Road.

6.7 Safe Walk/Cycle to school assessment

As no schools are located within 800m of the subject site, no safe walk/cycle route assessment has been conducted.

6.8 Access to Public Transport

As no public transport services have been planned within a 400m radius of the proposed LSP site, no analysis of access to public transport has been undertaken as part of this assessment.

6.9 Safety Issues

LATM measures should be put in place on Road 2 to discourage heavy vehicles using this road either signage or road narrowing. Such measures at the site will promote safety for all road users.

6.10 Geometric Design Considerations

The turning radius required for double road trains (length of 36m) and triple road trains (length of 53.5m), as described in the "MRWA Supplement to Austroads Guide to Road Design - Part 4", are shown in **Table 6-13**. Consideration for these standards should be given at the subdivision stage to ensure that both RAV7 and RAV 10 vehicles can satisfactorily undertake the turning movements to/from Edward Road, as well as at the Road 1 / Road 3 intersections.

Table 6-13 Preferred Minimum Turning Radii

Vehicle Type	Turning Radius to outside front wheel
Double Road Train (36.5m)	20m
Triple Road Train (53.8m)	20m

As illustrated in **Figure 6-4** to **Figure 6-9** swept path analysis has been undertaken for RAV7 vehicles entering and egressing Road 1 on to Edward Road and for southbound RAV10 vehicles egressing from Road 1 on to Edward Road.

Figure 6-4 Swept Path Analysis at Edward Road/Geraldton Mount Magnet Road Roundabout for 36.5m (RAV7) Vehicle



Source: Nearmap 2013

Figure 6-5 Swept Path Analysis at Edward Road/Geraldton Mount Magnet Road Roundabout for 53.4m (RAV7) Vehicle



Source: Nearmap 2013

Figure 6-6 Swept Path Analysis for a 53.4m Vehicle (RAV10) Undertaking Right Turn from Edward Road to Road 1



Source: Nearmap 2013

Figure 6-7 Swept Path Analysis for a 53.4 m Vehicle (RAV10) Undertaking Left Turn from Road 1 to Edward Road



Source: Nearmap 2013

Figure 6-8 Swept Path Analysis for a 36.5 m Vehicle (RAV7) Undertaking Left and Right Turns from Road 1 to Edward Road



Source: Nearmap 2013

Figure 6-9 Swept Path Analysis for a 36.5m Vehicle (RAV7) Undertaking Left Turn from Edward Road to Road 1



Source: Nearmap 2013

The foregoing figures related to access to/from Road 1 illustrate the minimum area necessary for use by the design vehicles.

7 Conclusions

This Traffic Impact Assessment outlines the transport aspects of the proposed Meru Local Structure Plan focussing on traffic operations, road reservation widths and potential safety issues.

This assessment has been prepared in accordance with the WAPC *Transport Assessment Guidelines for Developments: Volume 2 – Structure Plans (2006)* for lodgement with the Meru Local Structure Plan.

