

MULATAGA STRUCTURE PLAN

MARCH 2020



DevelopmentWA



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DOCUMENT CONTROL

REVISION	DATE	DESCRIPTION
A	10 OCT 2019	First Draft issued to Client, Project Team, City & DPLH
B	25 FEB 2020	Final Draft issued for lodgement
C	9 MAR 2020	Minor Modification to Landscape Masterplan

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ENDORSEMENT PAGE

This Structure Plan is prepared under the provisions of the City of Karratha Local Planning Scheme no. 8.

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

..... Date

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

.....

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

..... Witness

..... Date

.....Date of Expiry





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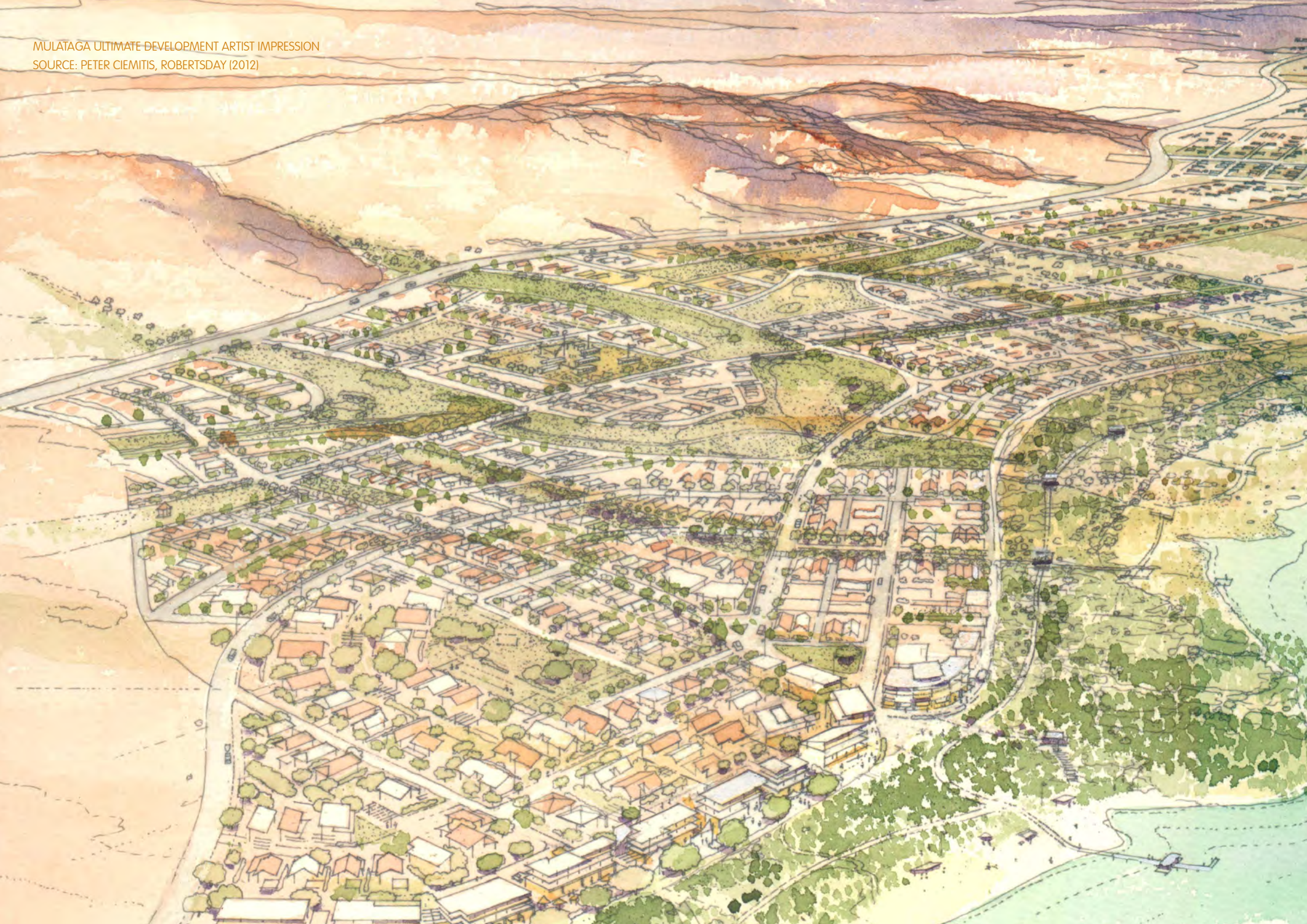
great places

TABLE OF AMENDMENTS

AMENDMENT NO.	SUMMARY OF AMENDMENT	AMENDMENT TYPE	DATE APPROVED BY WAPC

TABLE OF DENSITY PLANS

DENSITY PLAN NO.	AREA OF DENSITY PLAN APPLICATION	DATE APPROVED BY WAPC



EXECUTIVE SUMMARY

The Mulataga Structure Plan establishes a planning framework for the basis of structuring new places to live, work and visit in the City of Karratha, and will accommodate housing for 3,900 people over 171.5 hectares.

Planning and design for Mulataga originally commenced in the late 2000s, with planning activities peaking in April 2012 during a 3 day Planning Design Forum that formulated a vision for the future of the site, involving over 100 stakeholders, Government Agencies and local authority representatives. Planning activities were placed on hold following down turns in the residential property market that heavily impacted demand in 2013/14. As further investment into the Region continues, the Mulataga Structure Plan seeks to embed the long term vision established for the site and ensure the City is ready to absorb any increase in housing demand in a coordinated and orderly manner.

DevelopmentWA seeks to develop the Mulataga landholdings which are owned by the State of WA and the WA Land Authority (separate parcels).

The Structure Plan accommodates the existing Mulataga Creek riparian corridors, which serves an important drainage function for the Karratha Hills to the south, as well as holding strong ecological and cultural values.

It is proposed that Mulataga's public spaces and streets will tell the story of the Pilbara, including narratives of the local Aboriginal ancient heritage. In recent history, the site has been used for grazing as part of the original Karratha Station. The site is completely undeveloped. The proposed development is consistent with the current zoning.

The Structure Plan area is surrounded by the suburb Bularra to the west, the Karratha Hills and future urban expansion area to the south, the Mulataga Foreshore and Nickol Bay to the north, and undeveloped land to the east. The back beach boat ramp will be accessible to the north east of the site.

The Coastal Node forms an integral part of planning for the wider City, providing the basis for Mulataga to contribute toward the transformational vision to turn Karratha into the predominant City of the north-west. It also represents an opportunity for the City of Karratha to boast a vibrant, attractive and iconic place, assisting with the retention of key worker staff and their families associated with the resource sector. A new primary school is planned and will assist in creating a series of destinations promoting sustainable local trips and a healthy lifestyle.

TABLE 1: Proposal Summary

ITEM	DATA	STRUCTURE PLAN REF (SECTION NO.)
Total area covered by the Structure Plan	171.5858 ha	1.2.3
Gross area of each proposed land use (approx.):		
> Residential	109 ha	3.3
> Mixed Use / Commercial	3.1 ha	
> Public Purpose: Education	4.0 ha	
Total estimated lot yield	1,265 lots	3.3
Estimated number of dwellings	1,400 dwellings	3.3
Estimated residential site density	13 dwellings/hectare residential zoned land	3.3
Estimated population (based on 2.8 persons per dwelling)	3,900 people	2.9
Number of high schools	0	3.3.4.2
Number of primary schools	1	3.3.4.2
Estimated commercial floor space	up to 1,500m ² NLA	3.3.4.1
Estimated area and percentage of creditable public open space	20.1346 ha (15.2% of gross subdivisible area - 132.25 ha)	3.3.2
Estimated area and percentage of natural area (foreshore reserve, mulataga creek and aboriginal sites)	33.9773 ha	2.3



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Appendix 2:	Landscape Strategy (UDLA, 2020)
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Appendix 4:	Local Water Management Strategy (JDA, 2019)
Appendix 5:	Bushfire Management Plan (Strategen, 2019)
Appendix 6:	Transport Impact Assessment (Transcore, 2020)
Appendix 7:	Engineering Servicing Report (Cossill and Webley, 2020)
Appendix 8:	Community, Social and Economic Planning Recommendations (Creating Communities, 2012)



PART ONE IMPLEMENTATION



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1.0 Structure Plan Area

This Structure Plan shall apply to the land contained within the inner edge of the line denoting the boundary on the Structure Plan Map.

2.0 Operation

The date the Structure Plan comes into effect is the date the Structure Plan is approved by the Western Australian Planning Commission (the Commission).

3.0 Staging

It is anticipated that the Mulataga Structure Plan area will be developed in stages over a 10 year period, depending on the demand for residential land in the region and the extension of necessary services and facilities that are associated with the development.

Initially, development will be focussed in the south-west corner of the site, closest to existing service infrastructure, to minimise the requirement for the extension of sewer, water and power.

