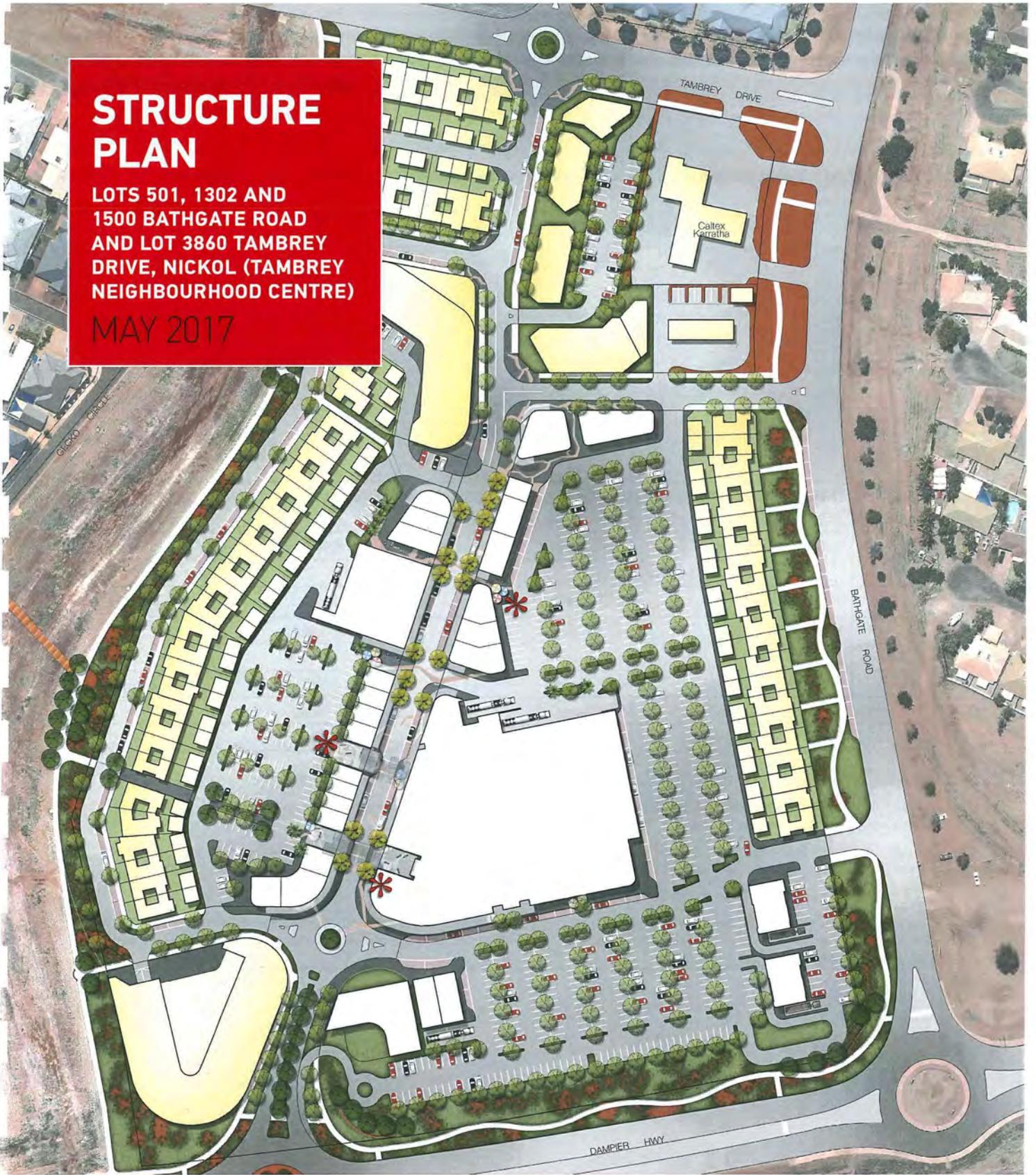


STRUCTURE PLAN

LOTS 501, 1302 AND
1500 BATHGATE ROAD
AND LOT 3860 TAMBREY
DRIVE, NICKOL (TAMBREY
NEIGHBOURHOOD CENTRE)

MAY 2017



TOWN PLANNING
URBAN DESIGN AND HERITAGE

DOCUMENT CONTROL

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ENDORSEMENT PAGE

This structure plan is prepared under the provisions of the
Shire of Roebourne Town Planning Scheme No. 8.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF
THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: 29/5/17

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 the purpose, in the presence of:

_____  Witness

_____ 29. 5. 2017 Date

_____ 29. 5. 2027 Date of Expiry

TABLE OF AMENDMENTS

Amendment No.	Summary of the Amendment	Amendment type	Date approved by WAPC

TABLE OF DENSITY PLANS

Density Plan No.	Area of density plan application	Date endorsed by WAPC

EXECUTIVE SUMMARY

This Structure Plan has been prepared to facilitate the approval and development of a Neighbourhood Shopping Centre and associated residential development at Tambrey on the corner of Dampier Road and Bathgate Road.

The Structure Plan is applicable to Lots 501, 1302 and 1500 Bathgate Road and Lot 3860 Tambrey Drive, Nickol, hereon referred to as 'the site'.

The site is owned by the WA Land Authority (LandCorp) and is to be developed by the Tambrey Joint Venture in conjunction with LandCorp. The Structure Plan has been prepared with input from a team of experts, including:

- LandCorp;
- FJM Property and Raydale Holdings (The Tambrey Joint Venture);
- GMPM – Project Managers;
- Taylor Robinson – Commercial Architecture and Urban Design;
- Christou – Residential / Mixed Use Architecture;
- TPG Town Planning, Urban Design and Heritage – Town Planning;
- Wood & Grieve – Engineering;
- Coterra – Environmental;
- Emerge Associates – Landscape Architecture;
- McMullen Nolan – Surveying;
- Uloth & Associates – Traffic Engineers; and
- MacroPlan Dimasi – Retail / Economic Consultants.

The Structure Plan comprises two parts, being:

Part 1: Implementation; and

Part 2: Explanatory section and technical appendices.

PURPOSE

This Structure Plan provides a framework to guide and facilitate the future subdivision and development of land and has been prepared to address the requirement for a structure plan pursuant to 'Development Area' (DA7) of the Shire of Roebourne Town Planning Scheme No. 8 (herein referred to as 'the Scheme'), which is a prerequisite to subdivision and development.

LAND USE

This Structure Plan seeks to allow uses consistent with the 'Town Centre' zone over the land pursuant to TPS8, to achieve a range of retail, commercial and residential outcomes for the site. In the short term, it is intended to establish a full line supermarket and associated specialty retail, restaurant and tavern amenities near the intersection of Bathgate Road and Dampier Highway.

EXECUTIVE SUMMARY TABLE

Item	Data	Structure Plan Ref (section no.)
Total area covered by the structure plan	9,6055 hectares	Page 13; Subject Site
Area of each land use proposed		
Single Residential	1,4687 ha / 40 dwellings	Page 38; Population and Residential Densities
Grouped Dwellings	0,3710 ha / 45 dwellings	Page 38; Population and Residential Densities
Multiple Dwellings	0,7925 ha / 80 dwellings	Page 38; Population and Residential Densities
Estimated number of dwellings	165 dwellings	Page 38; Population and Residential Densities
Estimated residential site density	17,2 dwellings per site/hectare	-
Estimated population	410 (2,5 persons/dwelling)	Page 38; Population and Residential Densities
Commercial	5,1128 ha	Page 38; Population and Residential Densities
Serviced apartments	0,4835 ha	Page 38; Population and Residential Densities
Estimated retail floor space	8,500 m ² net lettable area	Page 57; Movement Network
Estimated area and percentage of public open space given to		
• Regional open space	0 ha	-
• District open space	0 ha	-
• Neighbourhood parks	Refer to Clause 4.6 of this Structure Plan	Clause 4.6; Page 4
• Local parks	Refer to Clause 4.6 of this Structure Plan	Clause 4.6; Page 4
Estimated percentage of natural area	Not applicable	-

PART 1 – IMPLEMENTATION

1. STRUCTURE PLAN AREA

This Structure Plan shall apply to Lots 501, 1302 and 1500 Bathgate Road and Lot 3860 Tambrey Drive, Nickol, being the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan Map (Plan 1).

2. OPERATION

- (a) In accordance with Clause 22 of Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015*, this Structure Plan shall come into operation on the day on which it is endorsed by the Western Australian Planning Commission (WAPC).
- (b) In accordance with Clause 28 (1) of Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015*, this Structure plan has effect for a period of 10 years commencing on the day on which the WAPC endorses the Plan in accordance with 2 (a) above.

2.1 INTERPRETATIONS

- (a) Unless otherwise specified in this part, the words and expressions used in this Structure Plan shall have the respective meaning given to them in the Shire of Roebourne Town Planning Scheme No. 8 (the Scheme) including any amendments gazetted thereto.
- (b) In addition to the above, the decision making authority shall have due regard to the following land use definition/s for applications within the Structure Plan area. These additional land uses may be permitted at the discretion of the decision making authority and are to be processed as a 'Use Not Listed' under the Scheme.

'Boat Storage Facility' means land or buildings used primarily for parking private boats, caravans or motor homes or the like, and where such vehicles may be stored with or without payment or reward.

- (c) The decision making authority shall have due regard in applying the following terms not defined under the Scheme:

'net lettable area' or *nla* means the area of all floors within the internal finished surfaces or permanent walls but does not include the following areas -

- (a) stairs, toilets, cleaner's cupboards, lift shafts and motor rooms, escalators, tea rooms and plant rooms, and other service areas;
- (b) lobbies between lifts facing other lifts serving the same floor;
- (c) areas set aside as public space or thoroughfares and not for the exclusive use of occupiers of the floor or building; and
- (d) areas set aside for the provision of facilities or services to the floor or building where those facilities are not for the exclusive use of occupiers of the floor of the building.

3. STAGING

Development envisaged by this Structure Plan shall be staged. Staging of road connections and accessways is permitted where supported by a suitable Transport Statement.

4. SUBDIVISION AND DEVELOPMENT REQUIREMENTS

(a) The Structure Plan Map (Plan 1) outlines land use, zones, reserves and the residential density codes applicable within the Structure Plan area. The decision making authority is to have due regard to the land use permissibility, zoning, subdivision and development requirements as contained within this Structure Plan.

4.1 LAND USE PERMISSIBILITY

- (a) When determining applications for development approval the City shall have due regard to the corresponding Structure Plan zones and reserves.
- (b) In determining any application relating to a 'Motor Vehicle Wash' within the Structure Plan area, the decision making authority shall have due regard to the location of such a use, and in making its determination, shall consider a location adjacent to the existing service station as depicted on Plan 1 as a favourable location.
- (c) The maximum combined net lettable area of all retail ('shop') floorspace within the Structure Plan area shall not exceed 8,500m² unless otherwise specified in the Scheme.

(d) The decision making authority in having due regard to this Structure Plan shall require the following uses to be located at least 50 metres away from Tambrey Drive:

- a. Motor Vehicle and/or Marine Repair;
- b. Outdoor Display;
- c. Reception Centre;
- d. Restaurant;
- e. Restricted Premises;
- f. Take-Away Food Outlet;
- g. Emergency Services;
- h. Funeral Parlour;
- i. Veterinary Centre;
- j. Entertainment Venue; and
- k. Tavern.

(e) In determining any application for a non-residential use, the decision making authority shall have regard to the proximity of the proposed use to planned or established residential development and shall ensure that the proposed use will not have any undue impact on the amenity of the nearby residential development with respect to the generation of noise, light, traffic movement or other factors.

4.2 RESIDENTIAL

4.2.1 DWELLING TARGET

(a) Objective

To provide for a minimum of 140 dwellings within the Structure Plan area.

4.2.2 RESIDENTIAL DENSITY

- (a) The density of residential development in the Town Centre zone is prescribed by Clause 6.6.4 of TPS8, which prescribes an R40 density code.

4.2.3 SPECIFIC R-CODE VARIATIONS

- (a) The decision making authority shall have due regard to the development provisions of this Structure Plan in applying its discretion in relation to the applicable deemed-to-comply provisions of the R-Codes.
- (b) Variations to the deemed-to-comply requirements of the R-Codes shall be specified on the individual Local Development Plans (LDP). Such variations shall include provisions relating to:
- Plot ratio;
 - Height (4 storeys unless otherwise indicated on the LDP);
 - Street setbacks;
 - Lot boundary setbacks;
 - Stormwater (no onsite retention required);
 - Visual privacy (where simultaneous approval and construction precludes overlooking of active habitable spaces and outdoor living areas); and
 - Solar access (no overshadowing requirements).

4.3 BUILT FORM REQUIREMENTS

- (a) The maximum height of development shall not exceed 4 storeys in height unless varied by an approved Local Development Plan.

- (b) Nil setbacks and the use of awnings are encouraged where development fronts the main street as denoted on Plan 1.
- (c) The maximum site cover for non-residential development is 100% and there is no maximum plot ratio requirement for any non-residential development.

4.4 PARKING REQUIREMENTS

- (a) Parking shall be determined in accordance with Clause 6.12 'Vehicle Parking and Access' of the Scheme with the exception of the following variations permissible under Scheme Clauses 6.12.5, 6.12.6 and 6.12.7:
- Reciprocal parking for non-residential development and for residential visitor parking is supported whereby a minimum of 50% of the required parking as specified by the Scheme is still available to the off peak use. The peak day time uses are residential visitors, 'shops', 'offices' and 'medical/consulting rooms' or the like and the peak 'night time' uses are 'restaurants', 'taverns', 'take away food outlets' or the like.
 - Each dwelling less than 75m² shall be provided with a minimum of 1 bay and each dwelling between 75m² – 110m² shall be provided with a minimum average of 1.5 bays and each larger dwelling a minimum of 2 bays unless specifically varied by a Local Development Plan.
 - Each development application which relies on reciprocal parking, including a change to the approved use of a building shall be accompanied by an updated schedule as appended to the Explanatory Report of this Structure Plan which outlines the use, and the existing and proposed parking allocation to ensure compliance with this Structure Plan.

- Parking within the commercial zoned lots marked 'A' and 'B' on the Structure Plan may be calculated on a communal/shared basis with the exception that parking bays in Area A cannot be used to satisfy the parking requirements in Area B and vice versa. All other parking shall be determined on an individual lot basis as per the provisions of this Structure Plan unless otherwise shown on a Local Development Plan approved by the City.
- The on street parking shall be apportioned to the commercial lots which directly abut those bays and included within the parking allocations;
- No parking is required for a 'Boat Storage Facility'; and
- Parking for a Take Away Food Outlet within the Structure Plan area shall be calculated based on a 'Restaurant' for the seated dining component and a 'Take Away Food Outlet' for the serving area accessible to the public.

4.5 ACCESS

- (a) Direct vehicle access to Bathgate Road or Dampier Drive is precluded unless shown as a 'Key Access Point' or a road connection as shown on the Structure Plan, or otherwise approved by the City as part of a Local Development Plan.
- (b) Temporary access arrangements for Stage 1 subdivision and development will be at the discretion of the relevant authority and will not be required to align with the 'key access points' shown on the Structure Plan map (Plan 1), provided that the functionality of the temporary

access locations are supported by traffic modeling

- (c) The ultimate road network and configuration is to generally accord with the Structure Plan map (Plan 1). Final detailed design of intersections and roads, including road hierarchy and classification shall be determined at the subdivision stage to the satisfaction of all relevant authorities and based on current traffic assessment.
- (d) Any residential development within the Structure Plan shall be located on a lot that has constructed access to a gazetted road. Where it is not practical to provide a lot with constructed access to a gazetted road, the relevant authority may consider the provision of a reciprocal rights of access easement to provide public access to a lot within the Structure Plan area.

4.6 OPEN SPACE

- (a) In determining any Public Open Space (POS) or cash in lieu contribution for subdivision within the Structure Plan, the following shall apply:
 - i. A regional variation pursuant to R34 of Element 4 of Liveable Neighbourhoods, being a 5% reduction to the amount of POS required, shall be applied and POS shall only be calculated based on the residential portion of the Structure Plan area (excluding commercial and mixed use development sites);

- ii. Provision of public open space shall be satisfied by either providing public open space to the satisfaction of the City or WAPC, or by a cash in lieu contribution based on 5% of the area of any Local Development Plan (LDP) for residential development. Each LDP shall include such provision and each Development Application for such development shall be burdened with a relevant condition to ensure payment prior to commencement of the development.

4.7 LOCAL DEVELOPMENT PLANS

- (a) A Local Development Plan (LDP) is required to be prepared for any residential component of the Structure Plan area and not for solely non-residential development. Variations to the provisions of the R-Codes shall be permitted where outlined on the LDP.
- (b) This does not preclude a LDP being prepared to vary a height or access restriction elsewhere in the Structure Plan area.
- (c) A Local Development Plan shall be prepared (by the developer, an owner of the land or the City) and adopted by Council prior to any substantial residential development commencing and used as the basis for the determination of all development applications for residential development.
- (d) A Local Development Plan will enhance, elaborate and expand the details and provisions contained in this Part as well as supplement the provisions of the Scheme and the R-Codes.

4.8 DRAINAGE

- (a) The intent of the Drainage area is to provide a landscaped setting and pedestrian access ways whilst facilitating stormwater conveyance in major storm events.
- (b) Development standards to be satisfied for the Drainage area include:
 - i. The design of open space areas shall ensure appropriate provision for stormwater drainage management; and
 - ii. The landscaping of open space areas shall be suitable for an arid climate having regard to minimising maintenance and water use whilst providing areas of highly aesthetic and functional amenity.