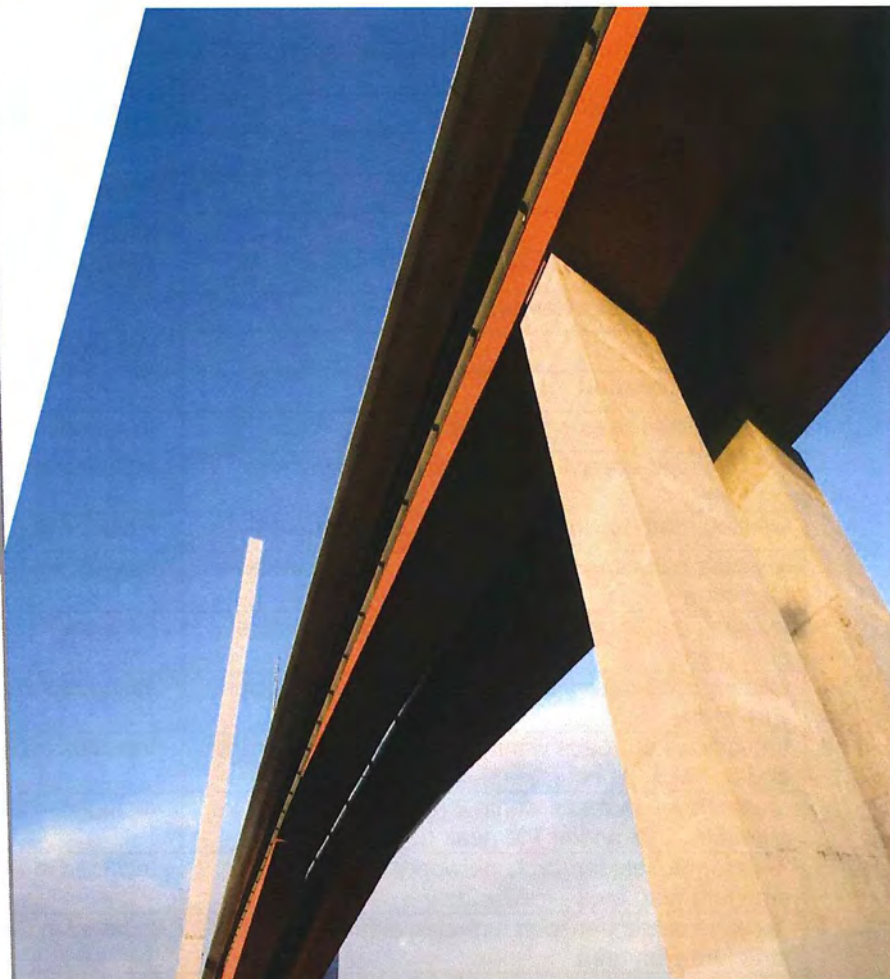
The following conclusions have been made in regards to the proposed Meru Local Structure Plan:

- > The proposed subject site, containing 27.52 ha of service Light Industrial, a total of 50.83 ha of Rural Residential land use (resulting in an estimated 47 Lots); will provide accommodation and employment to support the economic growth in the area.
- > The land uses within the subject site will generate an estimated 784 two-way trips during the AM peak hour and 848 two-way trips during the PM peak hour.
- > SIDRA analysis of the proposed intersections indicates that all intersections will operate at a Level of Service A to C at all times.
- > The road cross-sections for the internal transport network will have sufficient capacity to carry the daily traffic volumes expected on the transport network.
- > Due to the proximity of the intersection of Edward Road / Road 2 to the existing intersection of Edward Road / Galleon Drive, a reduction to the posted speed limit on Edward Road to 70km/h will be required (existing posted speed limit of 90km/h) once Road 2 is constructed in order to satisfy the relevant AustRoads standards for the minimum separation distances of staggered T intersections.
- > LATM measures to promote safety should be put in place on Road 2 to also deter use by heavy vehicles.