The development of the proposed Coastal Node area (Commercial area in north-west) is encouraged to be developed as early as practicable, to assist in establishing neighbourhood identity and attractiveness. Additional costs associated with servicing extensions are anticipated. The proponent is encouraged to negotiate delivery timing of the coastal node with the City of Karratha.

4.0 Subdivision and Development Requirements

4.1 Land Use Zones and Reserves

Land Use permissibility within the Structure Plan area shall be in accordance with the Structure Plan Map and corresponding Zones and Reserves under the Scheme.

4.2 Further Documentation and Management Plans

To facilitate subdivision of the land, the following documentation and/or management plans are to be prepared, as applicable, to the satisfaction of the relevant authority as outlined in Table 1.

Table 1: Further Documentation and Management Plans

DOCUMENTATION	APPROVAL STAGE	APPROVING AUTHORITY
Aboriginal Heritage surveys and Section 18 applications and Cultural Management Plan	Prior to lodgement of subdivision.	Department of Aboriginal Affairs
Residential Density Plan	Application/s for subdivision.	Western Australian Planning Commission
Landscape and Public Open Space Management Plans	Prior to clearance of subdivision.	City of Karratha
Urban Water Management Plans	Prior to clearance of subdivision conditions.	Western Australian Planning Commission Department of Water
Acid Sulfate Soil and Dewatering Management Plan	Prior to clearance of subdivision conditions.	Western Australian Planning Commission
Construction Environmental Management Plan	Prior to commencement of site works.	City of Karratha
Commercial Zone (Coastal Node) Precinct Plan	Prior to lodgement of subdivision.	City of Karratha
Local Development Plan/s (some lots only - refer s. 5.0)	As a condition of subdivision	City of Karratha

4.3 Public Open Space

The provision of a minimum of 5% public open space being provided in accordance with Element 4 (R34 – Regional Variation) of the Commission's Liveable Neighbourhoods.

Public open space is to be provided generally in accordance with the Structure Plan Map.

An updated Public Open Space Schedule should be provided at the time of subdivision for determination by the WAPC, upon the advice on the City of Karratha.

4.4 Foreshore Reserve

The area designated as Conservation Recreation and Natural Landscapes on the Structure Plan map shall generally be used and developed in accordance with the Landscape Strategy (Appendix 2).

Any subsequent amendments to the Scheme should be informed by the detailed planning done in support of the Structure Plan and the spatial extent of the Conservation Recreation and Natural Landscapes Reserve shown on the map.

4.5 Commercial Zone Precinct Plan

The area shown as 'Commercial' zone on the Structure Plan Map shall be a Local Activity Centre with an approximate retail floorspace (NLA) in accordance with Table 2.

Table 2: Retail Floorspace Provision

CENTRE	APPROX. NET LETTABLE AREA
Local Activity Centre	up to 1,500m ²

A Precinct Plan shall be prepared prior to development approval being issued, to guide development of the 'Commercial' zoned land. The contents of the Centre may include, but is not limited to:

- a) Land use activity
- b) Residential density and form
- c) Built form and heights
- d) Civic spaces and landscaping
- e) Movement network and vehicle access
- f) Public/private parking
- g) Servicing and staging
- h) Signage
- i) Cost sharing arrangements
- j) Place management and business development

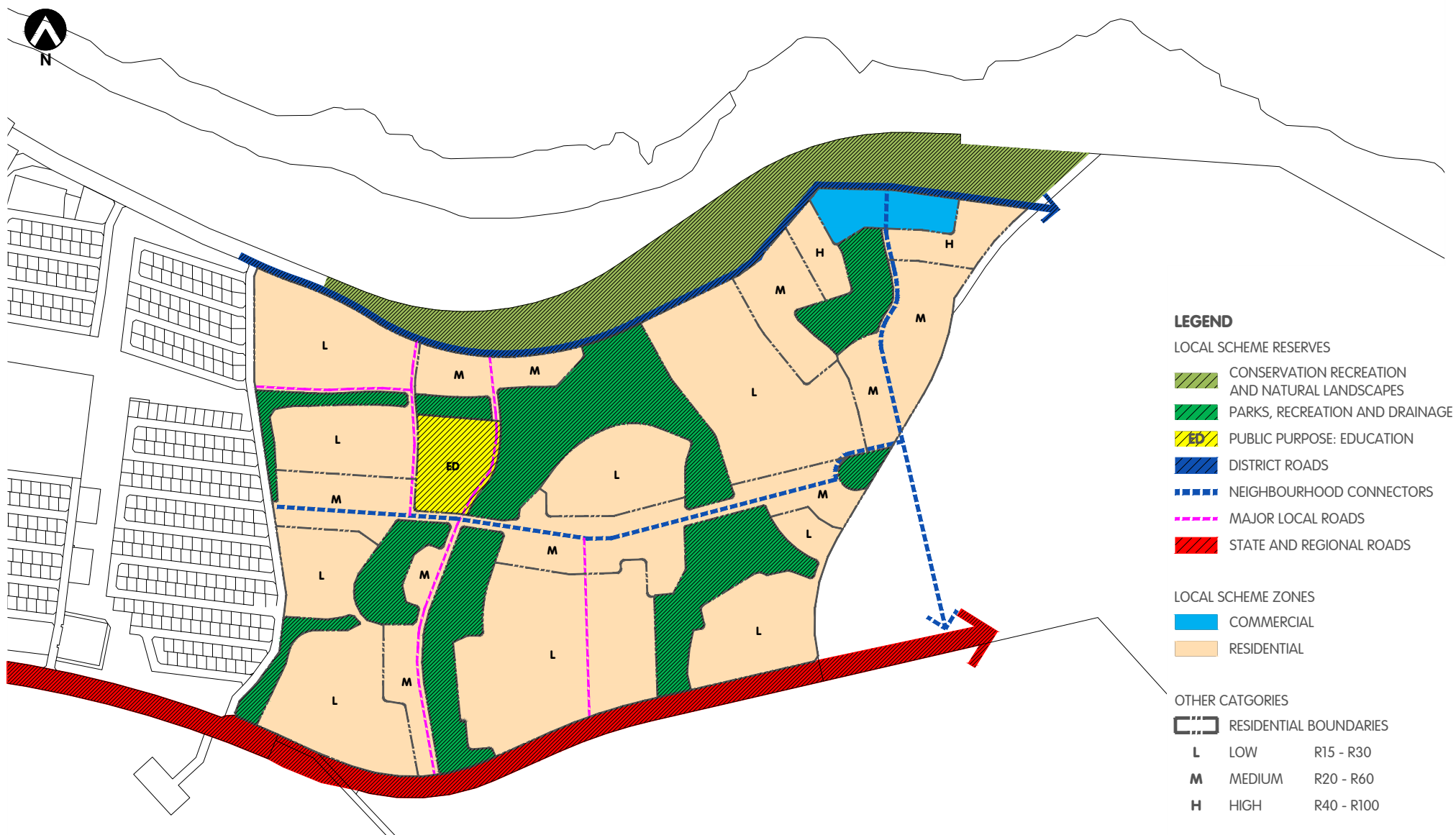
For the purpose of this Structure Plan, the Precinct Plan shall be subject to the same advertising and approval process as a Local Development Plan.

Any Precinct Plan shall have regard to the general guidance and design principles established under the Design WA suite of documents under State Planning Policy 7.

5.0 Local Development Plans

Local Development Plans (LDPs) shall be required, where applicable, as a condition of subdivision and shall be prepared in accordance with the Planning and Development (Local Planning Schemes) Regulations 2015, for the following lots:

- a) Lots adjoining public open space
- b) Lots affected by Bushfire Management Plan requirements
- c) Lots affected by Quiet House Design requirements as identified in an approved Noise Management Plan
- d) Any other lot which requires specific development standards as identified by the proponent, the City or the WAPC.







PART TWO EXPLANATORY



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FIGURE 1: LOCATION PLAN



1.0 PLANNING BACKGROUND

1.1 Introduction and Purpose

The Mulataga Structure Plan has been prepared to provide the statutory planning basis for the future subdivision and development of 171.5 hectares of land known as Mulataga located on the eastern edge of Karratha, approximately four kilometres from the Karratha City Centre. The landholdings that are subject of the structure plan are largely in control by the State of Western Australia and the Western Australian Land Authority (DevelopmentWA).

Extensive planning activity for the site first occurred in 2011/2012, with significant investment into research, studies, and design by the proponent (DevelopmentWA and their development partners) and the State Agencies and local government. A draft Development Plan was prepared under the provisions of the previously operational Shire of Roebourne Town Planning Scheme. The Development Plan was supported by Council, subject to modifications, but was never finalised and formally endorsed by the Western Australian Planning Commission. This was largely due to a downturn in economic conditions in the years following, resulting in a decline in resources sector activity and dwindling housing demand. In more recent times, resources investment and activity has heightened. It is important that the City of Karratha has available a suitable amount of land ready for development to accommodate any increases in housing demand in a manner that supports a high quality of life for future residents.