4.9 ACOUSTIC REPORT

- (a) An Acoustic Report is required to be prepared by a suitably qualified Acoustic Consultant as part of a development application demonstrating how the proposed development complies with relevant noise legislation for the following circumstances:
 - Any noise sensitive development proposed within 100 metres of the centreline of Dampier Road;
 - Any noise sensitive development proposed within mixed use development or located near (within approximately 50m) of a site(s) in which there is the potential for after-hours activity to occur (e.g. restaurant, tavern, service station); or

- Any non-residential development in which there is the potential to generate noise that may impact on noise sensitive development (e.g. tavern, entertainment venue, restaurant with alfresco dining, retail areas with loading docks etc). Where the City considers that there is sufficient distance between the use and any noise sensitive premises this requirement may be addressed by a noise management plan required by a condition of development approval.
- (b) Landscape Plans shall be required as a Condition of Subdivision and/or development approval. A stage 1 Landscape Plan shall be provided as a condition of Subdivision Approval for the first application for subdivision within the Structure Plan area. This Stage 1 Landscape Plan shall detail landscaping requirements for road reserves, drainage reserves and public open space to be ceded as part of the Stage 1 Subdivision in order to ensure that the public realm amenity is established as part of initial developments.

4.10 OTHER REQUIREMENTS

- (a) Additional reports and information shall be required as follows:
- i. Each Local Development Plan or Development Application where no Local Development Plan has been approved shall be accompanied by an Urban Water Management Plan and Landscaping Concept Plan.
 - ii. The approved Urban Water Management Plan and Landscaping Plans shall, by condition of Development Approval, be implemented to the satisfaction of the City prior to occupation of the development unless otherwise specifically agreed by the City.
 - iii. Each application for non-residential development shall be accompanied by a car parking schedule demonstrating compliance with the Scheme or an approved Local Development Plan unless an otherwise agreed variation is granted by the City.

PLAN 1

TAMBREY NEIGHBOURHOOD CENTRE STRUCTURE PLAN

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- LEGEND**
- Structure Plan Area
 - Existing Cadastre
 - Zones**
 - Town Centre
 - Other**
 - Drainage
 - Neighbourhood Connector Type 'B'
 - Access Street Type 'B'
 - Access Street Type 'C'
 - Existing
 - Roundabout
 - Intersection Treatment
 - * Residential Local Development Plans
 - * Motor Vehicle Wash Permitted (P)
 - A B Parking Areas
 - ↔ Key Access Points
 - ↔ Key Pedestrian / Cyclist Routes / Drainage
 - * Landscape Nodes
 - * Focal Point / Entry
 - Acoustic Report required for Noise Sensitive Development (100m from Damper Rd Centre Line)
 - Local Development Plan Boundary
- NOTE:** Road classifications are indicative only. All roads shall be subject to detailed traffic assessment and engineering design at subdivision stage.

Prepared by: **tpg**
 Project No: **TPG/2017/001**
 Date: **12/01/2018**
 Location: **715-222 511A Tambrey 2017-04-26W**

STRUCTURE PLAN
TAMBREY NEIGHBOURHOOD CENTRE

TOWN PLANNING
 AND URBAN DESIGN



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PART 2 - EXPLANATORY REPORT

INTRODUCTION

Karratha has a vision to become a regional city with a diversified economic base and healthy local community afforded full range of jobs and services, convenience shopping and amenities typically found in major regional centres. With a population of approximately 20,000 people, a regional city should no longer just be afforded a service station as its only neighbourhood centre providing convenience shopping outside the city centre. This Structure Plan is aimed at helping Karratha become a true regional city by providing a neighbourhood shopping centre that has the opportunity to provide the local community with amenities that could include cafés, restaurants, bistros, local shops and a supermarket where residents can easily and quickly drop in for their daily shopping needs, or enjoy a meal and a drink with friends. Community infrastructure such as that proposed will enhance the lifestyle of the local community and encourage residents to stay longer and become part of Karratha's long term community.

The vision is to be implemented by this Structure Plan that has been prepared on behalf of FJM Property & Raydale Holdings and LandCorp to facilitate the development of the Tambrey Neighbourhood Centre (TNC) which currently comprises vacant land on the corner of Dampier Road and Bathgate Road, Nickol. The site is currently vacant and unused, and is surrounded by residential neighbourhoods, some of which have only recently been developed or are planned for the future, and others that are already established.

The TNC will be a vibrant mixed use centre, providing convenience goods, services and facilities to its growing residential hinterland. In addition to its commercial functions, the Structure Plan will also facilitate the development of additional medium to high density housing, providing a more intense form

of accommodation to that typically provided in the surrounding area, and also providing activity and passive surveillance within the Centre.

The subject site is currently zoned 'Urban Development' part of which was rezoned from 'Parks Recreation and Drainage' by Amendment No 24 in November 2011. This Structure Plan has been prepared in accordance with the requirements of the Shire of Roebourne Town Planning Scheme No. 8 for the 'Urban Development' zone and the *Planning and Development (Local Planning Scheme) Regulations 2015* as discussed in detail in this report.

This report addresses relevant planning requirements, as well as traffic, environmental and engineering matters with input from a team of experts including:

- LandCorp;
- FJM Property & Raydale Holdings (The Tambrey Joint Venture) – Developers;
- GMPM – Project Managers;
- Taylor Robinson – Commercial Architecture & Urban Design;
- Christou – Residential/Mixed Use Architecture;
- TPG Town Planning, Urban Design and Heritage – Town Planning;
- Wood & Grieve – Engineering;
- Coterra – Environmental;
- Emerge Associates – Landscape Architecture;
- MNG McMullen Nolan – Surveying;
- Uloth & Associates – Traffic Engineers; and
- MacroPlanDimasi – Retail/Economic Consultants.

CONSULTANT TEAM



SUBJECT SITE

SITE LOCATION AND TENURE DETAILS

The subject site is situated within the suburb of Nickol, approximately four kilometres to the west of the Karratha town centre. The land currently comprises four land parcels as detailed below totalling 9.605ha, with frontages to Tambrey Drive to the north of approximately 130m, Bathgate Road to the east of approximately 296m, Dampier Road to the south of approximately 285m and a drainage reserve to the west of approximately 486m.

REFER TO FIGURE 1 – LOCATION PLAN

REFER TO FIGURE 2 – SITE PLAN

The site is owned by the WA Land Authority (LandCorp) and is to be developed by the Tambrey Joint Venture in conjunction with LandCorp.

The subject site itself is currently undeveloped, and is generally surrounded by residential development, with the exception of the Caltex service station located on the corner of Bathgate Road and Tambrey Drive.

The site's Certificate of Title particulars are as follows:

Certificate of Title Volume / Folio	Lot No.	Plan / Deposited Plan No.	Street Address	Legal Area
2883 / 298	501	DP 407053	Lot 501 Bathgate Road, Nickol	0.1895 ha
2883 / 299	1302	DP 407053	Lot 1302 Bathgate Road, Nickol	3.6977 ha
2785 / 815	3860	DP 215374	Lot 3860 Tambrey Drive, Nickol	0.9671 ha
2883 / 300	1500	DP 407053	3 Bathgate Road, Nickol	4.7492 ha

REFER TO APPENDIX A – CERTIFICATES OF TITLE

REFER TO APPENDIX B – FEATURE SURVEY

LOCAL CONTEXT

Surrounding the subject site, the local area has generally been developed for single residential dwellings at relatively low densities.

REFER TO FIGURE 3 – AERIAL PHOTOGRAPH

The residential area to the immediate west was built in the mid 2000's, and a residential area to the south-west (Bayton West) is currently being built out. Madigan residential estate, is planned on the eastern side of Madigan Road, which will eventually add some additional 1000 dwellings to the area with the first 140 lots currently on sale. These developments will result in additional demand for services, goods and amenities in this area, with the small local centre in Madigan being limited to only 500m² NLA to ensure that it did not detract from the viability of the proposed Tambrey Neighbourhood Centre.

Immediately to the north-east of the site at the corner of Tambrey Drive and Bathgate Road is a Caltex service station, which currently also acts as the convenience shopping centre for the western suburbs.

Approximately 400m to the west of the site is the Tambrey Tavern and Function Centre, Tambrey Oval and a children's playground area, and situated further beyond is the Tambrey Primary School.

FIGURE 1 – LOCATION PLAN.

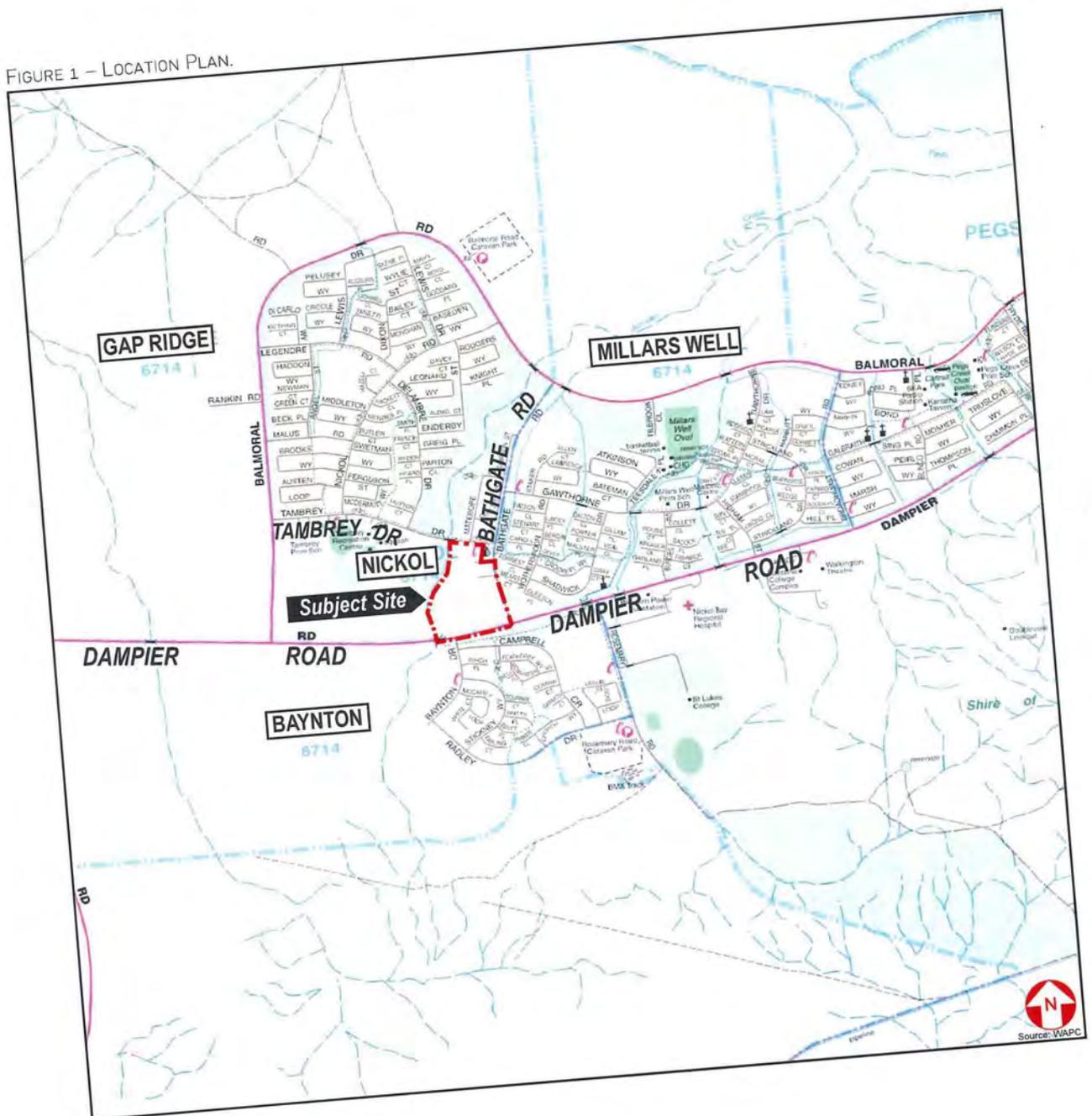


FIGURE 2 – SITE PLAN



FIGURE 3 – AERIAL PHOTOGRAPH



The Pam Buchanan Community Centre, is located approximately 1km south west of the subject site was opened in January 2012. It is a 'one stop shop' for family and child-related services. The facility contains a child care centre, office and clinic space for specialist health providers, two infant health clinics and various other facilities, and also temporarily contains the Karratha Community Library.

REFER TO FIGURE 4 – CONTEXT PLAN

HERITAGE AND CULTURAL SIGNIFICANCE

The subject site was excluded from the original Burrup-Maitland Industrial Land Agreement and therefore was not cleared of Native Title claims during that process. There are two Corporations entitled to native title claims on the Tambrey Neighbourhood Shopping Centre Site - Murajuga Aboriginal Corporation (MAC) and Ngarluma Aboriginal Corporation (NAC). Final settlement of all NAC entitlements was finalised in November 2012. A draft Deed has been prepared for the MAC entitlement, and MAC has recently executed the document which is nearing final completion and will be resolved before any development is undertaken on the land.

The Department of Indigenous Affairs Aboriginal Heritage Database does not identify the presence on any Aboriginal heritage sites within the project site or immediate surrounds. Two areas of significance are identified to the south of the site, being "LCK/16 - grinding set, mythological, grinding patches/groves" and "Baynton West scatter 2 artefacts/scatter" which will not be impacted on by the development.

The Australian Heritage Database does not identify any areas of European heritage significance on the site with the nearest heritage site listed on the Western Australian Heritage database being the nearby Tambrey Neighbourhood Centre.

ENVIRONMENTAL CHARACTERISTICS

Coterra have prepared an Environmental Report for the site, which details site characteristics and makes recommendations for the implementation of the Structure Plan.

REFER TO APPENDIX C – ENVIRONMENTAL REPORT

TOPOGRAPHY

Topography over the majority of the site has a gentle decline from 15m AHD on the southern boundary to 12m AHD in the north. The centre line of the drainage reserve on the western boundary lies at 11.5m AHD adjacent to the southern site boundary and 10m AHD adjacent to the northern site boundary.

The environmental geology mapping series shows most of the site to be underlain by alluvium (clay, silt and sand) deposits amongst large expanses of clay.

Department of Environment Regulation (DER) mapping indicated the site predominantly has a 'moderate to low' risk of Acid Sulfate Soils (ASS) within 3m of the natural surface. The south eastern corner of the site is mapped as having 'no known risk of ASS'. The closest high risk area is located over 2km from the site.

FIGURE 4 – CONTEXT PLAN



HYDROLOGY

GROUNDWATER

The site is underlain by the Pilbara Fractured Rock Aquifer which comprises of water pockets in fractured and weathered granitoid rock of low permeability (DoW 2012). This aquifer is not considered to be a major regional groundwater resource with bore yields varying depending on intersection of fractures.

Regional groundwater mapping suggests that the watertable is generally within 5 to 10 metres of the surface (DoW 2012).

SURFACE WATER AND DRAINAGE

There are no existing surface water drainage features within the site boundary.

Karratha experiences unreliable and variable rainfall and is seasonally prone to cyclones. Cyclonic events have the ability to cause widespread flooding and flood related damages. In order to address this issue, the drainage network in Karratha was developed primarily for the rapid removal of stormwater away from key infrastructure within developed areas, to prevent and minimise flooding.

Runoff generated on site flows in a north westerly direction into a drainage reserve which runs along the western boundary of the site. The drainage reserve conveys runoff from the site and upstream catchments towards Pegs Creek and eventually into Nickol Bay, as further discussed in the Local Water Management Strategy prepared for the site.

REFER TO APPENDIX D - LOCAL WATER MANAGEMENT STRATEGY

FLORA AND VEGETATION

DATABASE SEARCH RESULTS

A search of the DER's Threatened Ecological Community (TEC) database by GHD (2011) indicated that there are no TEC's within, or in close proximity to this area.

A search of the DER's Rare Flora Databases, Western Australian Herbarium and Western Australian Museum NatureMap records by GHD (2011) found no Declared Rare Flora (DRF) have been recorded within 10km of the Karratha Land Release project study area.

A search of the NatureMap database for a 5km radius around the Tambrey site indicated that *Acacia glaucocaesia* (Priority 3) was the only Priority Flora species known to occur in the area. This plant is described as a dense, glabrous shrub or tree, 1.8-6m high with yellow flowers appearing from July to September. The species occur on red lam, sandy loam, and clay in floodplain areas (DEC, 2012).

During GHD's vegetation and flora assessment for the Karratha Land Release project, which includes numerous areas in the vicinity of this site, no DRF or Priority flora species were encountered (GHD, 2011).

ONSITE VEGETATION AND FLORA

An assessment of the vegetation onsite was undertaken by Coterra Environment in May 2012, which found the following:

- The majority of the site appears to have been previously disturbed especially the northern half which is dominated by closed introduced grassland.
- The southern half is variously disturbed, both directly and indirectly.
- The flora species (in particular grass species) present and the clay substrate, which has now been largely disturbed, indicates prior to disturbance this would have been an area of Roebourne Plains Priority Ecological Community (DEC, 2006).
- The predominantly introduced grassland on the lot is particularly dense on the northern half where the soil has been largely disturbed. Towards the southern end of the site Acacia species shrubland occurs over the grassland, which becomes more mixed.
- Clusters of the Priority 3 flora species, *Themeda* sp Hamersley Station (M E Trudgen 11431) are located in grassland within the southern end of the site. Priority 3 flora species are defined by the EPA as Taxa which are known from several populations

and are not believed to be under immediate threat (that is, not currently endangered), due to the number of known populations (generally greater than or equal to five), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as rare flora but are in need of further survey (EPA, 2008).

- Eight weed species were recorded onsite. Two of these, **Cenchrus ciliaris* and **Cenchrus setiger* dominate the grassland over the majority of the site.

A description of the onsite vegetation units is provided in the table below.

Vegetation Description	Condition	Comment
<i>*Cenchrus ciliaris</i> / <i>*Cenchrus setiger</i> closed tussock grassland on previously disturbed earths with some gravel.	Completely Degraded	70-100% grass cover. Completely degraded. Northern and western portion of site.
<i>Acacia bivenosa</i> shrubland over mixed tussock grassland of <i>*Cenchrus ciliaris</i> , <i>Eragrostis xerophila</i> , <i>Aristida latifolia</i> , <i>Astrelba pectinata</i> , <i>Sorghum plumosum</i> on mosaic of cracking clays and gravelly silts, semi disturbed.	Fair	15% Acacia shrub cover over mixed grasses. 40-60% native flora composition but signs of disturbance. Southern portion of site.