Meru Local Structure Plan

APPENDIX A

WAPC CHECKLIST

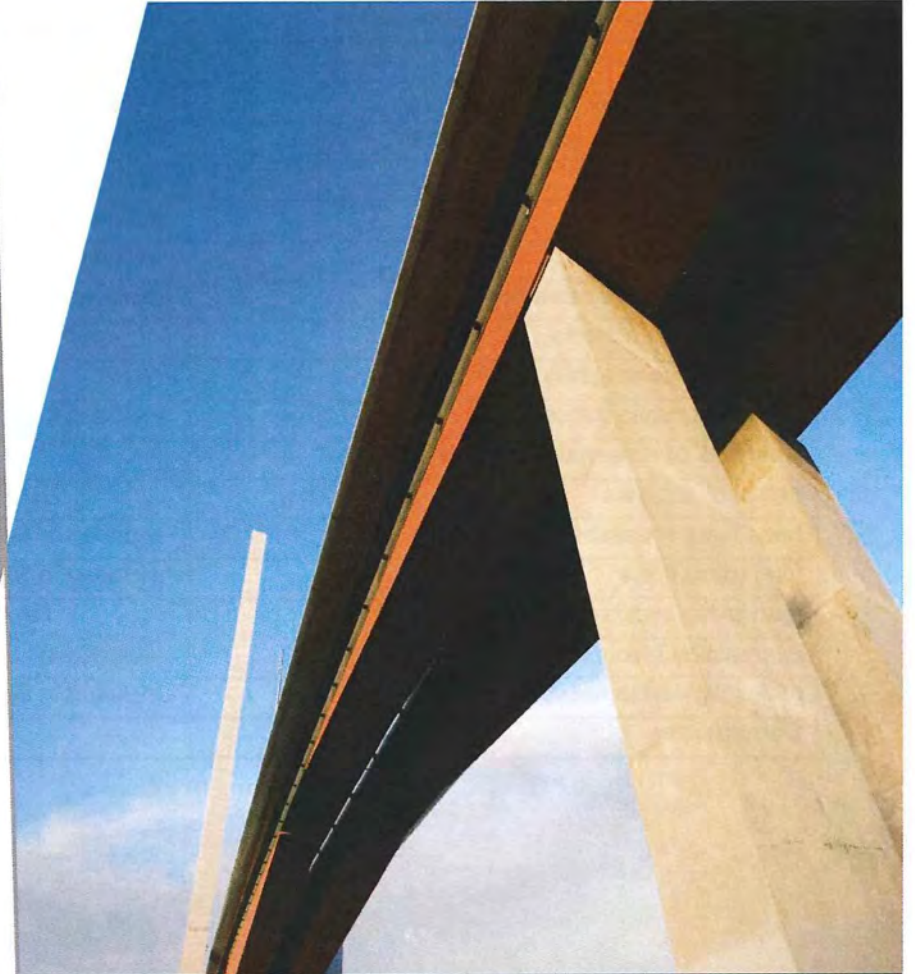


Item	Status	Comments/Proposals	
Summary			
Introduction/Background			
Structure plan proposal			
regional context	Included in Section 1.2		
proposed land uses	Included in Section 2.1		
table of land uses and quantities	Included in Section 2.1		
major attractors/generators	NA		
specific issues	Included in Section 1.3		
Existing situation			
existing land uses within structure plan	Included in Section 3.1		
existing land uses within 800 metres of structure plan area	Included in Section 3.2		
existing road network within structure plan area	Included in Section 3.3		
existing pedestrian/cycle networks within structure plan area	Included in Section 3.7		
existing public transport services within structure plan area	Included in Section 3.9		
existing road network within 2 (or 5) km of structure plan area	Included in Section 3.4		
traffic flows on roads within structure plan area (PM and/or AM peak hours)	Included in Section 6.2		
traffic flows on roads within 2 (or 5) km of structure plan area (AM and/or PM peak hours)	Included in Section 3.6		
existing pedestrian/cycle networks within 800m of structure plan area	Included in Section 3.8		
existing public transport services within 800m of structure plan area	Included in Section 3.10		
Proposed internal transport networks			
changes/additions to existing road	NA		
network or proposed new road network	Included in Section 4		
road reservation widths	Included in Section 4.1		
road cross-sections & speed limits	Included in Section 4.2		
intersection controls	Included in Section 6.5		
pedestrian/cycle networks and crossing facilities	NA		
public transport routes	Included in Section 4.4		
Changes to external transport networks			
road network	NA		
intersection controls	Included in Section 6.5		
pedestrian/cycle networks and crossing facilities	NA		
public transport services	NA		
Integration with surrounding area			
trip attractors/generators within 800 metres	Included in Section 5.1		
proposed changes to land uses within 800 metres	NA		
travel desire lines from structure plan to these attractors/generators	NA		
adequacy of external transport networks	Included in Section 6.4		
deficiencies in external transport networks	NA		
remedial measures to address deficiencies	NA		
Analysis of internal transport networks			