The Structure Plan provides a framework for the physical development of the land for housing, community, recreational and commercial facilities, streets and paths, as well as the delivery of essential infrastructure and management of important environmental and cultural assets.

The Plan has been prepared to reflect the vision and strategic goals for Karratha. The vision and guiding principles capture the aspirations of the community and stakeholders, and reflect the opportunity for transformational change and transition of Karratha into a regional 'City of the North West'. The plan has been prepared with thoughtful consideration of the opportunities and constraints presented by the site, and to fulfil the statutory planning requirements set out under the City of Karratha Local Planning Scheme No 8 and relevant Western Australian Planning Commission State Planning Policies.

The design and planning of Mulataga has been informed by a Planning Design Forum that involved a range of stakeholders from Government and community (refer section 1.4.3). The structure plan has also been informed by an extensive amount of community and market research and visioning work as generally summarised in the figure on this page.

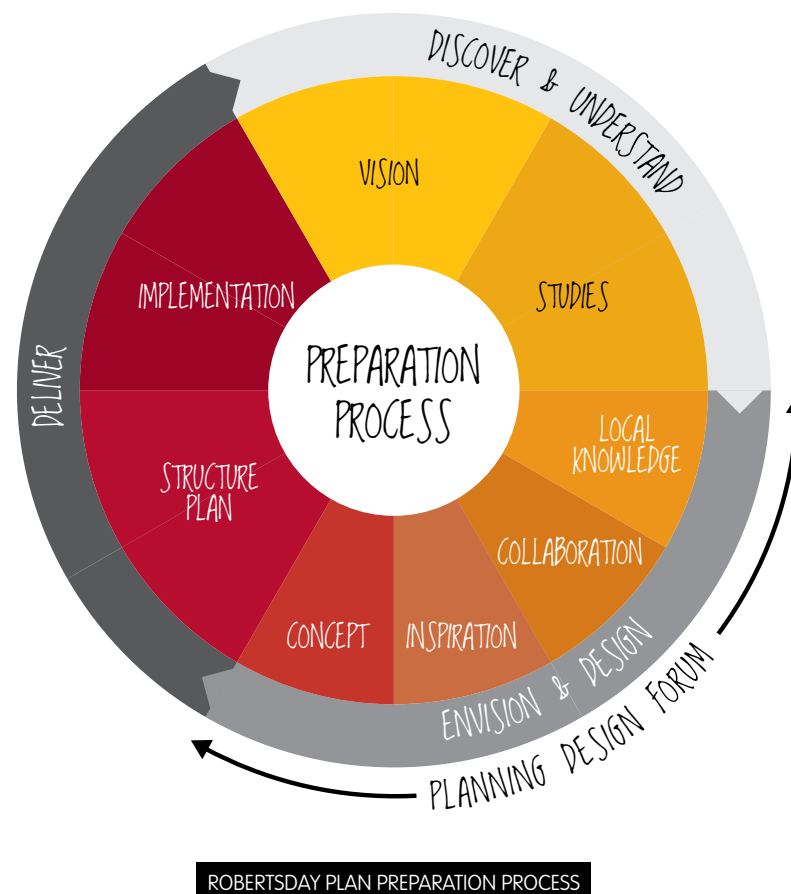
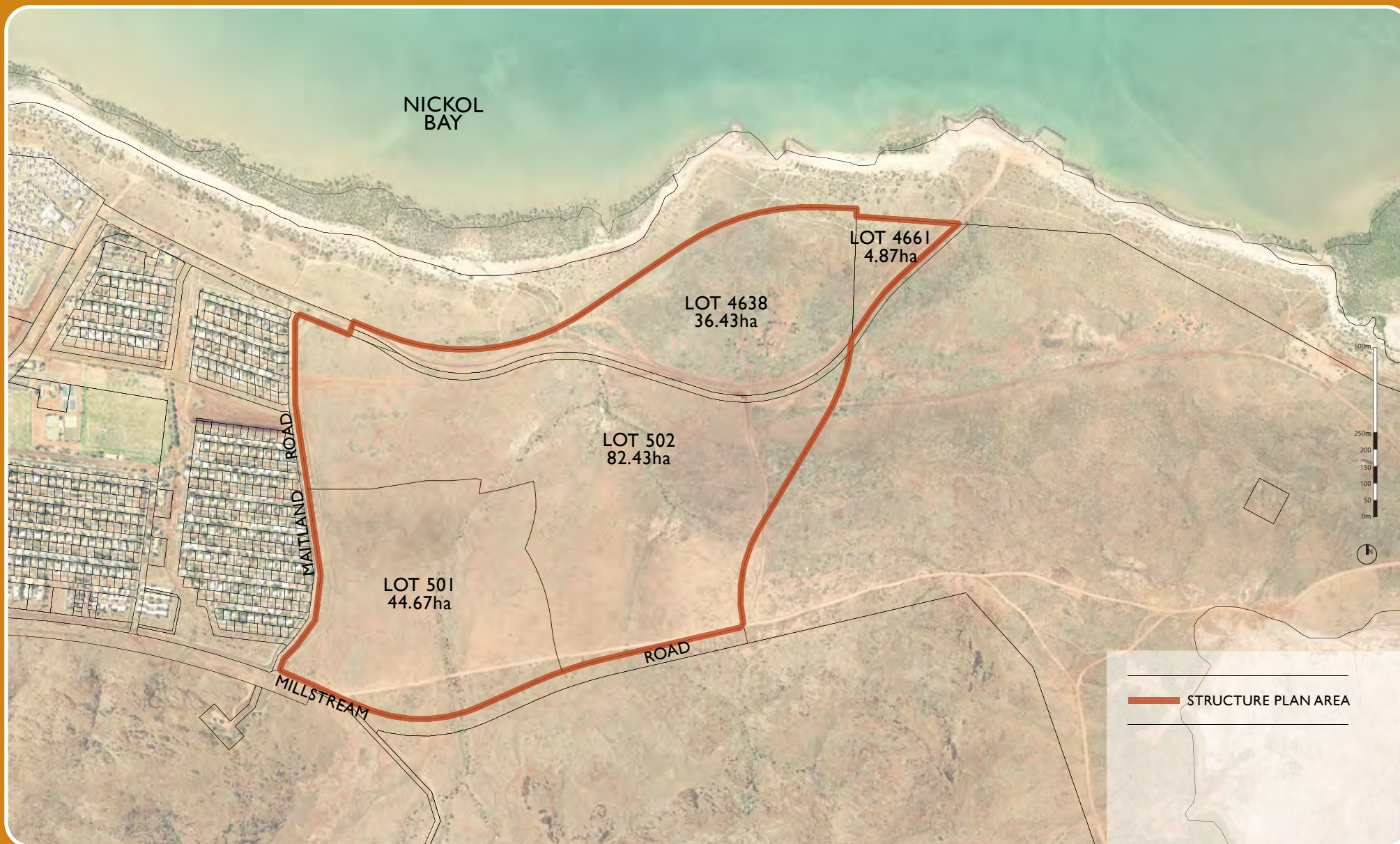


FIGURE 2: STRUCTURE PLAN AREA



1.2 Land Description

1.2.1 Location

The Structure Plan area forms part of a larger district precinct extending to the south and east of the site which is earmarked for future residential expansion as part of the City's strategic planning initiatives to accommodate growth in the locality.

The site is surrounded by the suburb Bulgarra to the west, the Karratha Hills and future urban expansion area to the south, the Mulataga Foreshore and Nickol Bay to the north, and undeveloped land to the east (including a local quarry). The Back Beach boat ramp lies to the north east of the site via Bayview Road.

1.2.2 Land Use

The Structure Plan area contains a portion of the existing Bayview Road, a dedicated road that will require formal closure and will be realigned closer to the coast.

The Ngarluma Aboriginal people have an ancient and ongoing association with the land around the Karratha townsite and it is understood that the Mulataga area forms a part of their broader cultural landscape. Aboriginal heritage surveys were carried out to identify and record Aboriginal heritage sites. A more detailed description of the Aboriginal heritage context is provided in Section 4.4 – Heritage.

In recent history, the site has been used for grazing as part of the original Karratha Station.

The site is currently undeveloped and used informally by off-road vehicles to gain access to the coast.

1.2.3 Legal Description and Area

The Structure Plan area comprises approximately 171.5 hectares of land in the following parcels:

LOT NUMBER	PLAN / DIAGRAM	CT VOL	CT FOLIO	AREA
501	P074744	2820	105	44.6732 ha
502	P074744	LR3162	374	82.4282 ha
4638	P221032	LR3116	896	36.4332 ha
4661	P026336	LR3124	310	4.8700 ha
*4654 (Bayview Rd)	P221032	LR3116	896	*2.9475 ha
**Bayview Rd road reserve	n/a	n/a	n/a	**0.2337 ha
Total				171.5858 ha

It should be noted that the area referred to as the Mulataga Foreshore, which directly abuts the northern boundary of the site, does not form part of the implementation boundary of the Structure Plan. However, particular attention has been given to the relationship between the foreshore and the site given the environmental and heritage significance of the land and the opportunities for connection to the coast.