Notes: * denotes introduced flora species Vegetation condition rating adapted from Keighery (1994) and Kaesehagen (1995)

FAUNA AND HABITAT

As previously discussed, the condition of the vegetation at the site is disturbed and degraded, with little ecological value remaining. Based on this, and the relatively small size of the site, this area is not anticipated to provide significant fauna habitat opportunities.

A search of the NatureMap database for a 5km radius around the Tambrey site indicated that the following conservation significant fauna have been recorded in this area:

- Northern Quoll (*Dasyurus hallucatus*)
- Lined soil-crevice skink (*Notascincus butleri*)
- Eastern Curlew (*Numenius madagascariensis*)

Habitat requirements for each of these species are summarised in the following table.

Species	Habitat
Northern Quoll	The species' preferred habitat consists of rocky escarpment, open forest and open woodland (SEWPaC, 2005)
Lined soil-crevice skink	Found mainly in stony spinifex areas (Cogger, 2000; Cyberlizard, 2012)
Eastern Curlew	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. (SEWPaC, 2012; Dann 1994).

The site does not contain landforms or vegetation which provide habitat opportunities required for the species above.

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PLANNING FRAMEWORK

CITY OF KARRATHA LOCAL PLANNING STRATEGY

The City of Karratha is currently in the process of preparing a Local Planning Strategy to form the guiding document for the preparation of a new town planning Scheme. Whilst at the time of writing this report the Strategy had yet to be released, a number of technical documents are available and an Outcomes Report has been released. The Outcomes Report outlines a number of key messages relative to this Structure Plan which will be considered in the preparation of the Strategy including:

- Karratha is to remain as the major population and service centre for the region;
- It is recognised that employment and the provision of amenities are key factors required to drive growth;
- Small business and economic diversification is very important to the community, but the cost of business and residential accommodation is high and there is a lack of affordable short stay accommodation.
- There is a need for housing diversity to accommodate young singles/couples and retired/aging population; and
- There is support for common boat storage.

Implementation of this Structure Plan will assist the City in achieving some of these objectives, particularly by providing more amenities and services, and enhancing the City as a retail destination, but also providing greater employment opportunities, commercial diversification and opportunities for housing diversity.

KARRATHA CITY OF THE NORTH PLAN

The Karratha City of the North Plan (KCNP), adopted by the City of Karratha (then the Shire of Roebourne) on 18 May 2010, comprises a series of documents being the *Karratha City Growth Plan*, the *Karratha City Centre Master Plan* and the *Implementation Blueprint*. Together, these documents identify a range of spatial and non-spatial requirements to guide the future growth of Karratha into a regional city of 50,000 residents.

The KCNP will provide a basis for guiding decision makers in assessing rezoning, subdivision and development applications as well as the provision of infrastructure and community facilities over time.

KARRATHA CITY GROWTH PLAN

The Karratha City Growth Plan (CGP) is a city-wide strategy to guide the future development of Karratha into a city of 50,000 residents. Specifically the CGP will guide the future spatial and non-spatial development requirements for the growth of Karratha, identifying the need for land supply, housing diversity, open spaces, commercial nodes, entertainment and retail areas, as well as the provision of community and servicing infrastructure.

The CGP identifies Karratha as a series of neighbourhood precincts. Each precinct is described in terms of its desired urban character, land use and urban structure as well as identifying key assumptions and planning considerations requiring further resolution.

Under the CGP, the site is situated within the 'Nickol/Baynton' precinct which is to be an 'Enhanced Existing Residential' area with the 'Potential for Increased Density'.

REFER TO FIGURE 5 – CITY GROWTH PLAN

The general design intent of the Precinct is for the development of a site responsive, walkable and connected residential neighbourhood that provides good pedestrian and vehicular connectivity within and to and from existing residential areas. The Tambrey Neighbourhood Centre itself is identified to be developed as a *"district centre comprising mixed use development (ground floor commercial/retail with upper floor medium density residential)"*.

Generally the Karratha CGP envisages residential development to provide a range of densities to achieve an average of R40 with "higher densities around areas of activity such as the Tambrey Centre".

The proposed Structure Plan and the development it facilitates will implement this vision.

KARRATHA PRIMARY TRADE AREA RETAIL & COMMERCIAL STRATEGY (2009)

The Karratha Primary Trade Area Retail & Commercial Strategy prepared by the Department for Planning and Infrastructure in 2009 analysed existing retail and commercial floorspace provision for the principle towns within the City of Karratha and identified future floorspace demand by the year 2020.

With regard to the site, the Strategy provides for the development of a neighbourhood centre in Nickol (Tambrey), recognising that the City Centre is some 4km from residents to the west of the site. The Strategy recognises the residential growth of the western end of town and advocates a retail neighbourhood centre with a 4,500m² supermarket and an overall 8,100m² centre size.

The proposed Structure Plan will assist with achieving the objectives envisaged under the document.

KARRATHA REGIONAL HOTSPOTS LAND SUPPLY UPDATE

The Karratha Regional HotSpots Land Supply Update updated by the WAPC in December 2010 provides an overview of land supply within Karratha based on the status of major projects and current and anticipated lot creation activity. The latest update reflects the Karratha City Growth Plan (discussed above) which is proposed to be reflected in the Scheme via Amendment 21 and a review of the Scheme.

REFER TO FIGURE 6 – HOT SPOTS UPDATE

The subject site is identified on Map 6 as being area KA24 and KA24A and intended to be developed as mixed use to include a neighbourhood centre with a range of residential dwelling types and other uses.

The document is relevant to the planning of the site as it guides infrastructure agencies in the planning of future servicing requirements.

FIGURE 5 – CITY GROWTH PLAN

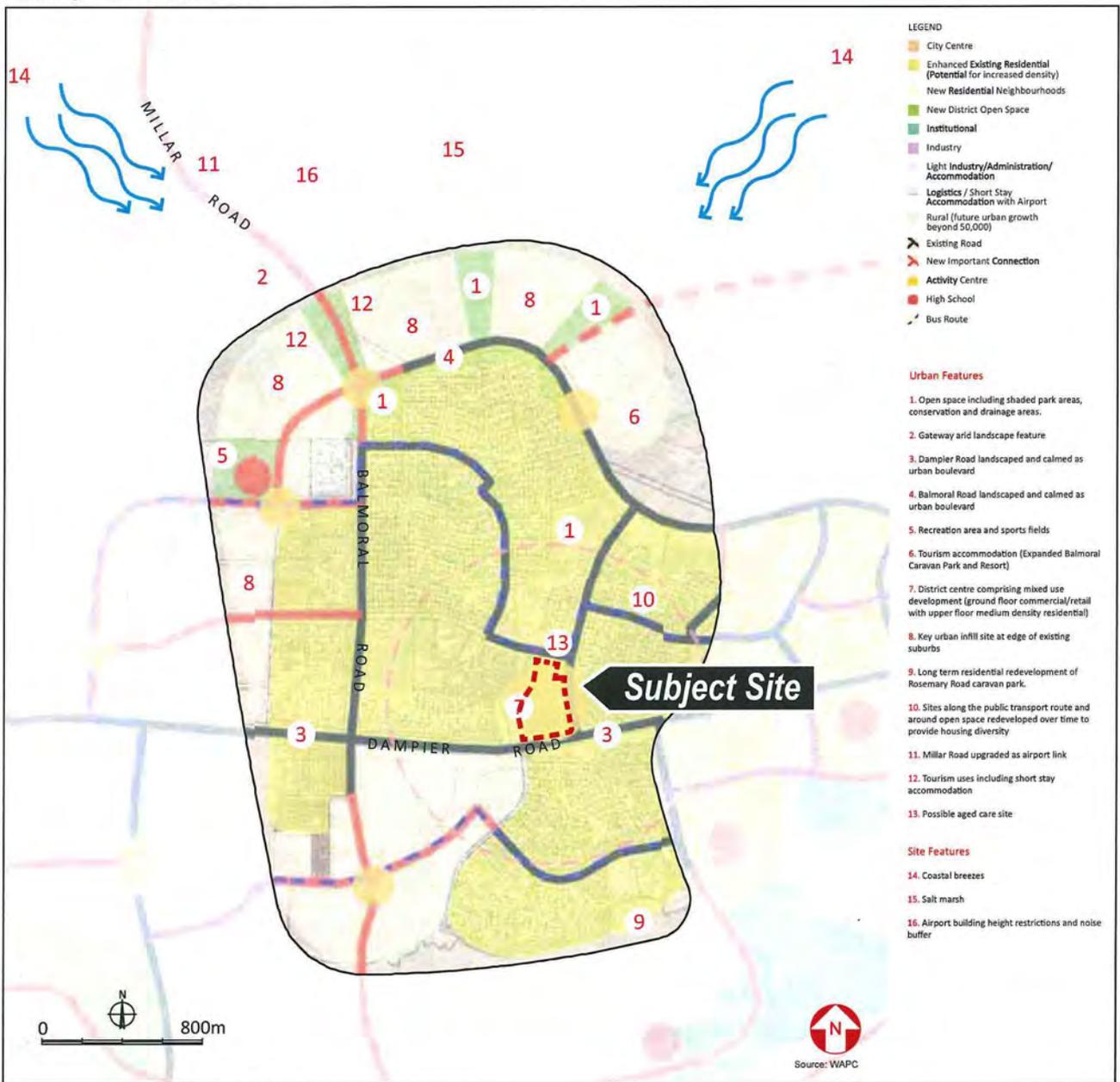
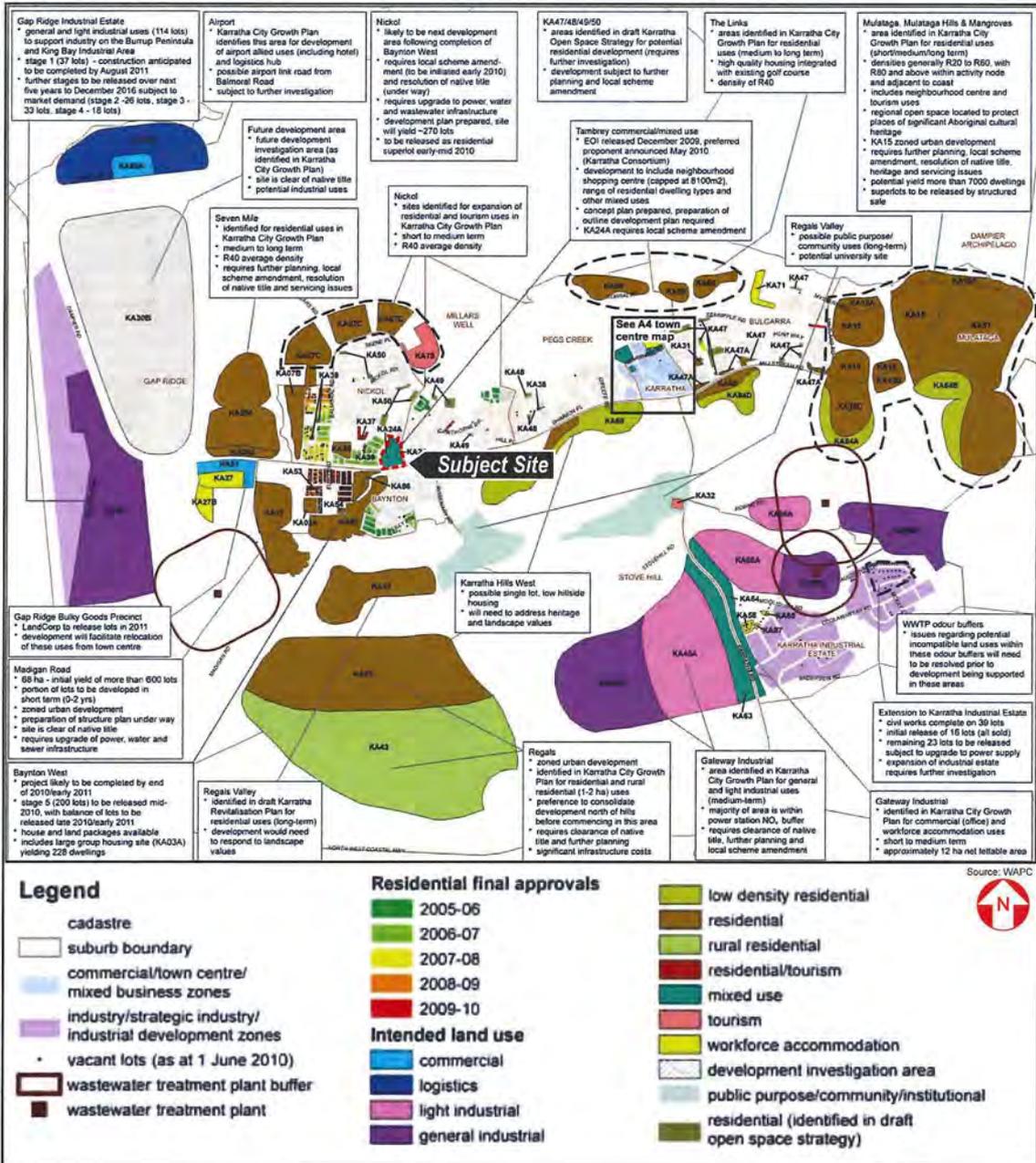


FIGURE 6 – HOT SPOTS UPDATE



Source: WAPC

KARRATHA 2020

The Karratha 2020 Vision and Community Plan (2009), prepared by the City of Karratha in partnership with the State Government and industry, assesses Karratha's infrastructure and service needs in response to anticipated future population growth.

Key themes highlighted by the document include the need to provide affordable, non-mining related office, commercial and retail space to facilitate economic diversity as well the provision of a range of family services and amenities.

The document also highlights the need to provide affordable housing to address the escalating costs of housing and also the need to provide a diverse variety of housing types that appeal to a greater variety of family types and increase the town's liveability.

The proposed Structure Plan will assist with achieving the objectives envisaged under the document by not only providing additional amenities and services, but also providing non-mining related employment and a variety of housing types.

SHIRE OF ROEBOURNE TOWN PLANNING SCHEME NO. 8

The Shire of Roebourne Town Planning Scheme No. 8 (TPS 8) was gazetted on 22 August 2000 and provides the statutory basis for the planning for all land within the City of Karratha, including Karratha.

Under the Scheme, the subject site is zoned 'Urban Development' and comprises 'Development Area 7' (DA7). The eastern portion of the site was rezoned to 'Urban Development' as part of Amendment 24 to TPS 8 in December 2011, and included in DA7.

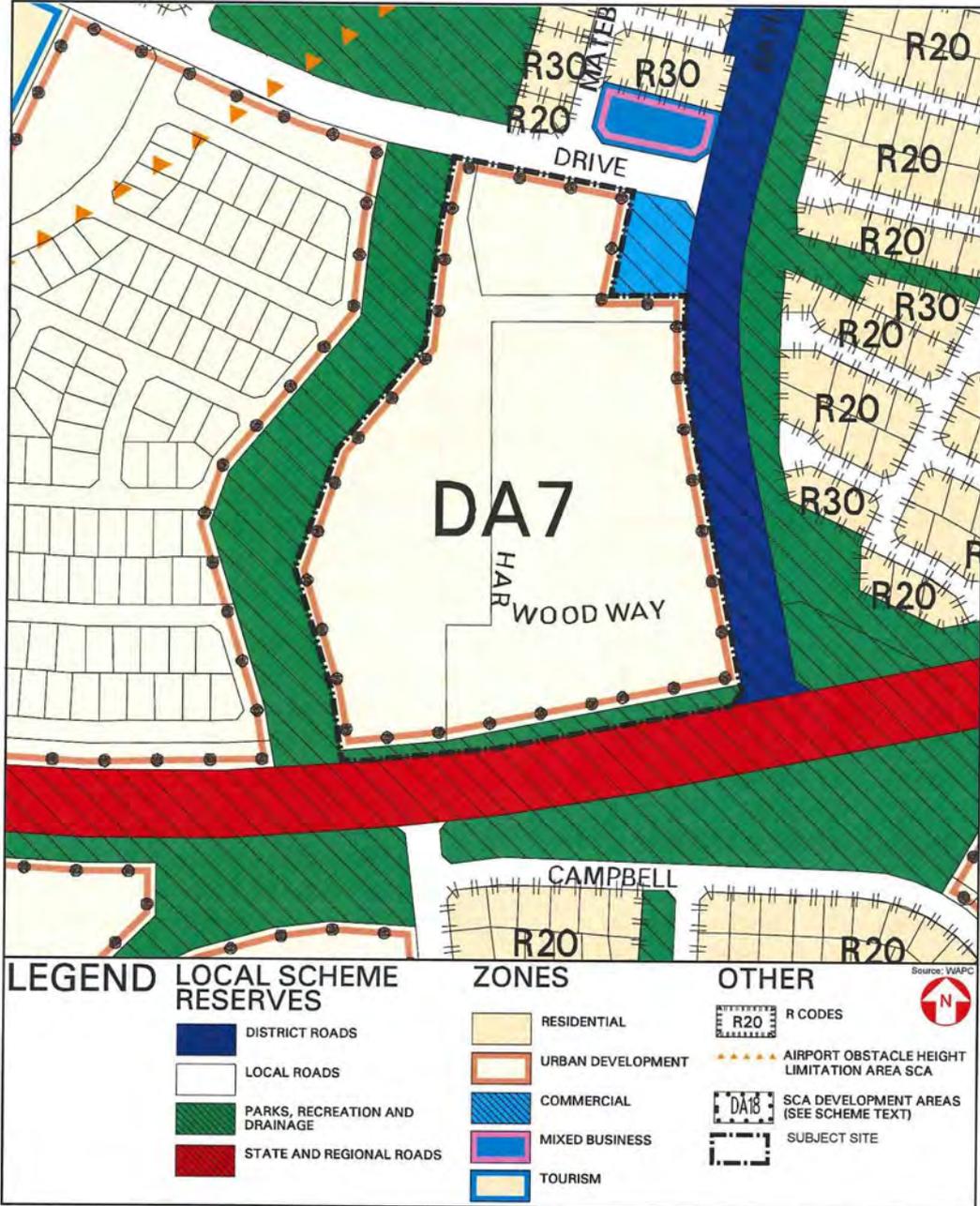
This rezoning was originally to be undertaken as part of a larger amendment, being Amendment 21 to the Shire's Scheme, which sought to rezone and set aside developable land as identified in the City Growth Plan. However, due to the long time frames associated with the assessment and approval of Amendment 21, the separate Amendment 24 was undertaken, to enable the Neighbourhood Centre to be developed sooner.