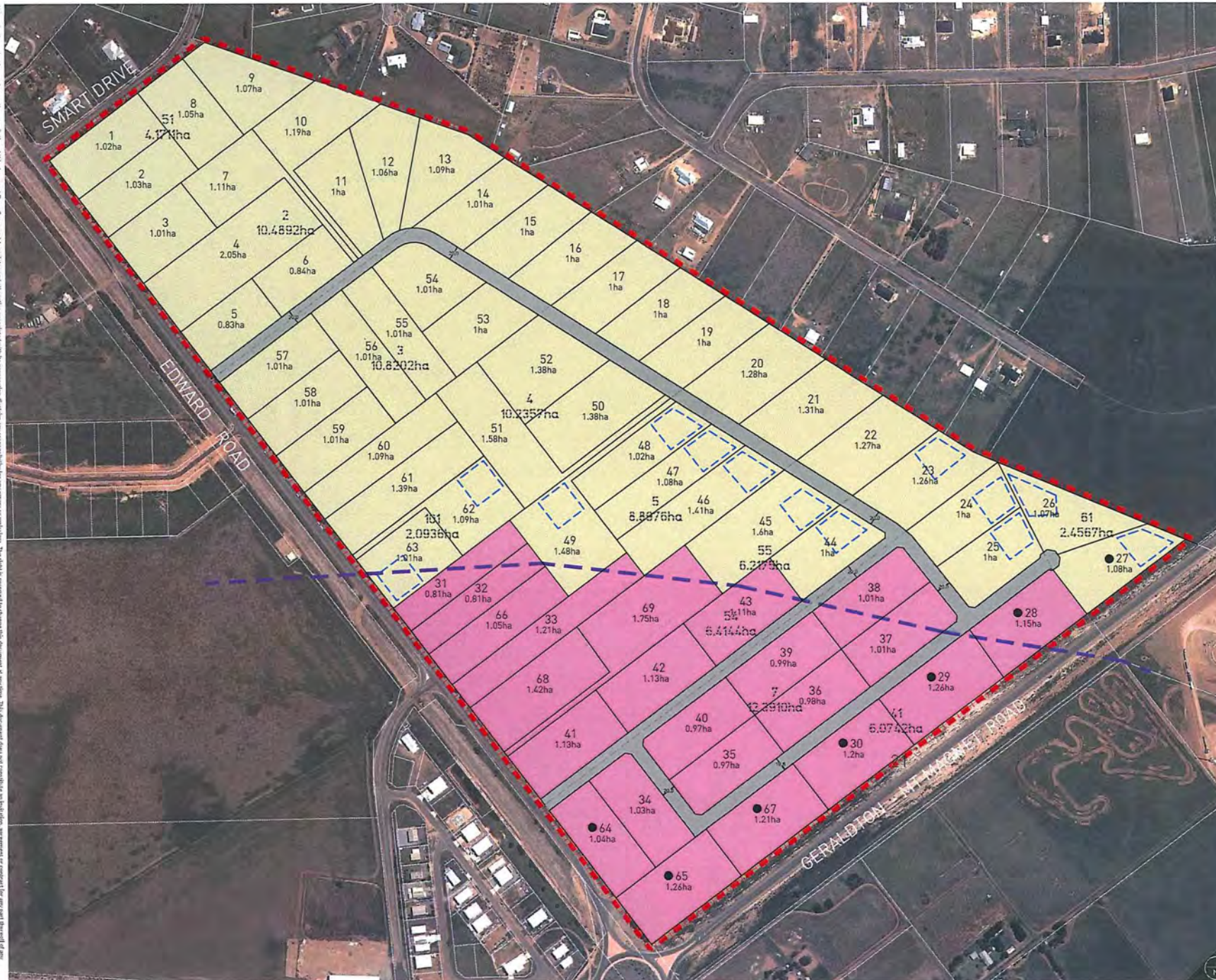
assessment year(s) and time period(s)	Included in Section 6.1		
structure plan generated traffic	Included in Section 6.2		
extraneous (through) traffic	Included in Section 6.3		
design traffic flows (ie. total traffic)	Included in Section 6.4		
road cross-sections	Included in Section 4.2		
intersection controls	Included in Section 6.5		
access strategy	Included in Section 6.6		
pedestrian / cycle networks	Included in Section 4.3		
safe routes to schools	NA		
pedestrian permeability & efficiency	NA		
access to public transport	Included in Section 6.8		
Analysis of external transport networks			
extent of analysis	NA		
base flows for assessment year(s)	Included in Section 6.3		
total traffic flows	Included in Section 6.4		
road cross-sections	NA		
intersection layouts & controls	Included in Section 6.5		
pedestrian/cycle networks	Included in Section 3.8		
Conclusions			

Meru Local Structure Plan

APPENDIX B
MERU LOCAL
STRUCTURE PLAN



As areas and dimensions are subject to survey.