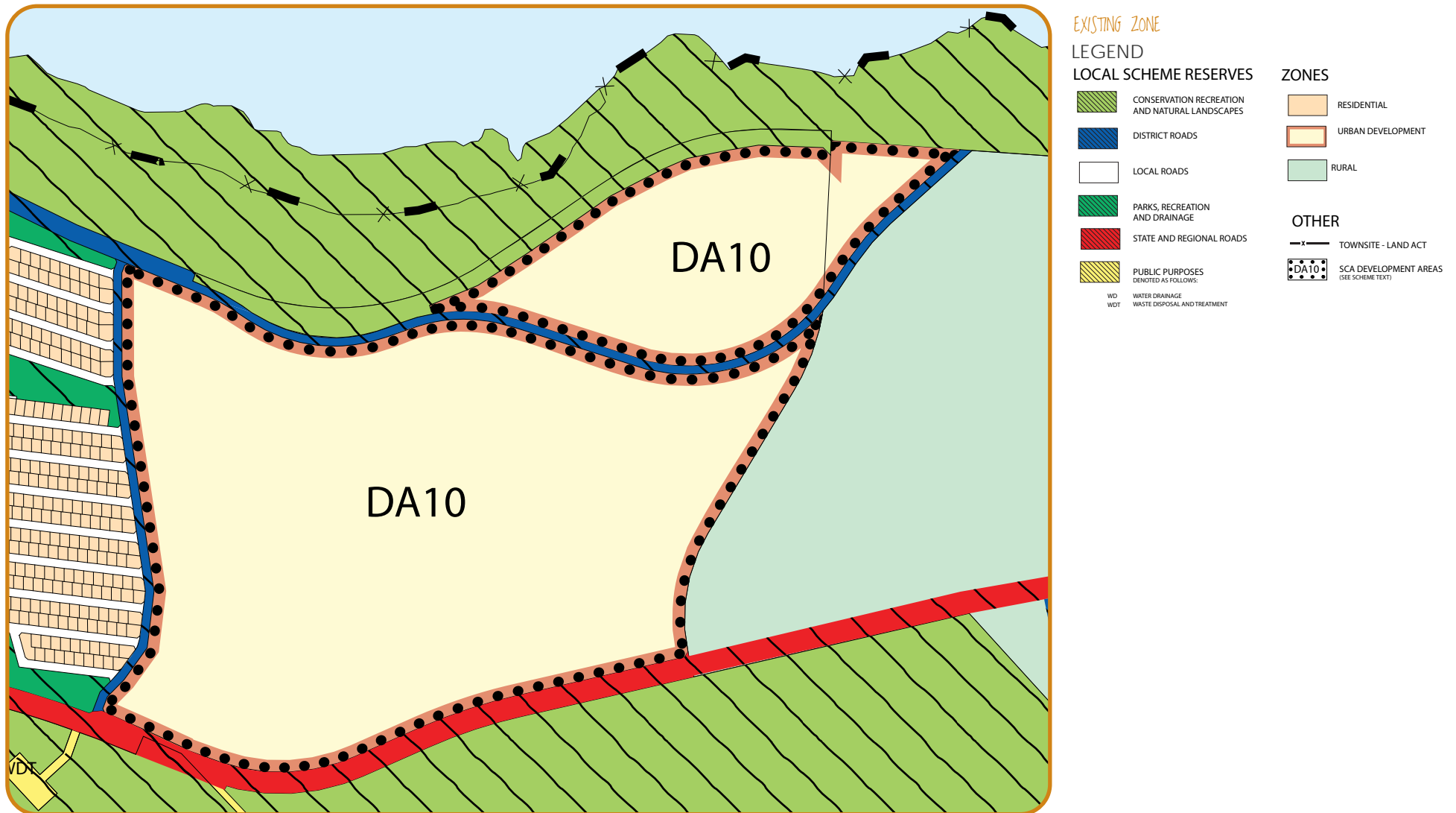
*Lot 4564 has been created to accommodate Bayview Road, and is listed as 3.9294 ha. Approximately 0.9819 ha of Lot 4564 extends east outside of the Structure Plan area.

**The portion of Bayview Road Reserve included in the structure plan (in addition to Lot 4654) is situated in the north-west of the structure plan area abutting the foreshore reserve.

SITE: NATURAL CONDITION



FIGURE 3: CITY OF KARRATHA TOWN PLANNING SCHEME NO. 8



1.3 Planning Framework

The preparation of the Structure Plan and the long-term development of a new community at Mulataga is guided by several key strategic and statutory documents that provide a framework for long-term development.

Where relevant, the Structure Plan must meet the requirements of these plans or provide an appropriate local response that is relevant to the specific context, opportunities and constraints of the site.

1.3.1 City of Karratha Local Planning Scheme No. 8 – Zoning

Under the City of Karratha Local Planning Scheme No. 8 ("the Scheme") the majority of the Structure Plan area is zoned Urban Development with a corresponding Special Control Area - Development Area 10 (DA10).

Bayview Road currently traverses the northern portion of the site and is Reserved District Road under the Scheme.

To the west, Bulgarra is predominantly zoned Residential with a residential density of R20, with the remaining areas reserved for Public Open Space. Millstream Road, directly abutting the southern boundary of the Structure Plan area, is reserved State and Regional Road.

Following Approval of this Structure Plan, it is anticipated that an Amendment to the Scheme would follow to correct any discrepancies between the Urban Development zone, the Conservation Recreation and Natural Landscapes Reserve and the District Roads Reserve, to be informed by the spatial arrangement of zones depicted in Plan 1.

1.3.2 City of Karratha Local Planning Scheme No. 8 – Relevant Scheme Provisions

The purpose of the Shire's Town Planning Scheme is to:

- > Control and guide land use and development;
- > Facilitate community input into planning to balance economic, social and environmental outcomes; and
- > Implement the strategic planning directions of the City.

The Scheme sets out a number of statutory planning provisions which guide the preparation and approval of Structure Plans. These provisions are summarised as follows:

- > Section 4.1 of the Scheme includes provisions that specifically relate to Structure Plans
- > Clause 4.1.1 states that Structure Plan may be prepared for Urban Development zone areas prior to the local government considering subdivision or development applications
- > Clause 4.1.2 states that upon endorsement of a structure plan, the local government is to ensure they are included in the City of Karratha Local Planning Policy Manual as a policy statement.
- > Clause 4.1.3 states that development of land shall generally be consistent with the requirements of approved structure plans, subject to compliance with the provisions of the Scheme.
- > Section 5.4 of the Scheme includes provisions relevant to the Urban Development Zone
- > Clause 5.4.1 states that before considering any proposal for subdivision or development of land within the Urban Development zone, a structure plan may be prepared in accordance with Part 4 of the deemed provisions
- > Clause 5.4.2 states that the local government shall, when it considers subdivision and development in an area the subject of a structure has proceeded to an extent where detailed zones and reservations can be defined, amend the Scheme to indicate these zones and reservations.
- > Clause 5.4.3 states where residential development guidelines have been adopted and included in the Policy Manual in accordance with Part 2 of the deemed provisions, development within the Urban Development zone should be in accordance with the intent of these guidelines, unless the local government resolves, for a particular development application, to vary this intent.

Clause 4.8 outlines a number of objectives for future development within the Karratha townsite. The relevant objectives are:

- i. Facilitate the continued growth of Karratha as the regional centre of the West Pilbara.
- ii. Develop Karratha as the tourist entry for the West Pilbara built upon and taking into account the levels of commercial travellers associated with resource developments.
- iii. Preserve the key recreational, landscape and heritage values of the Karratha Hills.
- iv. Develop local commercial centres so as to provide convenience goods and services, private recreation, and community uses to the local community.
- v. Enhance the high level of residential amenity within Karratha in both existing suburbs and the residential expansion areas.
- vi. Encourage residential development that will accommodate a greater range of lifestyles and needs to reflect the broadening population base.
- vii. Encourage the development of tourist resorts, short stay accommodation and caravan parks that provide for tourists and business travellers.
- viii. Encourage indigenous business opportunities and developments that promote indigenous culture.
- ix. Discourage the use of shipping containers for storage purposes in residential areas unless located behind the primary street setback area.
- x. Encourage boundary fencing immediately abutting parks, recreation and drainage reserves to be visually permeable so as to improve surveillance.

Appendix 6 of the Scheme sets out specific requirements for the Mulataga Urban Development zone (DA10) being:

1. A district level Structure Plan outlining:
 - a) Broad land uses (recreation, residential, education, tourism, commercial and conservation);
 - b) Key linkages (major roads and public transport);
 - c) Provision of essential services;
 - d) Coastal linkages;
 - e) Heritage areas; and
 - f) Coastal vulnerability areas.

The district level Structure Plan is to be approved prior to the approval of more detailed Structure Plans or super lot subdivision.