REFER TO FIGURE 7 – TPS8 ZONING

With regard to DA7, Appendix 7 of the Scheme states the following:

1. *An approved Development Plan together with all approved amendments shall apply to the land in order to guide subdivision and development.*
2. *To provide for commercial, holiday accommodation, medium density residential, aged persons and/or mixed use (commercial/residential) development.*
3. *The amount of retail floor space shall be determined based on an Economic Impact Assessment which shall also consider economic impacts on the Karratha City Centre. Provision of retail floor space is to be commensurate with a Neighbourhood Centre, delivered in stages and capped at an ultimate maximum floor space of 8,500m² NLA.*
4. *The Shire may require the preparation of Detailed Area Plans to ensure development adequately addresses the public realm (including drainage reserves), climatic conditions, a Karratha vernacular and reflects 'main street' design principles.*

FIGURE 7 – TPS8 ZONING



5. *Land uses classified on the Development Plan apply in accordance with clause 7.2.11.4.*

This Structure Plan is specifically aimed at satisfying these provisions.

PROPOSED AMENDMENT No. 27 TO TPS8

Amendment No. 27 seeks to amend Clause 7.5 of TPS8 to provide Council with greater flexibility to consider applications for planning approval relating to land located within the Storm Surge Special Control Area which in the opinion of the Council incorporate risk management and mitigating measures which present risks to human life and health, property, utility and service infrastructure and social, cultural and environmental values are suitably avoided remedied or mitigated.

The intent of the Amendment is to provide Council with the ability to consider mitigating factors when determining all applications within land that is known to be prone to 100 year ARI storm rainfall events or may be susceptible to a 1:500 year storm surge event.

Coterra has confirmed that the site is outside the 1:100 year and 1:500 year ARI storm events and therefore storm events are no impediment to the City and WAPC approving this Structure Plan under the Scheme.

REFER TO APPENDIX D – LOCAL WATER MANAGEMENT STRATEGY

STATE PLANNING POLICY 5.4: ROAD AND RAIL TRANSPORT NOISE AND FREIGHT CONSIDERATIONS IN LAND USE PLANNING (2009)

This Policy is primarily concerned with how the planning system can be used to minimise the adverse impact of transport noise on noise-sensitive development without placing unreasonable restrictions on development or adding unduly to the cost of road and rail infrastructure.

The Policy is applicable in the case where noise-sensitive development is proposed in proximity to major roads and/or railways. In this regard, the Policy identifies Dampier Road as a 'State Freight Road' for which transport noise may affect sensitive land uses.

The Policy sets out the outdoor noise criteria that apply for new noise-sensitive development. The noise levels are measured at a distance of one metre from the most exposed, habitable façade of the proposed building, at each floor level, and within at least one outdoor living area on each residential lot. The outdoor noise criteria requirements are as follows:

Time of day	Noise Target	Noise Limit
Day (6 am–10 pm)	LAeq(Day) = 5dB(A)	LAeq(Day) = 60dB(A)
Night (10 pm–6 m)	LAeq(Night) = 0dB(A)	LAeq(Night) = 55dB(A)

Generally where the noise target is likely to be exceeded for outdoor areas, a detailed noise assessment and/or the implementation of mitigation measures may be required by the developer to achieving the target levels. For residential buildings, acceptable indoor noise levels are LAeq(Day) of

40dB(A) in living and work areas and LAeq(Night) of 35dB(A) in bedrooms. To help mitigate any potential negative impacts of noise, this Structure Plan requires that, as part of any application for development for a noise sensitive land use (such as residential) within 100m of the centreline of Dampier Road, an Acoustic Report be prepared to demonstrate that the proposed development complies with the relative legislation.

100 metres is considered more than adequate given the Acoustic Report for the Madigan Road Structure Plan only required an acoustic amelioration for dwellings within 81.5 metres of Dampier Road. The Structure Plan also requires any sensitive development within 50m of a noise generating land use to also provide an acoustic report. 50m is considered more than adequate given the Structure Plan also requires the noise generating land use to also prepare and complete an appropriate report.

PROPOSED STRUCTURE PLAN

This Structure Plan aims to facilitate the development of the site into a mixed use Neighbourhood Centre, comprising both commercial and residential development around a central retail main street. To achieve this vision, the site was analysed and the development brief refined to ensure that a vibrant neighbourhood centre core would be established with residential development on those adjoining areas with higher amenity. The following design parameters were established to formulate the design and then the Structure Plan was prepared to facilitate the development of the design whilst still allowing flexibility for the design to evolve and adapt to an often changing market.

At the time of writing this report the demand for residential development is low, so the key aim is to facilitate the development of a shopping centre and non-residential services and amenities in the short term. The Structure Plan nevertheless puts in place a framework where appropriate residential development can be readily accommodated in the longer term through the preparation and approval of a series of Local Development Plans as envisaged under the objectives of DA7 under the Scheme.

URBAN DESIGN CONSIDERATIONS

The design team examined various options for the arrangement of the uses and land configuration for the Tambrey Neighbourhood Centre. The Structure Plan design is based around the Consortium's successful EOI submission. This design has been further developed in association with LandCorp with input from City of Karratha.

The now presented final draft plan arrangement has given consideration to addressing the following important parameters:

- The primary premise for much of the design arrangement is to offer a neighbourhood centre that is convenient to access and to use, whilst appreciating the various tenants for 'making a main street based retail centre work'. The anchor is a 'major' supermarket which can allow activation of convenience retail shops/services in the first instance, and later, the associated additional retail, commercial and other services. The size of the major supermarket requires that the design allows for locating the 'large footprint' with consideration of how the centre will be staged, how it can 'activate' the external tenancies and how it remains convenient to park and easy to service. There are many nuances of this design challenge and several remain with the leasing team for further consideration at a later date, but the design team has nonetheless, liaised with commercial leasing agencies for their opinion on such matters and the proposed design reflects this opinion.
- The main street needs to be kept to a 'manageable length' and requires both 'vehicular traffic' and 'pedestrian friendliness' to offer it a chance to function optimally. The total length of the main street proper on completion is circa 150 metres, which is comparable to Bay View Terrace in Claremont, or Mends Street in South Perth. In the first stages it may be less than 100 metres, but the design allows for 'anchoring the ends' with social and service functions (like the tavern and medical) and creation of a focal point at the heart by way of a partly covered entry that also intersects with the primary east west linkages. Parking is intentionally (and proportionately) distributed in three locations, being west, south east and north east.

- The main street connects the main Dampier Road through the site towards Tambrey Drive, with an intention to encourage a modest amount of traffic up the middle of the centre. The pavement treatments and hardscape will be designed to accommodate plateaued (shopping trolley and pram friendly) crossing points, (whilst also considering stormwater management), and shade structures is to span over parts of the road adjacent to it. The (main) street trees are generally located within the central median refuge to enable shade at the dwell points (as pedestrians cross) and slow down traffic. Their location also allows the building forms, awnings and retail signage to be evident and uncompromised by tree canopies.
- The commercial part of the main street is 'signalled' on approach from the south by a smaller roundabout (than the one on Dampier Road). This slows down traffic and allows an efficient 'split' of the traffic headed to the pad sites or to the residential fringe. The main street (including the roundabout) are designed to allow for future bus usage. Bus dwell points are designed in at the plaza area.
- The Dampier Road frontage has a character appropriate for that edge, insomuch as it comprises a larger landmark development to the west and a series of 'pad sites' to the east, the latter being probable fast food and entertainment uses. The south western corner will (subject to market) have the potential to accommodate a food and beverage Tavern type development and the eastern side is envisaged for fast food outlets.
- The eastern and western fringes of the site have potential as residential, where each has aspect, an address and a relationship to other 'opposite' residential. The possible product is also one that could be 'rear loaded' from a rear right of way and narrow lot design, with a view to encouraging density in some locations with garages at the rear. The residential fringe obviously also performs the important function of screening parking and the services areas of the primary centre. The design team recognises that the treatment to the rear of the lots needs some 'design control' so as to ensure that the carparks (onto which these garages/carports face) are still quality environments and it is intended that LDPs will be prepared with the City to address this interface. These issues may also be resolved by appropriately designed non-residential development that addresses the street.
- The northern sector of the development recognises the existence of the service station and offers a possible link via a proposed carwash with a minimum lot size of 1400m² on the corner of Bathgate Road. The north western quadrant of the proposed development is residential, and/or short stay accommodation to provide an appropriate and manageable interface with the service station and existing short stay to the north.
- The entire development is designed to have permeability both for vehicles/cycles and pedestrians. There is a strong north south axis (via the main street) but also several east west connections, the most evident of which is the extension of the proposed pedestrian connection westwards across the drainage reserve to Gecko Circle via a pedestrian link.

- The final architectural design detail has yet to evolve, but it is anticipated that shade awnings, activated shop frontages, human scale and 'north western' vernacular/materiality will all be considered as being important. The uses, scale, form, language and height of buildings have been considered in relation to the roles of each site/location as a 'marker' or as a 'vista' or both.

REFER TO FIGURE 8 - PRELIMINARY MASTER PLAN

REFER TO FIGURE 9 - NOTIONAL BUILDING USE PLAN

DESIGN INTENT

The Structure Plan is derived from these parameters for the site to provide a main street style Neighbourhood Centre which provides retail goods and other services and amenities for the surrounding residential catchment, whilst also providing places for people to live. The TNC will be a lively mixed use centre with retail, restaurants and entertainment venues; a place with sheltered walkways, convenience shopping and accessible parking, with active streets during the day and evening. Landscaped outdoor entertainment venues, community facilities and evening shopping opportunities will capture the benefits of the climate to maintain this activity into the evening. A variety of different shopping experiences will be provided within the Neighbourhood Centre, from the shaded 'Main Street', which will comprise a range of different goods and services, to the air-conditioned shopping centre, within which the supermarket will dominate.

REFER TO FIGURE 10 - STRUCTURE PLAN

The design of the Structure Plan allows for retail uses to be developed along the north-south, central spine or 'Main Street', with parking largely sleeved behind buildings. Smaller scale fine grain retail uses will be concentrated along the central spine, with larger scale uses (such as a supermarket) located further back to draw people past the specialty stores within the large centre proposed. It is also envisaged a minor major or key anchor tenant will be provided on the western side of the street to draw people out of the centre and activate the main street.

Residential uses are also permitted in the 'Town Centre' zone, particularly in the form of apartments with 'town house' type development envisaged on

FIGURE 8 – PRELIMINARY MASTER PLAN



FIGURE 9 – NOTIONAL BUILDING USE PLAN

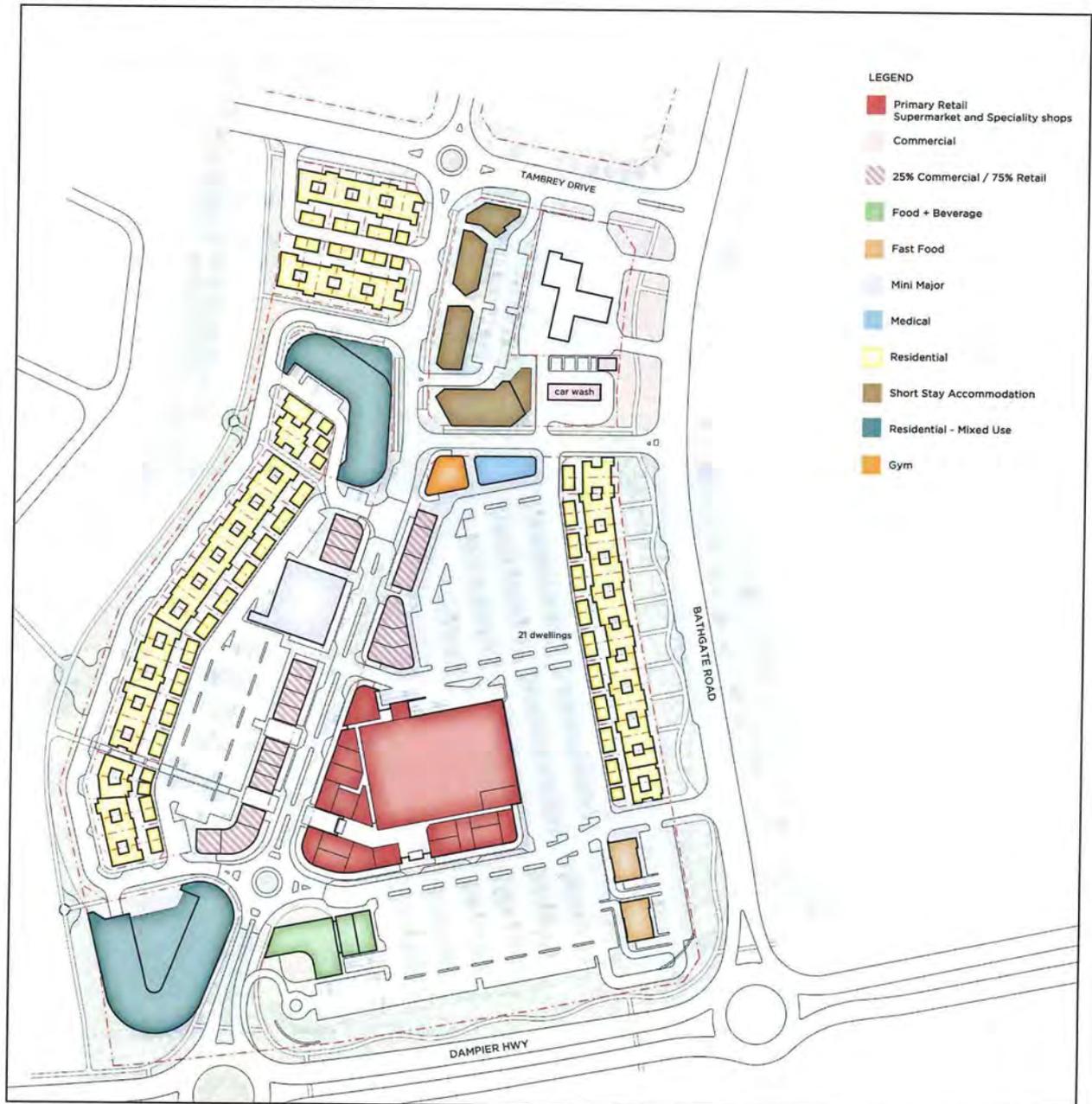
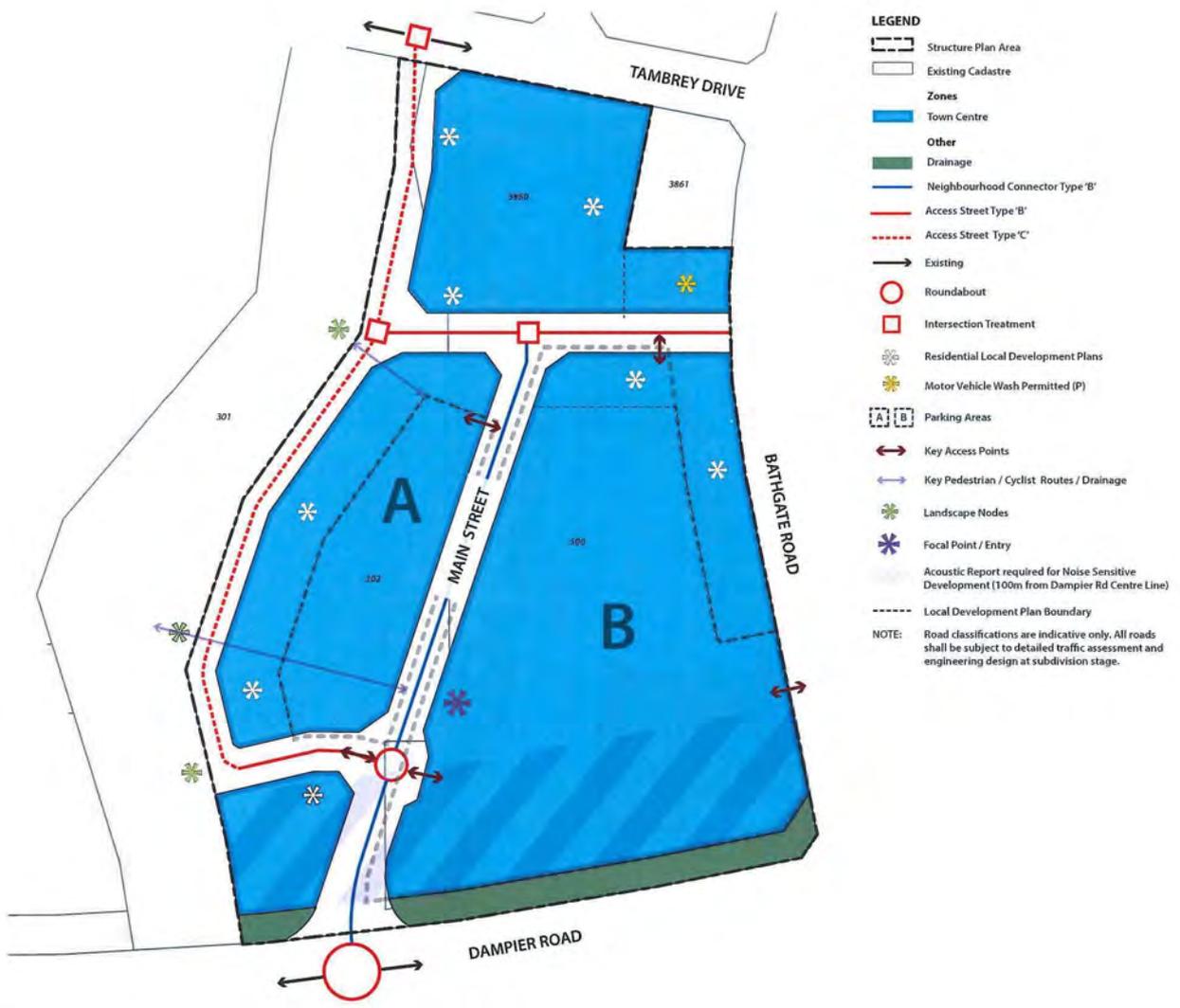


FIGURE 10 – DEVELOPMENT PLAN



the peripheries overlooking the Drainage Reserve, Bathgate Road and Tambrey Drive. Some areas located away from the central main street are envisaged to be developed for housing with potential for apartments above garages. These are located to provide surveillance over the adjoining landscaped drainage reserve and in the northern part of the site to interface with residential uses to the north of Tambrey Drive. There is the potential for residential live/work terraces with offices or other compatible non-residential uses to the street to face Bathgate Road located towards the edge of the Structure Plan area.