Planning Design Delivery



LEGEND

- RURAL RESIDENTIAL
- INDUSTRY LIGHT - RESTRICTED USES
- SUBJECT SITE
- NARNGULU INDUSTRIAL ESTATE BUFFER
- EXISTING BOUNDARIES
- BUILDING ENVELOPES
- NO ACCESS WILL BE PERMITTED ONTO THE GERALDTON-MOUNT MAGNET ROAD OR EDWARD ROAD

0 125 250 Metres

REVISIONS

Rev	Date	Drawn
B	2013.07.01	S.Blanchard



W: www.rowegroup.com.au
 E: info@rowegroup.com.au
 P: 08 9221 1991

Date Drawn: 2013-07-01
 Job Ref: 7587
 Scale: 1:5000 @ A3
 Client: City of Greater Geraldton
 Designer: H. Graham
 Drawn: S.Blanchard
 Projection: MGA50 GDA94
 Plan ID: 7587-CSP-01-B
 Aerial Photography captured and supplied by GOOGLE EARTH PRO

Meru Development Investigation Area Structure Plan

Lots 2,5,7,31-33,41,51,54-55 & 61

Edward Road

About Cardno

Cardno is an ASX200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company, listed on the Australian Securities Exchange [ASX: CDD].

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Our Ref: LP/0111
Enquiries: Mr Simon Lancaster

WLP RECORDED

9/1/08 JV

27 October 2008

Dept for Planning & Infrastructure
PO Box 68
GERALDTON WA 6531



Dear Sir/Madam

Draft Meru Subdivision Guide Plan and Scheme Text provisions

The City of Geraldton-Greenough writes to advise you that it has prepared a draft Subdivision Guide Plan for the area of land bounded by Edward Road to the west, Smart Drive to the north, the Eastlyn Estate to the east, and the Southern Transport Corridor alignment to the south.

Please find enclosed with this correspondence a copy of the draft Subdivision Guide Plan along with a location plan and aerial photograph to elaborate upon this matter. The draft plan has been prepared in response to repeated landowner interest within the subject area concerning the development and subdivision potential of their properties.

The City's Town Planning Scheme and Department for Planning and Infrastructure's Geraldton Region Plan (1999) both identify the subject land as being 'Rural'. The existing lot sizes within this area (ranging from 8096m² to 12.3879ha) indicate that this land is not capable of agricultural production, and the neighbouring presence of the rural-residential Eastlyn Estate (with its 1ha minimum lot size) provides a degree of development pressure. Given these factors some landowners have expressed a desire to be able to subdivide their property for rural-residential purposes, whilst others have expressed a desire to also undertake some limited business operations upon their property.

The Geraldton Region Plan defines the southern portion of the subject area as within the confines of the Narngulu Industrial Estate Buffer and this is required to be incorporated into the design of the draft Plan.

The draft Subdivision Guide Plan proposes that the northern portion of the subject area be able to be subdivided for rural-residential purposes to a minimum 1ha lot size, with some additional 'commercial' land uses permitted (subject to such proposed development requiring to be advertised and assessed with consideration to its compatibility to surrounding rural-residential properties). The draft Plan also proposes that the southern portion that is within the buffer area be rezoned to a Special Use Zone to allow for a greater range of land uses, although these land

uses will be required to demonstrate their compatibility with nearby rural-residential land uses. The buffer area requires that further habitable buildings (e.g. residences and ancillary accommodation) will not be permitted, although existing residences will be treated as existing non-conforming uses and are not required to be removed by any rezoning action.

The City is seeking the comments of all affected landowners, surrounding landowners and relevant government agencies upon this draft Subdivision Guide Plan so that it may be altered to best meet the needs of all stakeholders. It is recognised that with many different landowners involved and a range of aspirations having been previously expressed it is difficult to formulate a plan that all parties will initially be satisfied with and it is hoped that this consultation process will enable a plan to be finalised that meets with general acceptance.

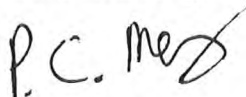
The preparation of the draft Subdivision Guide Plan is the first step in a process that the City anticipates undertaking to meet with landowner and agency expectations. Should a Plan be largely agreed upon, then the City is anticipating making a submission during its own Town Planning Scheme No.5 advertising period. The submission would propose to rezone the northern section to 'Rural-Residential (Additional Use)' zone and the area within the buffer to 'Special Use' zone. A draft version of the Scheme Text provisions have also been attached with this correspondence for your inspection and comment, this text details what land uses would be permitted within the proposed zones. To be of further assistance a list of definitions for the proposed uses has been attached to elaborate.

Council would welcome any comments on this proposal, but advises that they must be in writing on the attached public submission form and submitted prior to 4pm on Friday 28 November 2008.