2. The amount of retail floorspace shall be determined based on an Economic Impact Assessment which shall also consider economic impacts on the Karratha City Centre. Provision of retail floorspace is to be commensurate with a Neighbourhood Centre, delivered in stages and capped at an ultimate maximum floorspace of 8,500sqm NLA.
3. An approved Structure Plan together with all approved amendments shall apply to the land in order to guide subdivision and development.

Note that for the purposes of complying with the requirements of DA10, the Mulataga Structure Plan constitutes a 'district-level' plan in as much as it addresses the listed requirements and covers the entire extent of the Urban Development Zone.

1.3.3 Karratha City of the North – City Growth Plan (DevelopmentWA, Shire of Roebourne 2010)

The Karratha City of the North – City Growth Plan provides the principal framework for the growth and development of Karratha to a regional city of significance in the State's north-west. The Growth Plan's key objectives will be complemented by the City's updated Local Planning Strategy once it is endorsed by the WAPC (refer section 1.3.4).

Given original planning and consultation for Mulataga dates back to 2012, the plan has been influenced by the Growth Plan's key city design principles. These principles are considered useful in guiding development over Mulataga in the long term, and should remain valid despite any updates to the strategic planning framework.

The principles were drawn from an analysis of cities around the world which were considered to demonstrate good city design and which exhibited similar locational, physical and climatic challenges to Karratha. The principles are summarised as follows:

1. DEVELOPING DIVERSITY

- > Variety of living and lifestyle opportunities, adding to cosmopolitan character
- > Distinctive character in civic / shopping nodes
- > A waterfront destination showcasing retail, entertainment and civic activity

2. A CITY OF EXCELLENCE

- > Enhanced growth of the knowledge-based economy
- > Enhanced opportunities for working and studying
- > Place of opportunity

3. A HEALTHY CITY

- > Promotion of healthy living and lifestyles, and preventative health
- > Improved services and access to services

4. WALKABLE AND CONNECTED

- > Comfortable, interesting, attractive public realm
- > Well defined and intuitive movement network
- > Social connections and participation

5. AN ACTIVE AND PLAYFUL CITY

- > A variety of public places for diverse community activities to optimise recreation and leisure activities for residents and visitors

- > Types of places where people can meet and enjoy casual interaction, people watching

6. AN AFFORDABLE CITY

- > Restoration of an equitable and affordable economic balance to create and attractive and sustainable place
- > Optimal local employment distribution, increased diversity, enhanced investment and entrepreneurialism

7. SUSTAINABLE AND REPLENISHING

- > Visual connections and references to the local landscape, defined identity and sense of place
- > Designed for multiple solutions with a focus on nourishment and replenishment

8. INTEGRATED AND CONDUCIVE

- > Integrated land uses and interconnected streets to promote accessibility at local-district-regional levels, with multiple places of interest and activity

The Growth Plan states the Mulataga precinct is to:

- > Be a "truly water connected community of Karratha ... intended to bring the waters of the Nickol Bay into the urban environment";
- > Essentially provide for new residential neighbourhoods with community and educational facilities, commercial centres, medium density around centres, a coastal focal point for leisure and entertainment and district sporting fields;
- > Be "well connected to the coast and the Bulgarra residential area, and designed in a manner that is highly responsive to the surrounding landform and coastal environment".;
- > Address the quality and function of the public realm to celebrate the place and community in a highly responsive and playful manner, given the unique connection to landscape and the coast; and
- > Incorporate public spaces within higher density areas and activity nodes that establish a "sense of urbanity and connection to water".

This design philosophy expressed in the Growth Plan is extremely important in improving the function and quality of the public spaces and the attractiveness of Karratha as a place of permanent residence.

The Growth Plan requires a range of residential densities for Mulataga to facilitate a range of housing types – larger and small single dwellings, villas, apartments and studios - to attract a diverse community.

1.3.4 Draft Local Planning Strategy (City of Karratha 2015)

At the time of Structure Plan lodgement, the City of Karratha Draft Local Planning Strategy is yet to be endorsed by the WAPC. Once it comes into effect, the Strategy will guide strategic land use planning for the municipality for a 10 year planning horizon. The established vision set by Council is to be Australia's most liveable regional city, and to be the economic and cultural focal point of Western Australia's Pilbara - 'City of the North West'.

The Strategy acknowledges that Karratha is the sixth largest contributor to the national economy, with a Gross Regional Product of \$19.69 billion, with significant growth highly likely to support increased investment in the resources sector. Any future growth should be carefully planned to ensure the overarching liveability objectives of the Strategy are achieved.

Although the Strategy is in draft form, the Mulataga Structure Plan is likely to be within a larger future development footprint, designated as Proposed Urban under the Strategy Map.

Planning for the Structure Plan will assist in achieving many of the Strategy's strategic objectives, including:

- > Provision of sufficient urban land to support expected population growth.
- > Attract higher order services and make Karratha more of a destination.
- > Provide commercial land that assists in creating local jobs.
- > Provide choice, quantity, quality and affordability in housing that contributes to a desirable lifestyle.
- > Provide land and infrastructure to support growth of tourism.
- > Grow the City's permanent population by encouraging a more residential workforce wherever possible.
- > Provide and maintain recreation and community facilities which are accessible, fit-for-purpose and responsive to community expectations - ie. coastal node.
- > Areas of environmental significance are recognised and protected - ie. coastal foreshore.
- > Aboriginal heritage protection.
- > Preparing the planning framework to facilitate future investment and activity.
- > Facilitation of development through orderly and proper planning.
- > Respond to flooding risks and coastal hazards.

The coastal node is an opportunity to provide a catalyst for the transformation of Karratha City, to support the established vision for activity and investment at Mulataga, consistent with the objectives of the Strategy.

1.4 Pre-Lodgement Community Consultation and Stakeholder Engagement

Extensive engagement with community and stakeholders has informed the preparation of the Structure Plan and will continue to inform ongoing detailed design, community development and place-activation.

1.4.1 Traditional Owners

The preparation of the Structure Plan has been guided by early and ongoing engagement with the Ngarluma Traditional Owners and Murujuga Aboriginal Corporation since inception. This was motivated by the extensive number of significant cultural sites across the Structure Plan area that require assessment under the Aboriginal Heritage Act (AHA), and also in recognition of the immense opportunities for ongoing contribution to the design, management of the environment, opportunities for appreciation and interpretation of natural landforms, community and economic development outcomes, and continual custody and stewardship of both ancient and modern Aboriginal heritage and culture.

Through initial and ongoing design dialogue with the Ngarluma Traditional Owners and Murujuga Aboriginal Corporation, initiatives to maintain an unbroken traditional 'lifestyle' that includes restoring environmental health, respecting significant sites and providing continual access to the land are to be respected and continued.

Separate from AHA processes, these groups have been consulted on a number of occasions including an extensive site visit with the landscape team and providing advice during the Planning Design Forum site visit and workshop facilitated by RobertsDay in April 2012.

There will be ongoing communications and engagement with the Traditional Owners during all planning phases of the development, construction and post-construction. This will include preparing and implementing a Cultural Management Plan and input and advice on landscape and environmental management, cultural heritage, public art and interpretation opportunities, and edge treatments against the creek line and other significant areas.

1.4.2 Builders Reference Group

In March 2012, the proponent formed a Builders Reference Group (BRG) made up of both local in-situ builders in Karratha and the North West region as well as a number of Perth based 'modular' home builders.

The BRG provided advice on desirable lot sizes that will be delivered to Mulataga for house and land package sites and valuable local knowledge relating to building practices and planning constraints.

In 2019/20 DevelopmentWA continues to liaise with local, regional and Perth based builders to facilitate new and innovative designs and to assist with the delivery of housing for Mulataga.

1.4.3 Mulataga Planning Design Forum

RobertsDay facilitated a three-day interactive design workshop called a Planning Design Forum was held in Karratha during April 2012. The Planning Design Forum successfully inspired and unified the Mulataga stakeholders to confirm the project vision and prepare a concept plan as the basis for formalising the Structure Plan.

The Planning Design Forum was attended by almost 100 people that included representatives from all parts of the community (including the Ngarluma, Murujuga, small business and schooling communities - among others), the City of Karratha (the then Shire of Roebourne), Pilbara Cities Office, Department of Planning and all other government agencies involved in the assessment and implementation of the project.

The concept plan was based on prior due diligence investigations and analysis undertaken by the consultant team that have since been subject to detailed design development, ground-truthing, modelling and feasibility analysis.

These subsequent investigations have been undertaken while maintaining focus on the established vision for Mulataga.

The issues and opportunities raised by the participants at the Planning Design Forum were:

- > Provide genuine housing choice by introducing greater variety of dwelling types to suit a range of household types. Importantly, this will enable people to comfortably age in place.
- > Neighbourhood design and built form to express the quintessential Karratha vernacular and reflect the needs and lifestyle of its people.
- > Development of an intimate coastal village that provides a heart for the wider community and engagement with the Mulataga Foreshore and Nickol Bay.