The Structure Plan also aims to optimise the residential development potential of the site whilst providing a variety of housing forms to cater for a range of household types. Whilst the predominant land use is for single residential dwellings (suitable for families with children who wish to benefit from the site's proximity to the Tambrey Primary School and Early Learning Centre), grouped and multiple dwelling housing sites will provide an opportunity for development of either villas, townhouses or apartments which can capitalise on the site's proximity to well developed open space and nearby key transport linkages. At the southern entry to the Centre it is envisaged there will be a gateway, mixed use or commercial building with active uses to the ground floor fronting the Main Street.

A key consideration is also accommodation for the service workers and retail attendants which are essential to the operation of the facility. These essential employees who are not already living in the local community are intended to be accommodated in a diversity of housing typologies within the Structure Plan area.

The single residential lots have been maintained on the periphery of the site where abutting existing single residential dwellings to provide a consistent interface and streetscape. The larger mixed use/residential dwelling site in the north west corner is located such that a higher density of development can benefit from proximity to the facilities associated with the commercial area, whilst also providing an opportunity for a mixed use interface with the main street. It is envisaged that the road abutting this site will be a traffic calmed road with designated entry treatments to clearly signalise that it is a low speed environment.

On the southern edge of the site, the Design Concept envisages the development of a number of fast food /restaurant outlets which require convenient access and good exposure to traffic along Dampier Road.

In terms of road layout, the Structure Plan is designed around the central Main Street, which runs north-south through the site, intersecting with Tambrey Drive in the north and Dampier Road in the south. A loop road which links on to the Main Street in two locations has also been proposed abutting the existing open space and school site to the west of the site to ensure that dwellings address and overlook the amenities to provide passive surveillance and greater security, but are not subject to commercial traffic volumes. Another road is proposed off the eastern side of the Main Street, linking the development to Bathgate Road to ensure a highly connective centre.

POPULATION AND RESIDENTIAL DENSITIES

The Structure Plan provides for a diversity of residential living options (and a point of difference from the surrounding predominantly single residential lots), being proposed to be developed with a flexible R-Coding where density and plot ratio can be determined by a subsequent Local Development Plan (LDP) to promote a denser urban form. The distribution of residential density has also been based on the provision of higher densities around the areas of amenity such as the landscaped drainage channel, but ultimately its to encourage a more sustainable form of development where residents can easily walk to amenities and services and the threshold population is increased to enhance the viability of the centre.

A range of residential densities will assist with meeting future market demand for residential housing. Densities are envisaged to be higher than those in the surrounding residential areas, highly appropriate due to their Neighbourhood Centre location, and to provide a greater level of dwelling diversity than is currently typical in Karratha.

The tables below summarise the estimated development yields and population generated by the future subdivision under the Structure Plan if the site were to be developed in accordance with the draft Preliminary Master Plan shown in Figure 8.

Development Areas Summary

Land Use	Land Area	Percentage of Future Subdivision Area
Single Residential (Approx. 200m ²)	14687	15.2%
Potential Grouped Housing (Approx. 150m ²)	3710	3.8%
Commercial	51128	53.3%
Multiple Dwellings	7925	8.3%
Serviced Apartments	4835	5.1%
Drainage	3743	3.8%
Roads and access ways	10022	10.5%
Total	96050	100%

Estimated Dwelling Yield and Population

Residential Type	Estimated No. of Dwellings	Estimated Population (2.5 PPD)
Single Residential	40	100
Grouped Dwellings	45	110
Multiple Dwellings	80	200
Total	165	410

*Note: These are based on current concept planning and subject to change.

Whilst the current Development Concept does not show residential uses above commercial uses, the Structure Plan still provides the flexibility for these to be added in subsequent stages should the demand arise. There is also an area in the northern section of the Structure Plan just south of the east west link to Bathgate Road which may be used for either Commercial or Residential uses depending on what the demand for secondary commercial outside the Main Street is like. Should this change be desired then there is a provision in the Plan for a LDP to be prepared as a pre-requisite to any built form for residential which will provide the City with the level of comfort that it will have control over the resulting built form.

Based on the above and if the site were developed as per the Preliminary Concept Plan, it is estimated that there will be approximately 165 dwellings provided in the precinct. Whilst based on the 2011 population in Pegs Creek, the typical number of persons per dwelling is 2.71, a reduced rate of 2.5 persons per dwelling is considered more likely given the higher density of development proposed is likely to result in smaller dwellings and household size. Based on this the anticipated population of the development is only around 400 persons which does not give any undue rise in the need for community services or amenities beyond that proposed in the development. In fact it is considered that the proposed development considerably adds to the amenity provided to all residents in the western suburbs of Karratha, and community facilities such as a child care and/or medical centre may be included in the final development.

LOT LAYOUT AND DEVELOPMENT TYPOLOGIES

The Structure Plan encourages the development of a diverse range of lot types, including larger robust lots for commercial purposes, down to facilitating smaller freehold residential terrace lots.

Commercial lots are generally to be fairly large, to provide flexibility for development design and allow room for parking and servicing. The largest commercial lot will contain the supermarket and speciality stores, which have a significant land take and the largest parking area, as well as requiring a good level of exposure. This main lot will also provide vehicular access directly onto Bathgate Road. The Main Street Design Concept (Figures 8 and 9) demonstrates the indicative layout of uses within the core of the 'Town/Centre' zone.

Residential lots as shown along the western, northern and eastern edges of the Structure Plan will provide an interface with the single residential dwellings beyond. Lots are oriented to look out onto the drainage channel to the west of the site, to provide a high level of passive surveillance and assist in creating a safe and attractive environment. A degree of overlooking will also be required to the rear to provide passive surveillance over rear commercial parking areas in the evenings. Residential street blocks are provided with a minimum depth of 30m, to facilitate a flexible range of lot typologies.

It will be determined at the time of a Development Application and ultimate subdivision of the site for it to be demonstrated that the minimum and average lot sizes are achieved.

DWELLING TYPOLOGIES

The Structure Plan enables a diverse range of housing options to be provided through a range of potential single, grouped and/or multiple dwelling sites. Whilst indicative typologies have been prepared to illustrate how the lots could potentially be developed under the Structure Plan, these do not form part of the approval being sought and are subject to review and change. It is envisaged that the dwellings will be constructed on a stage by stage basis, depending on the market. Whilst it is not envisaged that housing will be developed above the major retail uses, the Structure Plan does allow for residential dwellings above the commercial/retail uses in the future.

The Concept Plan envisages a series of single residential lots in the north western and western edges of the Structure Plan where they interface with the drainage swale and existing residential uses.

It is likely that these will comprise a mix of green title and strata titled grouped dwellings containing typically three or four bedroom homes. In addition, the ability to have additional multiple dwellings above mixed use development. Grouped townhouse style development is envisaged to be located at the periphery of the zone abutting Bathgate Road and has the flexibility to incorporate live/work offices interfacing with Bathgate Road.

Within the Structure Plan the following dwelling typologies are provided for:

- The site in north west corner abutting Tambrey Drive – This lot is envisaged to be developed as grouped or multiple dwellings, with several dwellings either in the one strata titled lot, or the site is also of a shape which lends itself to be developed for a series of north/south orientated terrace lots that could be serviced by a rear laneway accessing onto to Tambrey Drive. A LDP is required which will ensure that the lots have an appropriate interface with Tambrey Drive and also address and provide surveillance over the main street and the drainage open space to the west.
- The site in the central northern portion west of the main street – This lot is envisaged to allow for commercial type uses to interface with the main street, and a residential above and to the west. This lot has been tested to accommodate a series of terrace dwellings serviced by a rear laneway, but also lends itself to being developed as a mixed use development with commercial uses on the ground floor to the east and a series of residential apartments above accessed either from the shopping centre car park to the south and/or from the

new road which interfaces with the drainage open space.

- The western portion adjacent to the drainage open space has been tested to provide for a series of dual fronted single dwelling lots that can be approximately 8m wide and 30m deep intended to support a larger housing form commensurate with the higher value open aspect provided to the west. The LDP prepared for these lots will have a focus on ensuring that vehicle access is provided from the rear and a good level of passive surveillance is provided in the evenings over both the drainage reserve to the west and the commercial lots to the east with the ability to incorporate additional development above the garages. Some dwellings will have a 'Fonzy Flat' for a teenager or lower income service worker above the garage which can be fully closed off from the rest of the house, with a separate detached entry from the rear and a kitchenette, thus providing another form of housing type.
- Southern multiple dwelling site – This is a triangular shaped lot earmarked as a taller landmark entry building of either three or four storeys. This building could include office and/or apartment accommodation with undercroft parking and commercial tenancies of the ground floor, fronting onto the Main Street. If developed for apartments, then they are likely to be located over three storeys and provide a denser urban form where acoustic amelioration can be incorporated into the design and with predominately one or two bedrooms in each apartment.
- Eastern commercial/residential lots – A precinct has been earmarked on the eastern edge to potentially provide for a flexible living

and working options where a 'home office' type use can be provided on the ground floor to interface with Bathgate Road or a series of compatible non-residential uses. This site has been tested to provide lots approximately 8m wide and 30m deep which are access from the rear where the garages will provide a separation between the dwellings and the retail core.

- Northern service/commercial housing – It is envisaged that this lot will be developed to contain serviced apartments and provide an interface between the commercial sites to the south, existing short term accommodation on the opposite side of Tambrey Drive and the service station and car wash to the east. These are envisaged to be developed with smaller modular apartments, with either a single bedroom or in a 'studio' configuration with a rear parking area providing a buffer to the service station and ensuring that the parking does not adversely impact on the streetscape.

LANDSCAPE DESIGN AND INTENT

The design intent of the landscape response of the public realm is to create a civic area that is to become the focal point of the immediate area and form a vibrant urban public realm. This will be complemented by an attractive tree lined Main Street with appropriate shade canopies from building awnings to ensure pedestrian activity is encouraged by being a pleasant and viable option in the often harsh Pilbara weather conditions.

The Pilbara region boasts a large range of unique landscapes including coastal plains and mountain ranges with cliffs and gorges. The landscape design of the Tambrey Neighbourhood Centre as a whole, but

in particular the focal civic plaza, including detailed elements within the plaza will draw inspiration in the form of a design language that pays homage to the unique local landscapes of the Karratha area.

REFER TO APPENDIX E- LANDSCAPE STRATEGY

PUBLIC REALM

A crucial aspect of the landscape in the Town Centre is the design of external public places to ensure that they are filled with activity. The provision of interactive public spaces must have a seamless synergy with surrounding urban activities, ie cafes, bars, shops & alfresco dining, which will liven the centre and enrich the experience of the users of these spaces.

To best enhance the public realm the following strategies should be considered:

IDENTITY

The identity of the public realm refers to those elements that contribute to a positive sense of place and identity that is unique and authentic to Tambrey and Karratha. Identity can assist with way finding and personal safety whilst fostering community pride. Strategies include:

- Reinforce and enhance TNC and Karratha's positive attributes, build on its areas of strength and respect the distinctive identity;
- Promote local distinctiveness through use of materials that reflect the relative importance of the location;
- Ensure the identity reflects it's principal role as a Town Centre and community hub; and

- Celebrate the natural and cultural heritage of the area through public realm elements and public art.

CONSISTENT AND CONNECTED NETWORK

The network refers to the key community and commercial destinations and the connections in between. Defining and reinforcing the connections between each destination and links to the broader community through consistent use of material and contentious routes promotes safety, assists in effective way finding and promotes walking. Strategies include:

- Create a continuous and linked public realm that is clearly defined and consistent;
- Ensure all public realm development is consistent and coordinated in regards to material selection and function;
- Link activity nodes and destinations within the Town Centre;
- Connect to the surrounding pedestrian network;
- Respond to the main routes of vehicle movement throughout the area;
- Establish a hierarchy of streets and spaces;
- Promote place based intuitive way finding, supported by a simple signage system;
- Use a selective palette of materials to provide a unifying theme and a distinctive sense of identity; and
- Ensure accessibility for prams, wheelchairs users and people with disabilities or mobility

problems as an integral element of the public realm design.

ACTIVITY

Activity can be defined as the events and functions that occur in a public realm that generate and encourage positive social interaction; and the land uses and functions that adjoin public spaces that supports and encourage pedestrian use. Strategies include:

- Provide space and amenities in order to maintain and enhance activity throughout the day and into the evening;
- Allow uses adjacent to the public realm to spill out and use the public zones, i.e. café seating to extend into the street;
- Design spaces to have multiple functions and be flexible, i.e. outdoor markets;
- Encourage people to stay longer including more resting areas along streets and in gathering spaces;
- Promote walking as the main mode of transport within the Neighbourhood Centre through the provision of footpaths, slower traffic and adequate shelter;
- Provide activities for a range of cultures and age groups including children, young adults and the elderly.

INTEREST

The public realm should provide enjoyment to the community. This can be achieved through activity, social interaction and the visual environment. A public realm that interests the community will encourage more use and foster community pride. Strategies include:

- Enable streets and public spaces to be lively places where people can engage with others in the community;
- Furniture arrangement provides options for different seating groups, i.e. loose furniture; and
- Establish consistency and ensure the overall quality, appearance and amenity of the public realm within the Neighbourhood Centre is at its optimum.

COMFORT

Comfort responds to the physical arrangement of the public realm to ensure that users are comfortable within the space. Strategies include:

- Provide protection from the weather along major pedestrian routes and at key stops through canopies and awnings;
- Provide shade in summer and allow sunlight in winter through appropriate tree plantings;
- Use trees to provide a structure and scale to the public realm;
- Provide places for people to rest;
- Position elements within the public realm so that it does not obstruct pedestrian desire

lines or pose a hazard to the visually impaired; and

- Reduce the number of elements within the public realm to prevent clutter.

SAFETY AND PROTECTION

The design of the public realm is to address the issues of community safety and deter opportunities for crime and anti-social behaviour. Based on the principles of Crime Prevention Through Environmental Design (CPTED) the strategies include:

- Creating well defined routes, spaces and entrances that provide convenient movement;
- Ensure passive surveillance of public spaces to raise the likelihood that an offender can be either deterred, viewed and identified;
- Provide a range of lighting to ensure spaces are well lit at night time;
- Promote a sense of community ownership, respect, responsibility and pride;
- Incorporate well designed security features into the public spaces;
- Ensure ongoing maintenance of the public realm to indicate the intolerance for vandalism; and
- Provide management of the public realm to ensure there are regular activities in the public realm.

ENVIRONMENT

The urban infrastructure within the TNC needs to respond to the natural systems and environment in order to mitigate emerging environmental issues and to develop healthier places. Strategies include:

- Design drought tolerant, water efficient landscapes to reduce irrigation needs;
- Use locally native plant species where appropriate in order to maintain and encourage biodiversity and ecology;
- Incorporate water sensitive urban design features in the public realm, including possibly rain gardens where stormwater is directed to flow into garden beds, but definitely porous pavements to locally capture and treat stormwater runoff;
- Plant trees to maximise shading of pavements in order to reduce the heat island effect;
- Limit the use of turf to areas of maximum visual and functional benefit to the community;
- Use materials and resources efficiently, i.e. local materials; and
- Promote energy efficiency where possible.

MANAGEMENT AND MAINTENANCE

Ongoing management and maintenance of the public realm plays a significant role in its success. Best practice in management and maintenance can assist safety and foster community pride. Strategies include:

- Implement an event programme for gathering spaces to ensure the local community uses them regularly, i.e. outdoor markets;
- Select materials and elements that are hardwearing and resistant to vandalism;
- Use best practice construction methods to optimise lifecycle and performance of public realm elements, i.e. Street furniture, fixing methods, paving substrates.

WATER SENSITIVE URBAN DESIGN

An integrated approach to water management which inputs appropriate water sensitive urban design (WSUD) techniques is required within urban spaces. The Town Centre as a whole will take a precinct wide approach to sustainable use of all water forms.

Precipitation in the North West in general is both scarce but also heavy in volume during the cyclonic storm periods. Systems should be in place to help ensure that the water is able to be disposed of without causing undue flooding or damage during cyclonic events.

Applying WSUD practices becomes challenging when dealing with the harsh nature of the North West. Dramatic change of weather conditions from major flooding events to comprehensive periods of drought, as well as the impervious nature of local Pindan soils all present unique challenges to a WSUD approach.

Within streetscapes WSUD can be applied through rain gardens infiltration techniques and swale networks to medians and verges. The adoption of Xeriscaping principles can also minimise the need for irrigation.

Within urban spaces – swales and bioretention methods can be used in a more formalised and urban matter to ensure water does not linger and create a mosquito issues within public areas. Swales can be seamlessly used within the urban areas and can become a celebrated design element within the public realm.

As water is a major issue in the North West ensuring suitable WSUD practices are adopted is critical, especially for a successful landscape response.

By adopting WSUD practices within the Town Centre successful landscape spaces are created that provided essential aspects of the public realm such as provision of shade, softening of harsh urban environments, greenery and cooling while integrating a modern water wise approach.

CIVIC PLAZA & MAIN STREET LANDSCAPE DESIGN

Civic Plaza

Karratha Gorge Landscapes

The gorges of the Pilbara region display some of Earth's oldest rock formations as well as creating unique and instantly recognisable scenery. The landscape design response should draw inspiration from these landscapes through the following possible responses:

- Opportunities for vector sensitive interactive water feature designs that reflect the river systems and tidal flats of the Pilbara landscape, whilst also forming attractive stormwater drainage lines through pedestrian focussed areas; and
- Incorporating the gorge geology including ridges, furrows or linear marks into design elements such as walls, stairs, paving patterns & water features.