This draft Subdivision Guide Plan and Scheme Text provisions are available for inspection in order to provide opportunity for public comment and it should not be construed that any approval will be granted.

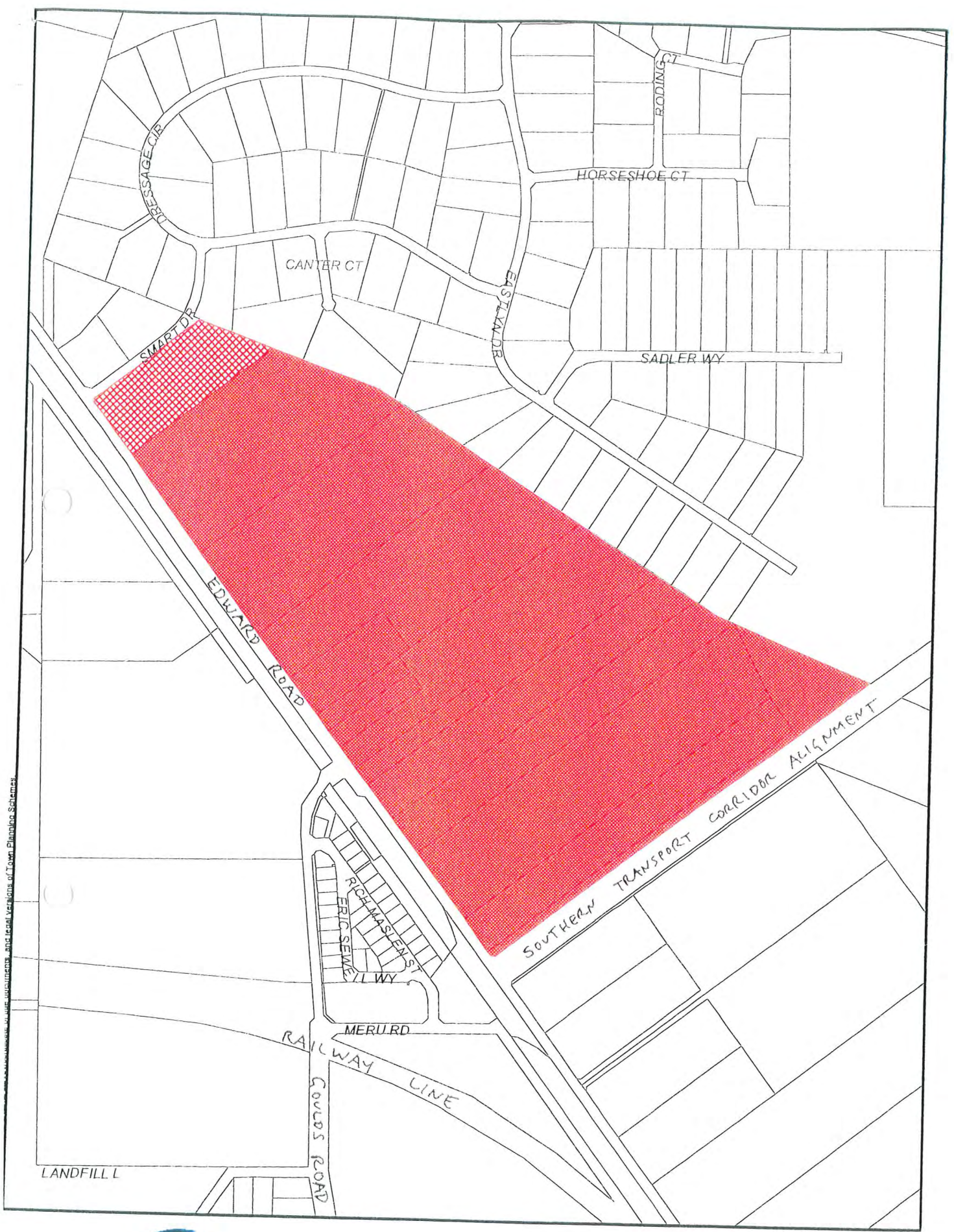
Trusting that this correspondence and the attachments are of assistance, however, should you require further information regarding this application please do not hesitate to contact Council's Town Planning Department during office hours on 9956 6900, or visiting Council offices at Cathedral Avenue, Geraldton.