- > Provide a high standard of landscaping and construction of public spaces as well as a strong built form (building) vernacular that will be very attractive to people from throughout the established Karratha community, as well as tourists.
- > Creeks and coastal dunes being protected within proposed public open space to retain the ecological and landscape attributes of the site and offer strong linkages from the Karratha Hills to the beaches and mangroves.
- > Cultural sites important to the Traditional Owners that are found in these areas to be the subject of further detailed discussions with the Ngarluma to determine if and how they are to be protected, conserved and celebrated.
- > Public access to the foreshore to be made available by realigning Bayview Road along the northern boundary and controlled pedestrian access to the beach to be established by constructing boardwalks at key points along the Nickol Bay frontage.
- > Establishing the foundation for a healthy and resilient community by ensuring it is integrated with the established Bulgarra neighbourhood and providing opportunities for key social infrastructure, such as a new primary school and the prospect of a private school in an adjoining stage of the project.



2012 PLANNING DESIGN FORUM



2012 PLANNING DESIGN FORUM



2.0 SITE CONDITIONS AND CONSTRAINTS

2.1 District Context

Prior to the development of concepts for Mulataga, the project team examined options for expansion of future urban areas to the east of Mulataga as proposed under the Growth Plan with participants at the Mulataga Planning Design Forum facilitated by Roberts Day held in April 2012.

A number of options relating to the location of the future Neighbourhood Centre, high schools and key roads were examined to determine a broad framework for the Mulataga site. Aspects relating to exact boundaries of future urban development across the wider district and dwelling yields were not reviewed as this level of detail was beyond the contextual assessment, however a number of constraints to development such as topography and flood affected areas were noted.

The consensus reached at the Planning Design Forum by participants was that the most likely district structure would include a Neighbourhood Centre located on Millstream Road, possibly co-located with a private high school and provision for a second high school further to the south.

The district structuring work was supported by the City and ultimately informed the spatial extent of future expansion areas proposed in the City of Karratha Draft Local Planning Strategy.

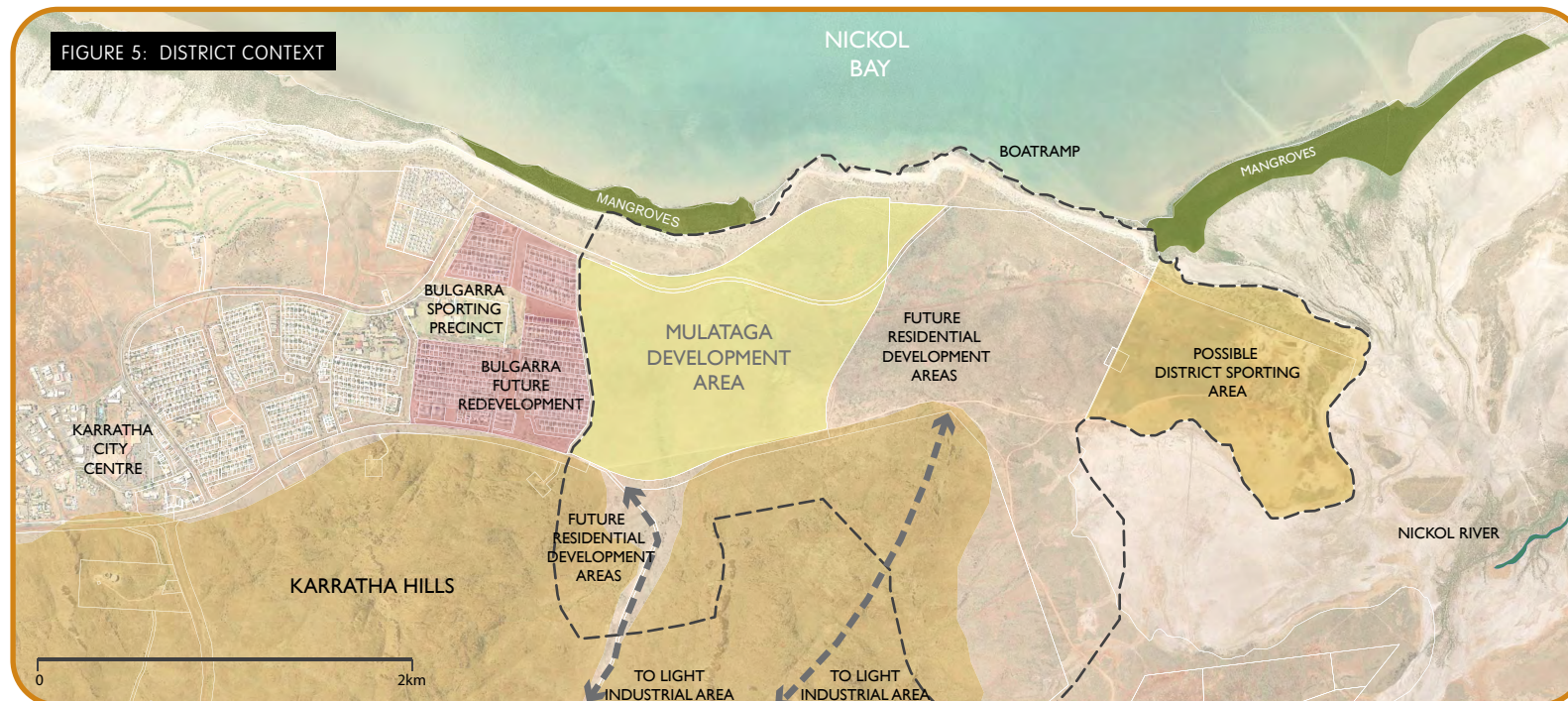


FIGURE 6: DISTRICT CONTEXT OPTIONS FROM PDF

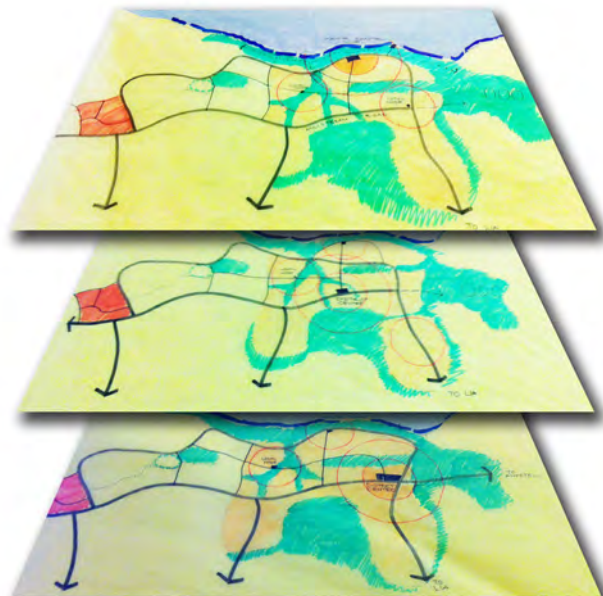
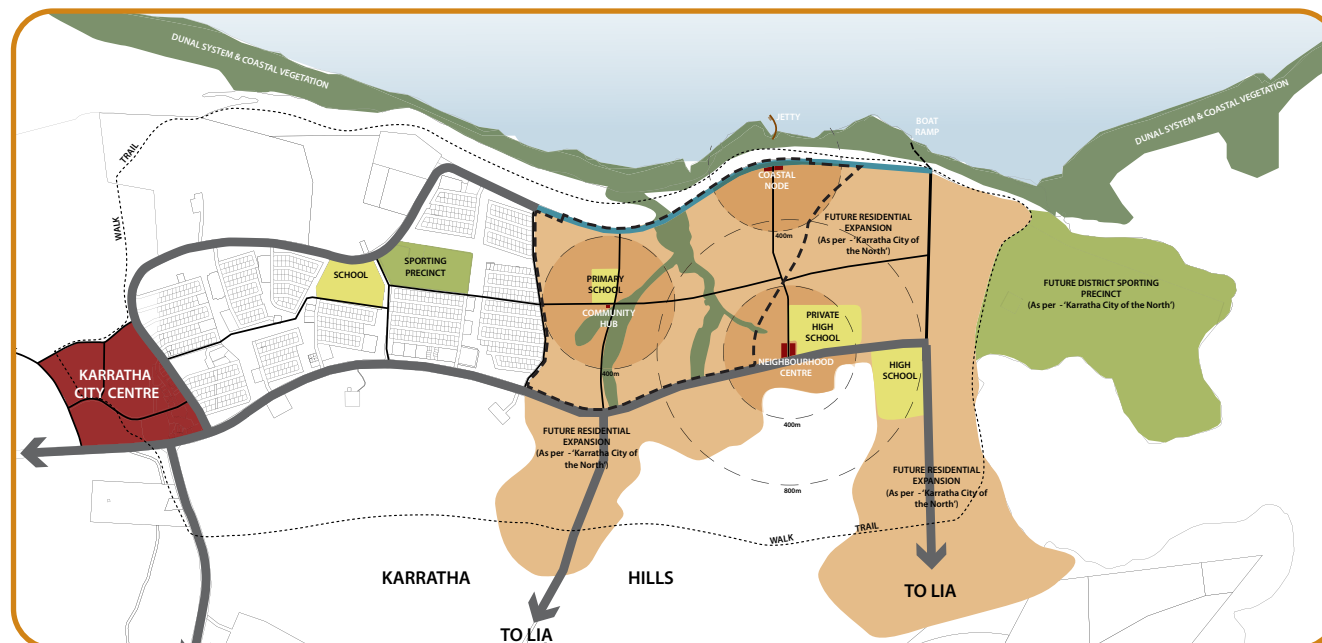


FIGURE 7: DISTRICT CONTEXT STRUCTURE ESTABLISHED AT 2012 PDF



2.2 Site Context

2.2.1 Environment and Landscape

Understanding the local Pilbara environment ensures informed, sensitive and sustainable design responses guide the development of this finely balanced ecology.