This can be achieved through irregular shaped stairs, angled wall shapes or through a direct interpretation of the geology in the form dry staked / stratified stone garden walls.

River Systems

The river systems of the North West are integrative and diverse network of tributaries. When viewed from an aerial perspective they create interesting and complex meandering patterns across the landscape. The plaza concept landscape design aims to encapsulate some of the patterns these systems create in a design language legible on the ground plane through the following possible responses;

Tributaries (through differing paving patterns) could be used as way-finding by guiding people to the main heart of the plaza where life, gathering & vibrancy are to dominate.

Tributaries can direct stormwater runoff through pedestrian focussed areas in an attractive landscape response that could include informal mini rapids as a source of interest.

The possible creation a small urban microcosm ecosystem that displays flora and fauna common to Pilbara area, through the provision of an indicative water feature and rockwork and associated shrub and tree plantings that mimic a Pilbara landscape.

Main Street

Streetscapes within activity centres and urban areas play a major role in creating a pedestrian focused urban environment as well as creating hierarchy and strong entry focal points.

Successful streetscapes look to work seamlessly with surrounding high quality urban spaces with high quality materials, encouraging activation, integrate vehicle provision, trees for hierarchy, aesthetics and shade & creating human scale streetscapes.

The mainstreet of the TNC will be designed to provide an urban amenity encouraging the community to use the space for activity and interaction. With a focus on promoting community ownership and pride in the urban environment, the Main Street is to be clearly legible with an active streetscape, connectivity, enhanced pedestrian experience and provide the community with a sense of safety and security to encourage use throughout the day and evening.

The streetscape will create an extension to the vibrant heart to the new centre through the provision of the same materials palette for hard and soft landscaping, including street furniture.

Car parking

Car parking is proposed to be located along the length of the Main Street for convenience access to retail trade located along the street. Parallel parking spaces are located at the same level as the adjacent footpath enabling for ease of access while also allowing pedestrians to be able to cross the road easily.

Larger designated carpark areas are to be provided to periphery of the retail core. These parking areas will have shade provided by trees at the rate of approximately 1 tree per 10 carbays.

The reduction of heat within a carpark is important especially due to the climatic conditions of the North West. The use of pedestrian pavements around the carpark that are reflective coupled with landscaped car parking areas are aimed at decreasing the effects of the bituminous hardstand in the carparking. Once matured large canopy shade trees will ensure heat transfer is somewhat reduced and a more comfortable pedestrian environment created.

Drainage Swales

Precipitation in the North West in general is both scarce but also heavy in volume during the cyclonic storm periods. Flooding events combined with the impervious nature of local Pindan soils creates large movements of water run-off which needs to be strategically redistributed and redirected through the site.

Linear drainage swales along the verge area to Dampier Road are to redirect water run-off from the site to the main existing drain to the west of the site. These drainage swales are to be landscaped in an attractive response utilising local endemic species that can tolerate a level of inundation. It is proposed that these areas will not be irrigated and plant species selected to ensure that they survive and flourish on the natural rainfall patterns of Karratha. The landscaping will be supplemented with the placement of rocks and gravels which will provide a unification technique across the swales to prevent erosion in flooding events. Swales and bioretention methods can be used in a more formalised and urban matter to ensure water does not linger and create a mosquito issue within public areas.

The existing drainage swale to the west of the site is to have a landscaped edge to the development boundary using unirrigated native endemic shrub and tree species. The existing dual use path that runs primarily north south along the drainage swale is to be retained and integrated into the footpath network for the development. Nodal locations are proposed at the major footpath intersections to add to the pedestrian experience and signalise possible changes in direction. The major east west pedestrian network will terminate on a proposed pedestrian bridge crossing over the existing drainage channel to ensure good pedestrian connectivity to the existing Tambrey neighbourhood to the west.

PLANTING PALETTE AND STRATEGY

Plant species are proposed to be predominantly endemic in composition and / or known to be waterwise and tolerant to the harsh Pilbara

conditions. Feature amenity areas, such as the Main Street and Civic Plaza will have feature shade trees that maybe exotic, but all understorey garden beds will consist of predominantly native species. All trees in pedestrian areas will be selected to provide shade and colour and where possible be an extension of a coordinated planting through the greater Karratha area.

It is proposed that the following indicative planting palette will be used in the amenity areas of the development and streetscape.

Trees (Exotic)	
Caesalpinia ferrea	Leopard Tree
Cupaniopsis anacardioides	Tuckeroo
Delonix regia	Poinciana
Ficus hillii	Hill's Ficus
Mimusops elengi	Bullet Wood Tree
Peltophorum pterocarpum	Yellow Poinciana
Pongamia pinnata	Indian Beach
Pterocarpus indicus	Rosewood
Tabebuia rosea	Pink Trumpet Tree
Tipuana tipu	Pride of Bolivia
Trees (Native)	
Acacia coriacea	Wirewood
Corymbia flavescens	Cabbage Ghost Gum
Corymbia opaca	Bloodwood
Eucalyptus leucophloia	Snappy Gum
Eucalyptus victrix	Coolibah
Melaleuca argentea	Silver Cadjeput
Terminalia canescens	Joolal
Shrubs	
Acacia hilliana	Hill's Tabletop Wattle
Allamandra nerifolia	Bush Alamanda
Alternanthera dentata	Purple Knight Alternanthera
Bougainvillea glabra	Paper Flower

Trees (Exotic) cont.	
Conostylis candidans	Grey Cottonhead
Dianella caerulea	Dianella Cassia Blue
Eremophila glabra 'Kalbarri Carpet'	Emu Bush
Evolvulus pilosus	Blue Eyes
Senna glutinosa	White Cassia
Strelitzia reginae	Bird of Paradise
Triodia pungens	Soft Spinifex
Westringia fruticosa	Native Rosemary
Zamia furfuracea	Cardboard Palm

Final species selection will be determined in accordance with the City of Karratha's approval and availability at nurseries at the submission stage of detailed landscape construction drawings.

STREET FURNITURE, SIGNAGE & LIGHTING

Street furniture will be selected to ensure it is robust and durable in the harsh environment and that can tolerate a level of vandalism to ensure maintenance minimisation. The street furniture will be selected to complement the architectural style of the built form response and include bench seats, bollards, tree grates, rubbish bins etc. Bicycle racks will be provided at prominent locations around the site, including within the civic plaza to promote a reduction in the dependence of vehicle use.

Where signage is proposed it will be to ensure way-finding opportunities are maximised for clear and legible navigation through the development. Signage will be simple and fabricated from materials that complement the landscape materials, finishes and overall street furniture strategy.

Landscape lighting will be designed in accordance with the architectural lighting to minimise overprovision and ensure consistency in materials. Landscape lighting will focus on the lighting of the civic plaza and any feature elements contained within it such as trees, public art or water features. Where possible overspill lighting from the Main Street street lights and carpark areas will be utilised to light landscape and pedestrian areas.

IRRIGATION

The landscape masterplan for the TNC has been designed with the reduction of water consumption as a key driving strategy. At this stage, landscaped areas that are to be irrigated will have their water source drawn from mains water supply. Investigations and considerations of recycled water technology will be

considered in the progression of the development to detailed design based on viability and budget constraints with the view to alleviate or reduce the requirements to utilise potable water supplies.

No lawn areas are proposed on the predominant commercial mixed use sites and all garden bed areas will be mulched with gravels or mulches to aid water retention and reduce moisture evaporation. Soil conditioners will also be used in garden beds to add water retention. Not all garden beds are proposed to be irrigated, with areas in drainage swales and other lesser priority areas proposed to be unirrigated areas utilising native and drought tolerant species.

Where irrigation systems are to be installed, a focus on Waterwise accredited systems utilising sub-surface droplet emitters will be used in accordance with the City's current specifications.

MAINTENANCE

The landscape design will incorporate recreation and environmental requirements, whilst focusing on maintenance minimisation principles and techniques. The robustness of the landscape design and the material and elements placed within it will be critical to its lasting success. All elements whilst selected for their aesthetics will also be selected to provide a robust, low maintenance solution. Where possible, the use of local suppliers will be encouraged to enable ease of replacement or repair in the event of damage or theft. All landscape hardscape items will be constructed to ensure they conform to the appropriate cyclone ratings to ensure their longevity.

PUBLIC OPEN SPACE

Liveable Neighbourhoods and WAPC Policy usually requires that for residential development, 10% of the subdivisional area be given up free of cost for POS. Element 4 - R34 of Liveable Neighbourhoods however, allows for this to be reduced to 5% in regional areas, where agreed with the local government and subject to a number of conditions regarding the quality of POS provided. Liveable Neighbourhoods also allows for cash in lieu of POS to be paid by the developer where there is already adequate public parkland in the area.

The Shire's Open Space Strategy (2008) notes that the existing suburb of Nickol is provided with approximately 19.6% open space, significantly more than the traditional 10% standard, or the 5% regional variation which can be supported under Liveable Neighbourhoods. The Strategy also identifies a number of 'candidate' sites for future development. Whilst the Strategy identifies Lot 302 within a 'Parks, Recreation and Drainage' zone, this is inconsistent with the Lot's 'Urban Development' zoning under TPS8, as per Amendment 24. Indeed, the specific purpose of Amendment 24 was to facilitate the redevelopment of this open space, as it was considered surplus to requirements.

Given the proximity of abundant and well developed open space in the area, no additional POS is being contemplated as part of this Structure Plan.

The actual requirement for the POS is difficult to determine as the extent of residential development is yet undefined. It is therefore proposed that open space will be calculated and required to be provided as a condition of any Local Development Plan

(LDP), given a LDP is required for all residential development. An appropriately worded provision in the Statutory Section of this Structure Plan is proposed to require a 5% POS contribution at the time of a LDP, which may be satisfied by landscaping of the drainage reserve.

The following table summaries the open space contribution for the site.

Public Open Space Schedule	Area (sqm)
Site Area	96,050
Deductions	
Commercial main streets and access ways	10,022
Likely Town Centre Area (commercial) and Drainage included	67,631
Net Residential Subdivisional Area	18,397
Public Open Space @5% (as per Element 4, R34)	920
Deficit	920m ²

The proposed upgrading of landscaping nodes is considered appropriate for the following reasons:

- There are little logical opportunities for the provision of POS in the Structure Plan area;
- The developer will also be responsible for all costs in upgrading three 'Landscaping Nodes' at the termination of the streets and PAW's on the western side of the Structure Plan. It is proposed that if any cash-in-lieu of POS is required to be paid, it will be used to enhance the City's drainage reserve at these key focal points;

- It will provide an alternative passive recreation opportunity than existing open space, which can be enjoyed not only by future residents of the Structure Plan area but also existing surrounding residents; and
- The areas to be upgraded are well located, being at the termination of east west roads and pedestrian access ways, where they are most visible, and would well exceed the equivalent of 5% of the gross residential subdivisional area.

MOVEMENT NETWORK

A Transport Assessment Report prepared by Uloth and Associates provides specific detail regarding traffic and transport matters relating to the proposed Structure Plan and is attached to this report. The following summarises the key findings of their report.

REFER TO APPENDIX F – TRANSPORT ASSESSMENT REPORT

EXISTING SITUATION

Dampier Road (which is reserved 'State and Regional Road' under TPS8) is a four lane divided arterial road, with a dual-lane roundabout at Bathgate Road and an unsignalised junction at Baynton Drive (with an intersection spacing of 250 metres). Dampier Road has a 70 kilometre per hour speed limit in the vicinity of the proposed development.

In order to identify the existing traffic flows in the vicinity of the proposed development Uloth and Associates initially obtained available traffic count data from Main Roads WA, being weekly traffic counts on Dampier Road, Bathgate Road and Baynton Drive, from 2008 and 2009.

The Dampier Road data shows Thursday as the busiest day of the week. Additional traffic counts were carried out by Uloth and Associates at the Dampier Road junctions with both Bathgate Road and Baynton Drive on Thursday 10 May 2012, in order to identify up to date traffic data. Dampier Road currently carries 14,400 vehicles per day adjacent to the proposed development, falling to approximately 12,500 vehicles per day west of Baynton Drive.

Bathgate Road (which is reserved 'District Road' under TPS8) is a two lane road with wide gravel shoulders, and a speed limit of 60 kilometres per hour. Bathgate Road carries 6,500 vehicles per day north of Dampier Road, while Baynton Drive carries 5,500 vehicles per day south of Dampier Road.

Tambrey Drive and Baynton Drive (both reserved 'Local Roads' under TPS8) are kerbed 2-lane roads with footpaths. Both Tambrey Drive and Baynton Drive have 50 kilometres per hour limits as they are local residential streets with no alternative speed signage. Tambrey Drive carries 4,400 vehicles per day west of Bathgate Road and 4,900 vehicles per day west of the petrol station access.

It is important to note that the existing petrol station at the corner of Bathgate Road and Tambrey Drive comprises two access driveways off each road. It is also important to note the significant drainage reserve along the western boundary of the development site, together with a paved dual-use path that runs from Baynton Drive through an underpass beneath Dampier Road and then north to Tambrey Drive.

PROPOSED ROAD HIERARCHY AND ROAD RESERVES

The proposed north-south Main Street is to be a Neighbourhood Connector A under Liveable Neighbourhoods, with a road reserve width of approximately 18m for the 'Main Street' section, narrowing to 16m to the north, facilitating a possible bus route and providing opportunities for on-street parking and footpaths along the retail frontages. This reserve is intended to comprise 3.0m wide paved and landscaped verges, 2.5m wide embayed car parking, a 3.5m wide carriageway suitable to accommodate buses. This is generally consistent with Figure 17 of Liveable Neighbourhoods with no cycle lanes given the predominant east/west cycle desire line and the main street speed environment desired, and no median given the indented car bays, narrower crossing and estimated traffic of less than 3000vpd. 2.5m wide parking bays are proposed rather than 2.1m given the more frequent use of larger vehicles in Karratha.

PROPOSED ROAD CROSS SECTIONS

The east-west road linking to Bathgate Road is proposed as an Access Street B, comprising a 15m road carriageway which includes 2.1m parking lanes, 6 metre carriageway and 2.4 metre verges.

The two residential streets to the west of the Main Street are proposed to be Access Street B's also, with a pavement width of 7.2 metres, allowing for frequent on-street parking, with an overall road reserve of approximately 15 metres. A 13m wide Access Street C runs along the western side of the development, between the residential lots and the drainage reserve beyond which is reduced in width as it abuts the Recreation Conservation and Drainage reserve where footpaths can be located in the reserve and services are only required on one side allowing the verge to be reduced to 2.5m.

INTERSECTION SPACING AND ACCESS

The intersection spacing requirements adjacent to the proposed development are discussed below, together with the resulting access arrangements for the proposed Structure Plan.

Main Street Connection to Dampier Road

In *'Guide to Road Design - Part 4A: Unsignalised and Signalised Intersections'*, Austroads specifies Safe Intersection Sight Distance (SISD) as the minimum standard that should be provided on a major road at any intersection in order to provide sufficient distance for the driver of a vehicle on the major road to observe a vehicle from the minor road moving into a collision situation, and to stop before reaching the collision point.

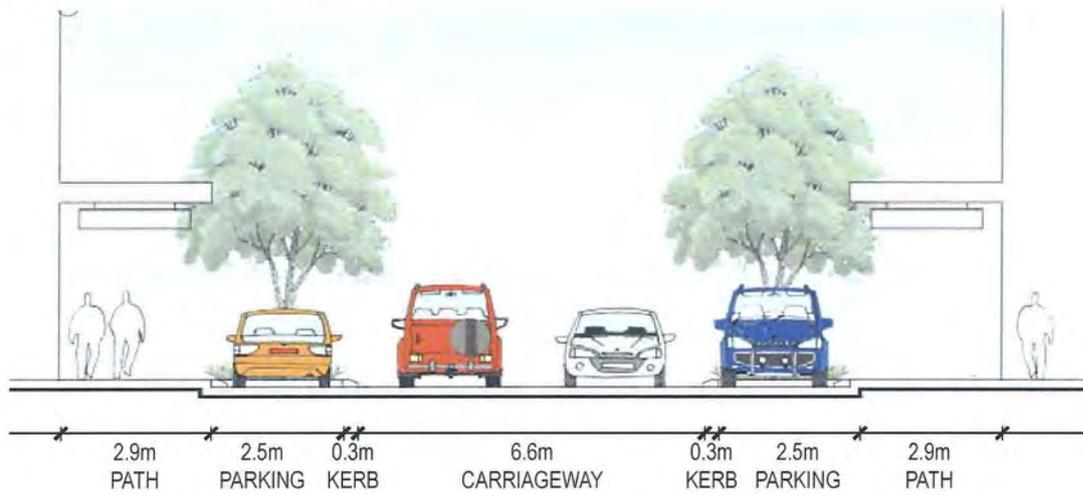
On the basis of this definition, it is recommended that the SISD is a suitable measure to adopt for the minimum acceptable separation between intersections.

The SISD for a speed of 70 kilometres per hour is 151 metres, while the SISD for a speed of 60 kilometres per hour is 123 metres (using a reaction of 2.5 seconds in Table 3.2 of the Austroads Guide), reducing further to 97 metres at 50 kilometres per hour.