Yours faithfully

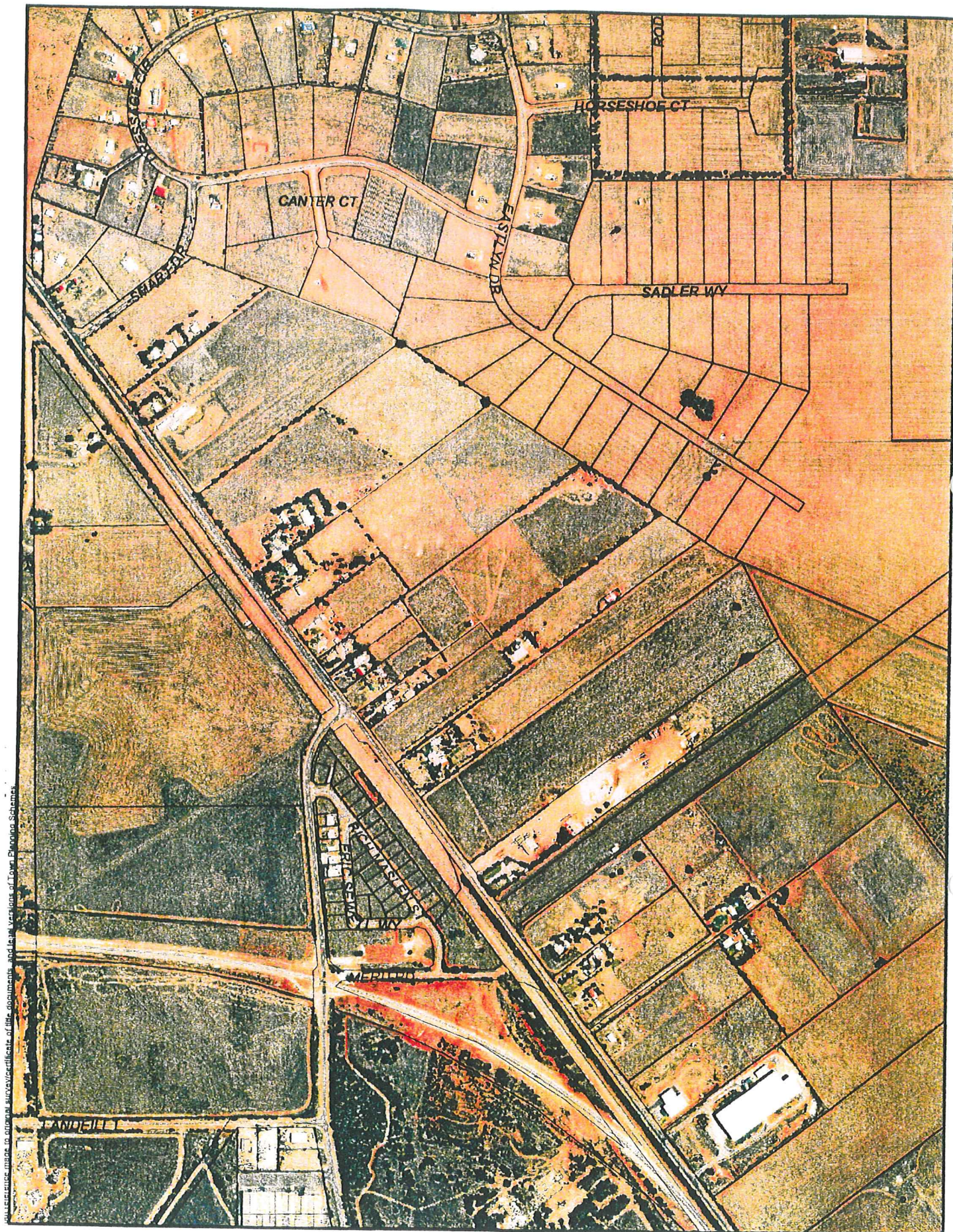


PHIL C MELLING
Director Sustainable Communities

Enc



Operator:	
Department:	
Drawing No:	
Date: 27/10/08	Scale: 1:10000



All electronic maps are subject to review and update of the documents and plan versions of Town Planning Schemes.



City of
Geraldton-Greenough

Operator:	
Department:	
Drawing No:	
Date: 27/10/08	Scale: 1:10000