The site offers a number of environmental assets which can provide amenity to future residents and visitors as part of a well designed development. In addition to these assets there are significant environmental conservation areas to be considered in the design process.

A full description of the environmental and landscape context, including opportunities and constraints, is contained within Part 3 – Technical Studies, in particular the Environmental Assessment Report (RPS Group, 2020) and the Landscape Strategy (UDLA, 2020).

2.2.2 Climate and Water

The distinctive climate and weather experienced within Karratha and across the Pilbara Region, including frequency of cyclones is documented in Part 3 Technical Studies – Environment Assessment Report.

The Structure Plan recognises these conditions and will respond where possible through the orientation of lots, appropriate dwelling design and design of public open space areas and streetscapes to provide shaded areas and regular refuges.

SITE: FROM KARRATHA HILLS TO COAST



2.2.3 Topography and Landform

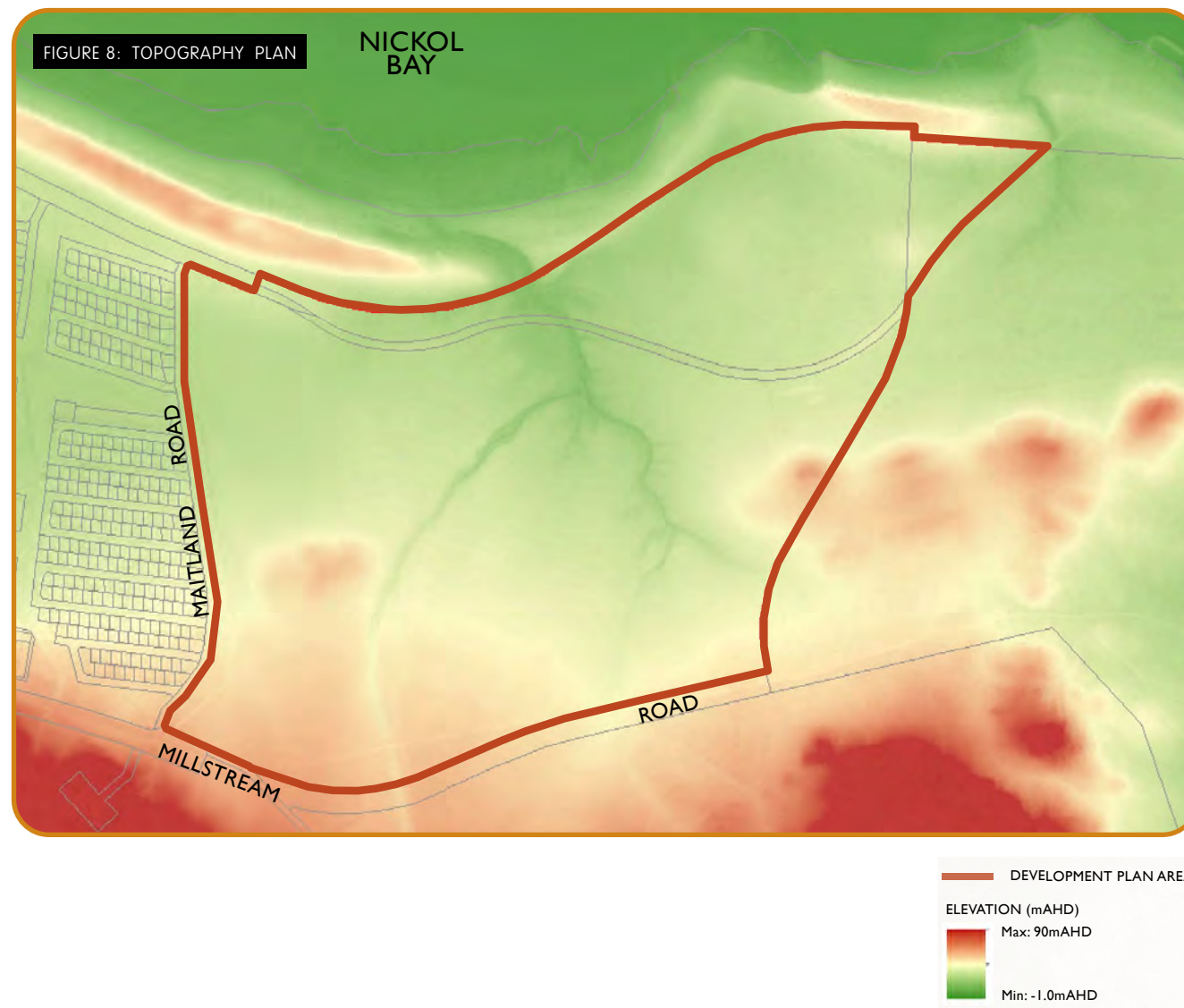
The topography of the site is relatively flat to gently undulating with a hill of approximately RL 20 metres Australian Height Datum (AHD) occurring in the centre of the eastern site boundary. The site grades evenly sloping at approximately 1% in the south from the foot of the Karratha Hills, north to base of the coastal fore dune.

Elevations vary from RL 17m AHD at the highest point near the intersection of Millstream and Maitland Roads, to RL 6m AHD adjacent to the Mulataga Creek outlets adjacent to the foreshore.

The majority of the site drains naturally to the Mulataga Creek tributaries.

The Structure Plan intends to grade the site to reflect the natural landform of the area as much as possible to maintain the sense of landscape, but to also minimise fill requirements.

The presence and integration of the Mulataga Creek riparian corridors into the design provide a significant opportunity for connection to the natural condition for future residents, allowing appreciation and enhancement of the environmental assets and cultural heritage of the site.



2.2.4 Geology and Soils

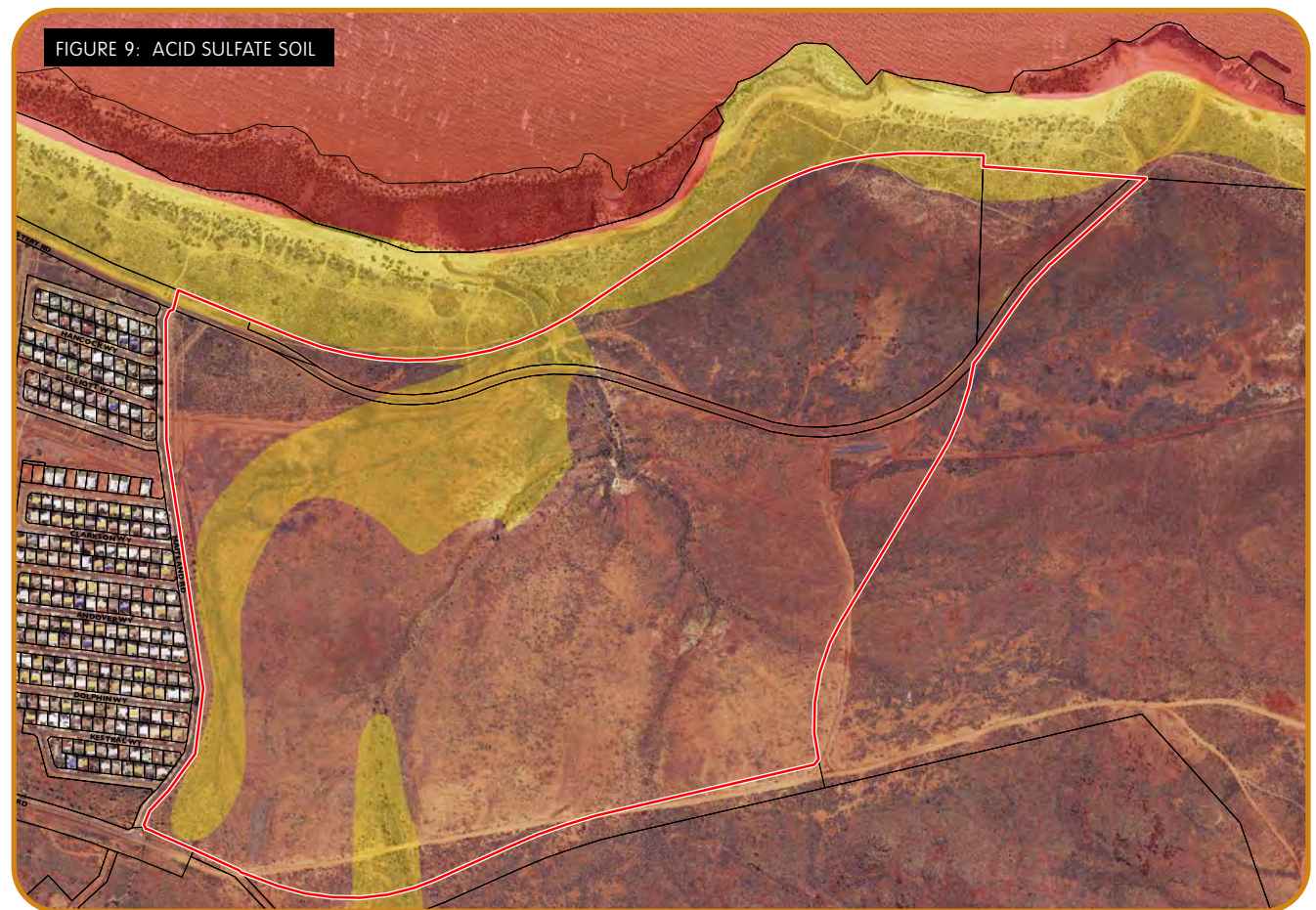
A major consideration in developing the site is the management and stabilising of the Pindan soils during the construction and through stormwater management.