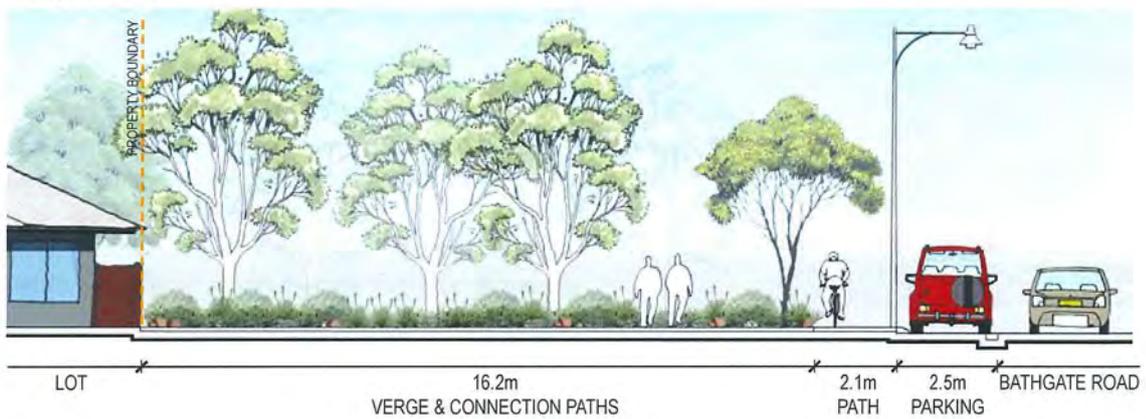
The existing intersection spacing along Dampier Road is 250 metres, from the eastbound give way line at the Bathgate Road roundabout to the centre line of Baynton Drive. If a new road was constructed between these 2 intersections, the resulting intersection spacing would be a maximum of just 125 metres, which is insufficient for the existing 70 kilometre per hour speed limit, and is therefore unacceptable.

However, it is important to note that the development of the Town Centre will attract significant traffic movements from the residential area south of Dampier Road, accessed via Baynton Drive, which will create significant weaving issues within Dampier Road under the current intersection arrangements,

18m Road Reserve (Main Street)



Bathgate Road



with high traffic volumes carrying out the right-left stagger between Baynton Drive and Bathgate Road.

Taking into account the agreed vision for the Town Centre to be focussed around a central 'Main Street' (and the resulting requirement for a highly connected precinct with direct access off Dampier Road) Uloth and Associates support the connection of the Main Street to Dampier Road opposite Baynton Drive, with the construction of a new roundabout to control the resulting 4-way intersection.

In addition to avoiding the construction of an additional conflict point along Dampier Road, this new roundabout will allow north-south traffic between Baynton Drive and the new Centre to safely cross Dampier Road, without having to use the regional road at all for this local shopping trip.

The construction of a roundabout at Baynton Drive also improves the existing weaving manoeuvre for southbound traffic from Bathgate Road to Baynton Drive, by removing the existing left turn lane in Dampier Road and hence increasing the available weaving length for this manoeuvre.

This proposal has been referred to Main Roads WA which has provided a verbal acceptance but is currently awaiting comments or formal referral from the City before advising of its acceptance to the proposal. It is anticipated that the Structure Plan will be referred to MRWA for final comments prior to approval.

Access off Bathgate Road

The proposed access roads off Bathgate Road provide intersection spacings of approximately 110 metres from both Tambrey Drive and the existing Dampier Road roundabout, which is suitable for a speed of approximately 55 kilometres per hour.

Access off Tambrey Drive

The recommended minimum intersection spacing along Tambrey Drive is 97 metres, for a travel speed of 50 kilometres per hour.

With the existing junction at Matebore Street located 120 metres west of Bathgate Road, the only logical location for an intersection with the proposed Main Street is to create a 4-way intersection at Matebore Street, with the construction of a small roundabout which will facilitate the orderly movement of traffic through the intersection.

FUTURE TRAFFIC FLOWS

The Traffic and Transport report prepared by Uloth and Associates suggests that the Centre, once fully developed, will generate a total of 13,870 vehicle trips per day with 1,388 vehicle trips during the PM peak hour.

Taking into account the existing distribution of residential areas in the vicinity of the proposed Centre, and the planned additional residential growth throughout the assumed catchment area, it is expected that the future traffic flows generated by the proposed development will travel to/from the Centre via the following approach routes:

- Dampier Road, west: 30 percent
- Baynton Drive, south: 20 percent
- Tambrey Drive, west: 20 percent
- Bathgate Road, north: 17 percent
- Dampier Road, east: 12 percent
- Matebore Street, north: 1 percent

Uloth and Associates carried out a traffic assignment process for each of the proposed land uses within the Town Centre, to determine the distribution of future daily development traffic flows and internal daily traffic flows.

The analysis identified the Main Street is anticipated to carry 7,200 vehicle trips per day at the southern end, with 2,100 vehicle trips through the retail core and 3,300 vehicle trips at the northern end, which suggests that approximately 53% of the overall Town Centre traffic will access via the proposed Dampier Road - Baynton Drive - Main Street roundabout.

Total future traffic flows were then determined, by taking into account the anticipated growth of surrounding residential areas, together with the long term forecast of 31,000 vehicles per day on Dampier Road west of Bathgate Road, as published in the KCN City Growth Plan report.

Accordingly the existing traffic flows (excluding the proposed development) will increase as follows:

- Tambrey Drive, west: 10%
- Bathgate Road, north: 25%
- Baynton Drive, south: 30%

Dampier Road is assumed to increase to a long term total of 31,000 vehicles per day, including the proposed development.

Uloth advise that Bathgate Road is expected to increase to between 8,000 and 9,000 vehicles per day in the long term, while Tambrey Drive is expected to carry 5,300 vehicles per day west of Bathgate Road and 8,000 vehicles per day west of the proposed Centre.

INTERSECTION OPERATIONAL ANALYSES

Initial analysis showed that if the proposed Town Centre is developed with access only off Bathgate Road and Tambrey Drive (that is without the proposed Main Street connection to Dampier Road), then the right turn movements into Dampier Road from both Bathgate Road and Baynton Drive will fall to low (and ultimately unacceptable) Levels of Service as traffic flows on Dampier Road continue to increase.

These intersection operational characteristics together with the weaving issues that would result, as discussed above, suggest that an acceptable situation can only be achieved if a new roundabout is constructed at Dampier Road - Baynton Drive, with a northern leg connection to the proposed Town Centre.

Detailed intersection operational characteristics for the resulting recommended plan are shown in Tables A.2 to A.9 in Chapter A.4 in the Technical Appendix.

If the Main Street is connected to Dampier Road, as proposed, then the Dampier Road roundabouts at Bathgate Road and Baynton Drive will both operate at overall Levels of Service A and B during the future Thursday PM peak hour, indicating good operating conditions with short traffic delays.

The Bathgate Road - Tambrey Drive junction will operate at an acceptable Level of Service C during the long term future PM peak hour, while remaining access roads into the Centre will also operate at acceptable operating conditions.

PUBLIC TRANSPORT AND PEDESTRIANS

The KCN City Growth Plan report identifies a proposed bus route running in an east-west loop both north and south of Dampier Road. However, with the proposed development of the TNC and Mixed Use Site being a major destination at the western end of the Karratha Town Site, it is considered that a future bus route could be modified to provide a figure 8 loop at the western end in order to provide bus stops within the Main Street of the proposed Neighbourhood Centre.

Possible future bus routes could therefore operate through the proposed Town Centre, with possible bus stops located in the middle of the Main Street as shown in Figure 11.

REFER TO FIGURE 11 – POSSIBLE FUTURE BUS ROUTES

Pedestrian routes will be provided along each of the public roads within the proposed Town Centre, with additional routes also provided on an east-west orientation linking to the existing pedestrian routes adjacent to the Centre. A possible future path network following the construction of the proposed Centre is shown in Figure 12.

REFER TO FIGURE 12 – POSSIBLE FUTURE PATH NETWORK AND BUS STOPS

Bicycles

No dedicated bicycle only cycleways are provided throughout the Structure Plan area. No major east west road links are proposed through the site which, given Karratha's shape, is the direction in which the vast majority of commuters travel and there is therefore anticipated to be a very limited need for

the bicycle pathways through the Structure Plan area given commuter cyclists to the Town Centre are likely to use Dampier Road.

Cyclists traveling to the Neighbourhood Shopping area will be able to share the road with cars, taking advantage of the low speed environment along the main street provided by embayed parking, frequent pedestrian crossings and central pedestrian refuge.

COMMERCIAL / RETAIL / COMMUNITY LAND USES

The Structure Plan will facilitate the provision of a mix of commercial, retail and community activities. Key features of the proposed development are described as follows:

- The provision of a mix of uses, including retail, commercial and residential facilities (permanent and short-stay accommodation), as well as possible other community uses;
- A core retail precinct comprising an ultimate retail floorspace allocation of approximately 8,500m² centrally provided within the development, accessible via a new 'main-street' through the site;
- Commercial development that may comprise approximately 3,000m², with the main component likely to be located to the south-west of the site, fronting Dampier Road;
- The provision of a number of dining options, including take away food outlets, cafés and restaurants to the southern part of the development, fronting Dampier Road; and
- The provision of other community facilities

to complement the retail and other uses, including a possible medical centre.

Use permissibility is to be in accordance with the Town Centre Zone.

Whilst all the uses are defined by the Scheme, there is one additional use inserted into the permissible uses in Part 1 which specifically allow for a 'Boat Storage Facility'. Given the high level of boat ownership and the higher densities proposed which limit opportunities for boat storage within the lot, provision is made for a lot(s) to be dedicated solely for boat storage which may be offered for use with or without charge and simply operated by either the centre management or another business within the neighbourhood centre.

NEEDS ASSESSMENT

MacroPlanDimasi have undertaken an Economic Impact Analysis for the provision of commercial and retail land uses under the Structure Plan. The report considers the potential economic and related effects of the proposed addition of retail floorspace at Tambrey on the surrounding centres, addressing the economic impacts and benefits of the proposal from a net community benefit perspective.

REFER TO APPENDIX G – RETAIL NEEDS ASSESSMENT

The report identified the following key findings and conclusions:

- The TNC is proposed to be developed in the western part of Karratha to serve the western part of town with a particular focus on providing convenience shopping and amenity. The TNC is planned to be a mixed-

use development including retail, commercial, residential and community uses;

- TNC is proposed to be developed in the western part of Karratha to serve the substantial existing population as well as the significant population growth occurring in the area. The TNC is planned to be a mixed-use development including retail, commercial, residential and community uses.
- For the retail component of the TNC, the draft masterplan proposes to include a full-line supermarket of 3,800 sq.m, two mini-major tenants totalling some 1,500 sq.m, and a supporting provision of retail specialty space. The total retail floorspace of the centre is expected to be around 8,500 sq.m upon completion.
- The primary trade area, which the TNC will serve, contains a present population of 11,710, forecast to grow to 15,360 by 2026.
- The sales potential of the retail component of the TNC is estimated at \$69 million in 2017/18.
- The total retail expenditure market generated by primary trade area residents is estimated at \$218 million, while the retail expenditure of the total Karratha City population will be \$461 million at that time. FIFO workers will add further to the overall demand for retail facilities within the town.
- The estimated market shares which the TNC will achieve are 25.8% of the primary sector expenditure, and 13.5% of the total retail expenditure by the City of Karratha population.
- The analysis shows that whilst retailers within Karratha are expected to be impacted by the

FIGURE 11 – POSSIBLE FUTURE BUS ROUTES

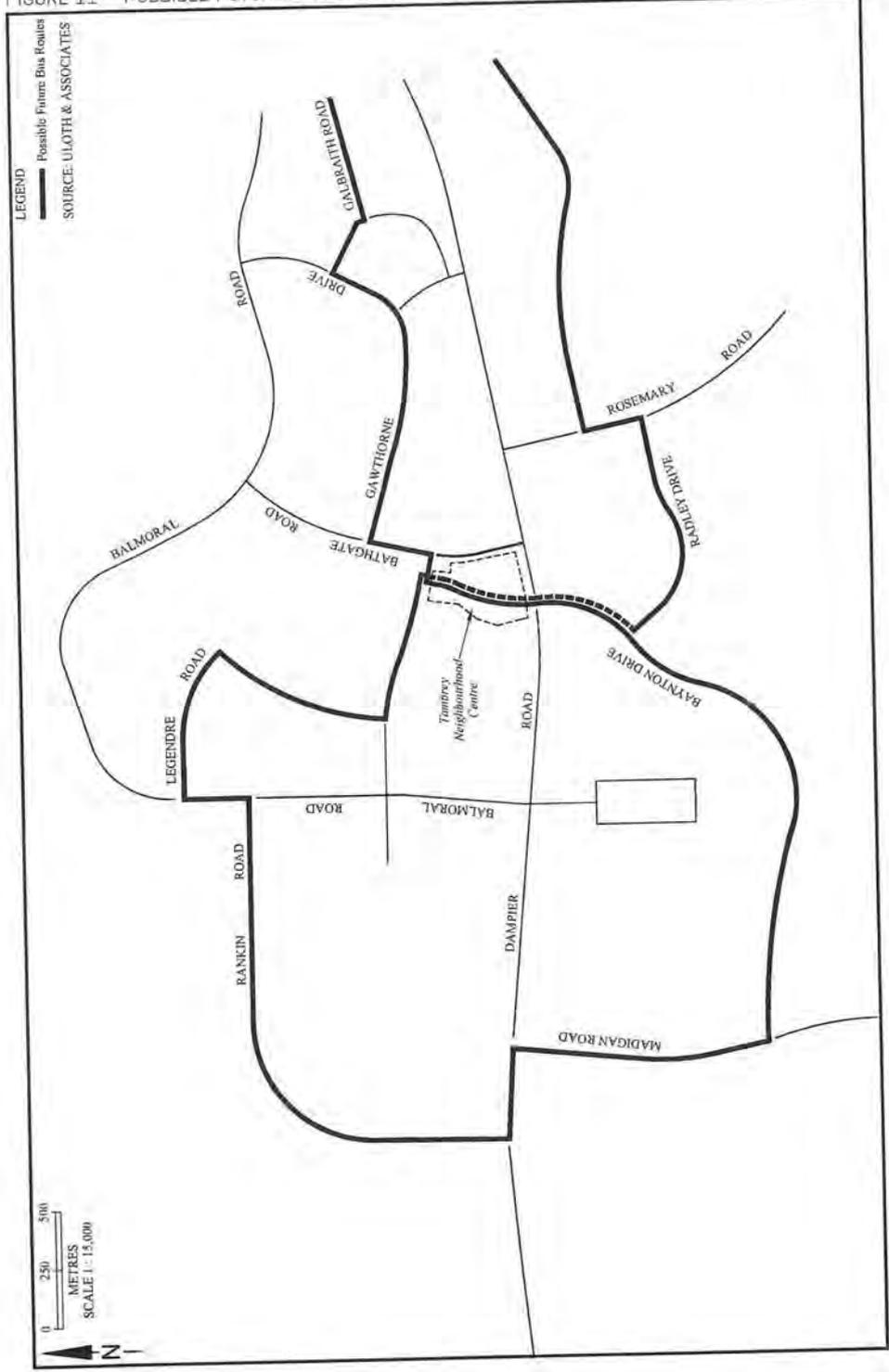




FIGURE 12 – POSSIBLE FUTURE PATH NETWORK AND BUS STOPS

TNC, those retailers are estimated to achieve sales of \$417 million in 2020/21, which is a \$33 million increase on their estimated sales at 2014/15.

- Existing Karratha City Centre retailers are expected to be impacted to a small degree by the TNC, however they are still expected to experience net growth in their sales potential over the next 6 years (three years post development of the TNC).
- The analysis shows that in 2017/18, existing retailers in Karratha would be expected to experience an aggregate impact of around \$48 million or 11.4%. These average trading impacts, when weighed against the positive economic and social impacts that will be generated by the development of the TNC, and the overall growth in the Karratha market, are considered reasonable and will not threaten the viability of existing retailers within Karratha. Overall, the analysis presented in this report shows that the TNC would not in any way compromise the future role or strength of the Karratha City Centre.
- The other proposed uses at Tambrey, including residential, commercial and ancillary, will help to reinforce the convenience role of the centre and help to achieve the objectives of the Karratha City of the North Plan. Those uses will not detract from the primacy of the City Centre.
- The new Structure centre will be conveniently located in the growing and underserved western Karratha area. It will therefore greatly improve amenity for local area residents, with shopping and service facilities being provided

in an accessible location within the local area. The quality of life of western Karratha residents will be improved as a result.

- The provision of facilities such as the TNC is an important step towards enabling the growth of Karratha that is envisaged under both the Shire of Roebourne Town Planning Scheme and the Karratha City North Plan.

ENVIRONMENTAL IMPACTS AND MANAGEMENT

As discussed earlier in this report, the TNC site does not contain sensitive environmental features, aside from the presence of a Priority 3 flora species within the southern end of the site.

VEGETATION CLEARING

Vegetation is proposed to be cleared across the entire site to facilitate development. As discussed in Section 2.3, the majority of the vegetation present onsite has been previously disturbed and is dominated by introduced grasses.

The vegetation with the highest conservation significance present onsite is the patches of the Priority 3 flora species, *Themeda sp* Hamersley Station (M E Trudgen 11431) which are located within the southern end of the site.

Prior to clearing works being undertaken FJM Property propose to liaise with the City of Karratha and the DER to determine if either group has a desire to use any plants which could be salvaged from the site for local conservation projects. If a suitable project is identified, FJM will arrange for these plants to be salvaged.

DRAINAGE

The low permeability soils and high intensity rainfall events in Karratha can lead to widespread flooding. To address this issue, the current drainage network in the town has been primarily developed for the rapid removal of stormwater from key infrastructure in developed areas (GHD, 2010).

A Local Water Management Strategy (LWMS) has been prepared to accompany the Tambrey Structure Plan, as discussed above. The key design and management items which relate to onsite drainage as discussed in the LWMS are summarised as follows:

- The stormwater system design for the site is based on a conveyance model, where flows are directed overland to the adjacent drainage reserve.
- Individual urban lot runoff will follow unobstructed overland flow paths to road drainage reserves.
- The road networks will be used as the main conveyance pathway to the drainage reserve in high rainfall events. As such, road levels have been designed to direct flows as required.

Further detailed drainage information can be found within the LWMS.

ACID SULFATE SOILS

As discussed previously, the watertable at the Tambrey site is anticipated to occur between 5 to 10m below the ground surface. Based on this depth and the depth of works proposed during construction, no lowering of the watertable during construction of post-development is proposed.

As such, development of the Tambrey site does not trigger any of the DER's criteria for the investigation of ASS. No further onsite investigations are proposed with regards to this matter.

CONSTRUCTION IMPACTS

The short-term impacts of construction, including noise and dust, will be managed according to industry best practice and in accordance with all applicable government regulations.

All static and mobile machinery employed during construction will be fitted with appropriate noise attenuation equipment and will comply with occupational noise regulations. Construction activities will be managed so as to comply with the *Environmental Protection (Noise) Regulations 1997*.

Dust arising from construction works and bare ground will be controlled so as to comply with the requirements within the EPA's *Guidance Statement No. 18: Prevention of Air Quality Impacts from Land Development Sites (2000)*. In particular:

- All cleared areas will be stabilised by watering, mulching or equivalent means.
- No vegetation or other debris will be burned on the development site.

- Where necessary, watering will be employed to minimise dust generation while earthworks are in progress.

The developer will ensure that provisions are made and responsibility accepted for dust control in all contracts issued for site works.

EARTHWORKS

The subject site typically has a surface fall of approximately 1:200 towards the North West. Coffey Geotechnics have completed a geotechnical investigation of the site. The generalised subsurface profile can be described as clayey gravel, with clayey sand overlaying clayey gravel, which in turn overlays rock at depth.

As soils in this location have a significant clay content, with associated shrink swell characteristics, it is expected that "Class M" Lot Classifications in accordance with AS2870 would be achieved.

Imported fill material will be required to shape lots to ensure stormwater flood routing to adjacent roadways. The road network has been configured to follow ground contours as closely as practical to minimise earthworks required to the site, whilst maintaining an overland flow path function. Minimum lot levels will be provided in accordance with the requirements of the Local Water Management Strategy and ultimately the Urban Water Management Plan for the site.

STORMWATER DRAINAGE

The high intensity rainfall associated with being in a cyclonic region requires the provision of a high capacity drainage scheme to cater for extremely large storm events.

Cyclonic and major storm events will be disposed by open gutter flow along road kerb lines, directed to the existing open drain to the west of the site by drop structures in accordance with the City of Karratha's requirements.

The road network configuration has been designed to provide an overland flow path for the site. Drain reserves are proposed to provide flood routes as required, directing flows to the existing open drain along the western boundary of the site.

Refer to Coterra Environment's Local Water Management Strategy for detailed drainage information.

SEWER RETICULATION

The subject site is currently serviced by an existing DN225 gravity sewer along the western boundary of the site and a DN150 sewer along the northern boundary of the site. A DN250 sewer pressure main is also located adjacent to the site in Bathgate Road.

The Water Corporation's overall sewer planning indicates that sewer disposal for the site will be achieved through direct connection to existing DN225 sewer services adjacent to the site, as discussed above. Ultimately the existing DN225 main discharges to Karratha Wastewater Treatment Plant (WWTP) No 1. The Water Corporation have recently

completed an upgrade to Karratha WWTP No 1 and associated infrastructure, which provides capacity for this project.

WATER RETICULATION

The subject site is currently bounded by existing DN300AC water distribution mains located in Bathgate Road and Tambrey Drive.

The Water Corporation's overall planning indicates that potable water supply to the site will be provided via connection to existing DN300 water distribution mains located in Bathgate Road and Tambrey Drive. The Water Corporation have recently completed upgrades to Water Supply Tank No. 1, which augments water supply capacity of Water Supply Tank No. 3. This work provided overall scheme capacity for the project.

Detailed design of the project will be required to satisfy the Water Corporation's water efficiency measures.

UNDERGROUND POWER SUPPLY

Existing overhead power lines front the site within Bathgate Road and Tambrey Drive. These power lines do not have capacity to service the site and are ultimately redundant under the proposed Pilbara Underground Power Project.

Underground power supply to the development will be provided via a new 22kV high voltage feeder cable connection to the Pegs Creek zone substation located approximately 700m to the east of the site along Dampier Road or through interconnection with new High Voltage feeders that are being installed by Pilbara Underground Power Project (PUPP). The

scope of work required for the site connection will depend on construction progress of the Pilbara Underground Power Project at the time of subdivision construction.

Internally the site would be serviced by a high voltage and low voltage underground power network connecting to transformers and switchgear located about the site.

TELECOMMUNICATIONS

The subject site is adjacent to existing Telstra optic fibre infrastructure within Dampier Road and copper network within Tambrey Drive.

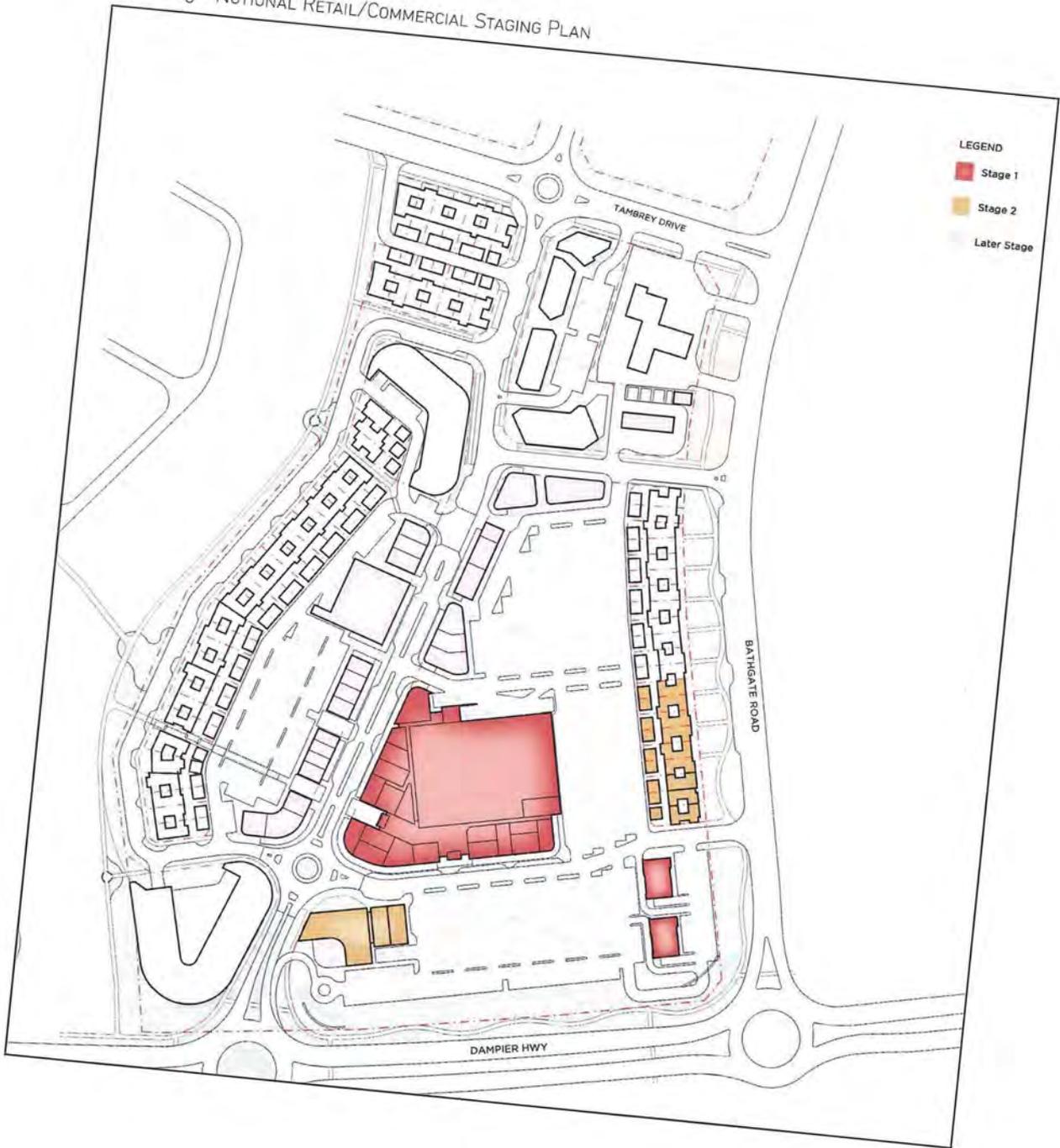
Depending on arrangements for commercial development at the time of subdivision either a Telstra or National Broadband Network telecommunications network would be installed within the development.

STAGING AND TIMING

Given the size and constantly changing market demand it is envisaged that the development will be staged over a number of residential and commercial stages. A notional commercial staging plan is provided at Figure 13 which indicates that the first stage will be the supermarket 'anchor tenant' which once established will act as the catalyst for the centre to grow and evolve to its full capacity.

REFER TO FIGURE 13 – NOTIONAL RETAIL/COMMERCIAL STAGING PLAN

FIGURE 13 - NOTIONAL RETAIL/COMMERCIAL STAGING PLAN



PLANNING MERIT

The proposed Structure Plan represents the logical, orderly and proper development of the land that is consistent with both the current strategic vision prescribed by the Karratha City of the North Blueprint and also the statutory objectives highlighted by the Scheme and Amendment 24 to the Scheme.

Firstly at the strategic level, the proposed Structure Plan will facilitate achieving the objectives of the recently endorsed KTCN Blueprint City Growth Plan which highlights the site as being developed for a neighbourhood shopping centre to service the western end of town and residential purposes with opportunities for increased density. The site is also a logical extension of the existing neighbourhood and provides housing diversity and density within the established urban fabric to reduce pressure to develop on the fringe and in the Regals south of Karratha Hills. The design is also responsive to the site providing a neighbourhood centre that is within a walkable catchment with a high level of pedestrian and vehicle connectivity, including to the adjoining educational facilities and open space.

The intent for the site to be developed for a neighbourhood centre is also reflected in both the WAPC *Pilbara Framework: Regional Profile (2009)* and the *Karratha Regional Hotspots Land Supply Update 2010* which both highlight that the site is to be developed for a Neighbourhood Shopping Centre with a range of residential dwelling types and other mixed uses.

The City of Karratha's *Karratha 2020 Vision and Community Plan (2009)* also notes the high cost of housing and the situation of employee accommodation being provided by certain employment sectors. The result being that there

is an established need for additional housing in Karratha to address the high cost of housing. The proposed Structure Plan will assist with achieving the objectives envisaged under the document by not only providing additional amenities and services, but also providing non-mining related employment and a variety of housing types.

Secondly from a statutory viewpoint, the Structure Plan is also consistent with its intended purpose prescribed by Amendment 24 to the City of Karratha Scheme and also assists in achieving the objectives of the Scheme as per clause 5.8 of TPS 8 in that it represents the continued growth of Karratha and Tambrey and will:

- (vii) *Develop Local commercial centres so as to provide convenience goods and services, private recreation, and community uses to the local community;*
- (viii) *Enhance the high level of residential amenity within Karratha in both existing suburbs and the residential expansion areas; and*
- (ix) *Encourage residential development that will accommodate a greater range of lifestyles and needs to reflect the broadening population base.*

CONSISTENCY WITH SURROUNDS

The proposed Structure Plan is consistent with the built form and development patterns surrounding the subject site. West of Balmoral Road, immediately south and east of the site is land zoned for "Urban Development", in addition to land south of Dampier Road. This "Urban Development" zoned land is being developed for single residential dwellings, consistent with the area north of Tambrey Drive which is generally zoned "Residential R20" and which represents an established residential area comprising single dwellings with pockets of grouped dwellings at the R30 density coding.

The Open Space Strategy identifies that of the existing dwellings in the suburb of Nickol, approximately 87.4% of these are detached houses, with the remaining 12.6% being attached houses. The proposed Structure Plan will allow for additional dwelling stock, including single houses and grouped dwellings, to be developed in Nickol, consistent with the existing development.

PERFORMANCE OF STRUCTURE PLAN

The proposed Structure Plan is also consistent with the various elements of sustainability. These key elements can be identified as environmental, social (heritage) and economic sustainability. The performance of the Structure Plan in relation to these elements is detailed below.

ENVIRONMENTAL

Optimising the development potential of the site with a range of dwelling types, including higher density development, within an established neighbourhood with existing services and amenities is inherently more sustainable in that it reduces the demand to develop more sensitive land on the urban fringe and reduces vehicle travel times and vehicle dependence by allowing residents to walk to amenities and essential services. Extensive provision has been made for pedestrian and cyclist connectivity, however it is envisaged to be a slow speed cyclist environment where cyclists walk their bikes rather than it being a commuter thoroughfare which should be more focussed near Dampier Road.

The site is also largely denuded and has little environmental benefits. There are no known Declared Rare and Priority Flora or Threatened Fauna on the site.

In terms of the environmental performance of the design, the road and lot layout has been proposed to provide all lots with a north south and east west orientation where the dwellings can be designed to provide shading of side walls, or extensive eaves to protect east and west facing openings which is the primary concern in the arid climate. The east-west lots will have the ability to capture the cooling dry season breezes and reduce the reliance on mechanical cooling. The Structure Plan also makes provision for a future bus route to run through the middle of the estate to connect it with the City Centre and the possibly the main employment areas on the Burrup and the Karratha Industrial Estate.

ECONOMICS

The proposed Tambrey Neighbourhood Centre will facilitate the development of a vibrant mixed use centre which provides a range of employment opportunities whilst also, through the provision of higher density housing opportunities, increasing the viability of these businesses and other services. The mixed use nature of the Structure Plan allows a range of employment opportunities in the food and beverage industry, retail and services industry, community services sector, medical staff and office workers in a variety of different fields. This not only provides employment for professionals, but also essential employment opportunity for teenagers and spouses of those working in other areas. It is estimated that up to 370 persons could eventually be employed in the Centre.

REFER TO MACROPLANDIMASI RETAIL NEEDS ASSESSMENT & ECONOMIC ANALYSIS REPORT IN APPENDIX G.

The MacroPlanDimasi Report appended to this Structure Plan estimates the sales potential of the retail component of the TNC at \$69 million in 2017/18. Despite this, the study concludes that as there is still an undersupply of floorspace to serve the City of Karratha that even once Tambrey is fully operational, the retailers in Karratha are still expected to achieve \$33 million in additional sales in 2014/15 and extra \$417 million in 2020/21. The report concludes *"Existing Karratha City Centre retailers are expected to be impacted to a small degree by the TNC, however they are still expected to experience net growth in their sales potential over the next 6 years (three years post development of the Centre)."*

The economic and flow on effects of the development are numerous, but importantly the improved shopping choice, convenience and amenity for the surrounding residents will be vastly improved. This improved quality of life will make the Town more attractive to encourage the transient parts of the population to stay longer, be part of the long term community and social fabric of the Town.

SOCIAL

The development of the TNC will provide numerous social benefits to Karratha, helping it transition from a Regional Town to a City of the North. The additional amenities, services, convenience shopping and the restaurants and bistros that will be provided will substantially increase the quality of life for the local community and help attract other key professionals to stay in the area and be part of the community. Simply diversifying the economic base to provide employment for all sectors of the community without relying on work from the mining sector helps to create a 'normalised' community where all members of the family can be involved and be gainfully employed in the community.

The development also has numerous benefits at the micro level. Simply providing numerous meeting places for the community to interact over a coffee and socialise has numerous benefits to the social fabric of a town. Other design elements have also been incorporated into the development which aim to ensure the creation of a quality neighbourhood environment. These include:

- the creation of a clear sense of identity that the local residents can be proud of through the use of consistent palette of furniture and

paving in the public domain, a clear landscape design intent, and quality landmark buildings which help orientate pedestrians and take pride in their surroundings;

- orientation of lots facing onto POS and provide surveillance over the public domain and create a sense of ownership over the Centre and facilitate community interaction;
- providing a landscaped setting and a walkable neighbourhood as first choice of local access will also encourage greater social interaction; and
- providing a variety of lot sizes and configurations will facilitate in providing a social demographic mix within the subject area.

PLANNING

As outlined above the proposed Structure Plan is consistent with the strategic planning framework and vision for the site to be developed for a Neighbourhood Centre that provides for a good mix of retail, commercial, residential uses and amenities which will all enhance the quality of life of local residents.

The Structure Plan is based on a sound design intent which involves:

- Providing a Main Street focus to the development which provides an active and vibrant streetscape, safe and attractive public domain and encourages pedestrian activity
- Providing an appropriate design and streetscape with development addressing

the public domain and providing appropriate interface with the existing short stay uses to the north of the site and recognising the amenity considerations caused by the operation of the adjoining Caltex Service Station;

- Provide a logical and efficient movement network that promotes walkability, facilitates access to the centre from the adjoining neighbourhood and provides for appropriate vehicle connections to Dampier Road and Tambrey Drive by roundabouts, which will also assist in providing safe movement from Baynton West onto Dampier Road;
- Provides for large lots and a robust planning framework with a variety of permitted uses which has the ability to adapt to changing market demands and needs;

- Providing for residential development which has the ability to optimise the number of lots located within close proximity to a Neighbourhood Shopping Centre;
- Including provisions which will address any amenity impacts to allow for noise sensitive premises to be located near amenities such as restaurants and bistros;
- Optimising the number of east west facing lots which allow for the front and rear of the lots to be provided with shading and to capture any cooler winter breezes; and
- Provides an infill development which assists in consolidating the Town north of the Karratha Hills and makes the most efficient use of community facilities and service infrastructure.

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CONCLUSION

This Structure Plan has been prepared in order to facilitate the orderly future subdivision, land use and development of Lots 500 and 302 Bathgate Road, and Lot 3860 Tambrey Drive, Nickol for a Neighbourhood Centre.

The Structure Plan and this supporting report demonstrates how the proposed development is in accordance with State and Local Government vision for the site, in particular the Karratha City of the North Blueprint, City Growth Plan and the Shire of Roebourne Town Planning Scheme No. 8 and will assist Karratha in becoming a true Regional City of the North.

The Tambrey Neighbourhood Centre will be a vibrant mixed use centre, providing goods, services and facilities to its growing residential hinterland. In addition to its commercial functions, the Structure Plan will also facilitate the development of additional housing in the form of townhouses and apartments, providing a different form and diverse range of housing types suitable for a wide demographic, and also providing activity and passive surveillance within the Centre.

Based on the consistency of the Structure Plan with the agreed vision for the site and that the design represents the optimal development outcome for the site, it is requested that the City and WAPC approve the Structure Plan at its earliest convenience to enable subdivision and development to occur.