The Department of Water and Environmental Regulation's Acid Sulfate Soils risk mapping indicates that approximately 20% of the site, located in the western portion, is mapped as 'moderate to low' risk of ASS occurring at depths greater than 3m. The remaining portion of the site is classified as no risk of ASS occurring at depths greater than 3m.

The regional mapping will be subject to further ground-truthing prior to construction and implementation of appropriate management measures.

2.2.5 Contamination

The Department of Water and Environmental Regulation's Contaminated Sites Database indicates that no contaminated sites are recorded within the Mulataga Structure Plan area. Given the site area is predominantly comprised of native vegetation, significant contamination is unlikely to be present.



SOURCE: ENVIRONMENTAL ASSESSMENT REPORT - RPS - FEBRUARY 2020

LEGEND

- Site boundary
- Cadastre
- Acid sulfate soil risk mapping (DWER, 2017)**
 - High to moderate risk
 - Moderate to low risk

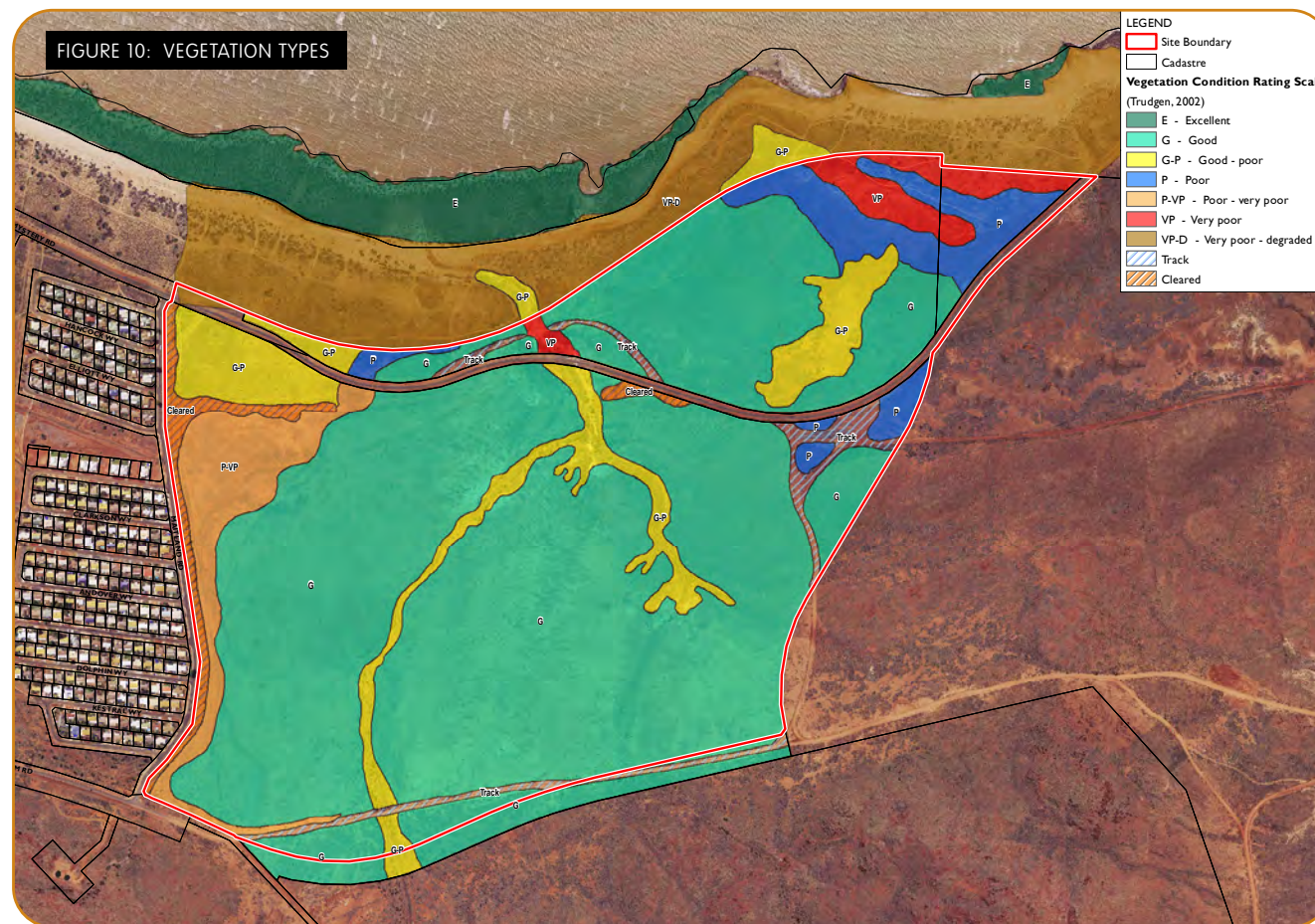
2.2.6 Vegetation and Flora

Coffey Environments conducted a Level 2 Flora and Vegetation Survey of the site in 2011. Whilst this survey was undertaken 8 years ago, in terms of vegetation type and conditions, no significant changes are expected to have occurred during this time, and as such the results of the survey are still relevant.

The survey concluded that:

- > Most of the vegetation within the site area was only considered to be in “good condition due to invasion by Buffel grass, which provides fodder for pastoral grazing cattle”
- > No flora species protected under EPBC Act or Wildlife Conservation Act 1950 were identified within the survey area
- > No Threatened Ecological Communities (TECs) were recorded within the site area
- > Priority Ecological Communities (PEC) Horseflat land system on Roebourne Plains does not occur within the site area

The extent and diversity of creek line riparian vegetation was ground truthed in 2012 by RPS Environmental Consultants. The 2012 site inspection identified that the majority of key riparian flora species were located in the central channel of the creek. In order to maintain pre-development hydrological flows, no development will occur within the 100 year ARI defined boundary. On the basis the majority of the riparian vegetation is within the 100 year ARI flood boundary, it is excluded from impacts of the development.



SOURCE: ENVIRONMENTAL ASSESSMENT REPORT - RPS - FEBRUARY 2020

2.2.7 Foreshore Environment and Mangrove Communities

While outside of the Structure Plan area, RPS undertook a survey of the foreshore environment and mangrove communities in March 2012, to assess the potential impact of development within the Structure Plan area on these communities and concluded:

- > the vegetation condition within the foreshore environment ranged from 'Excellent' to 'Very Poor - Degraded';
- > the foreshore primary dune environment was considered to be in 'Very Poor - Degraded' condition. This was predominantly due to physical anthropogenic impacts, erosion, and weed infestation; and
- > a management framework for both the construction and post development phase is proposed to specifically prevent any potential impacts to this mangrove habitat, the ecological function of this area, or the maintenance of ecological processes which sustain the mangrove habitats. The management framework will include construction management and urban water management plans to prevent surface water and sediment run-off, as well as a foreshore management plan.

2.2.8 Fauna

A Level 1 Terrestrial Fauna Survey of the site was conducted by Coffey Environments in 2011 (refer to full report appended to "Environmental Assessment Report – Mulataga Residential Project Karratha" (September 2012) by RPS Environment and Planning Pty Ltd). In addition, desktop database searches were conducted. The investigations found:

- > 15 species of conservation significant vertebrate species could occur within the site based on regional records; and
- > 2 fauna habitats occur in good condition, with some disturbance from past land uses and management regimes, however these habitats were typical of those found in surrounding areas.

In summary, there are no species of regional or local significance occurring within the site.



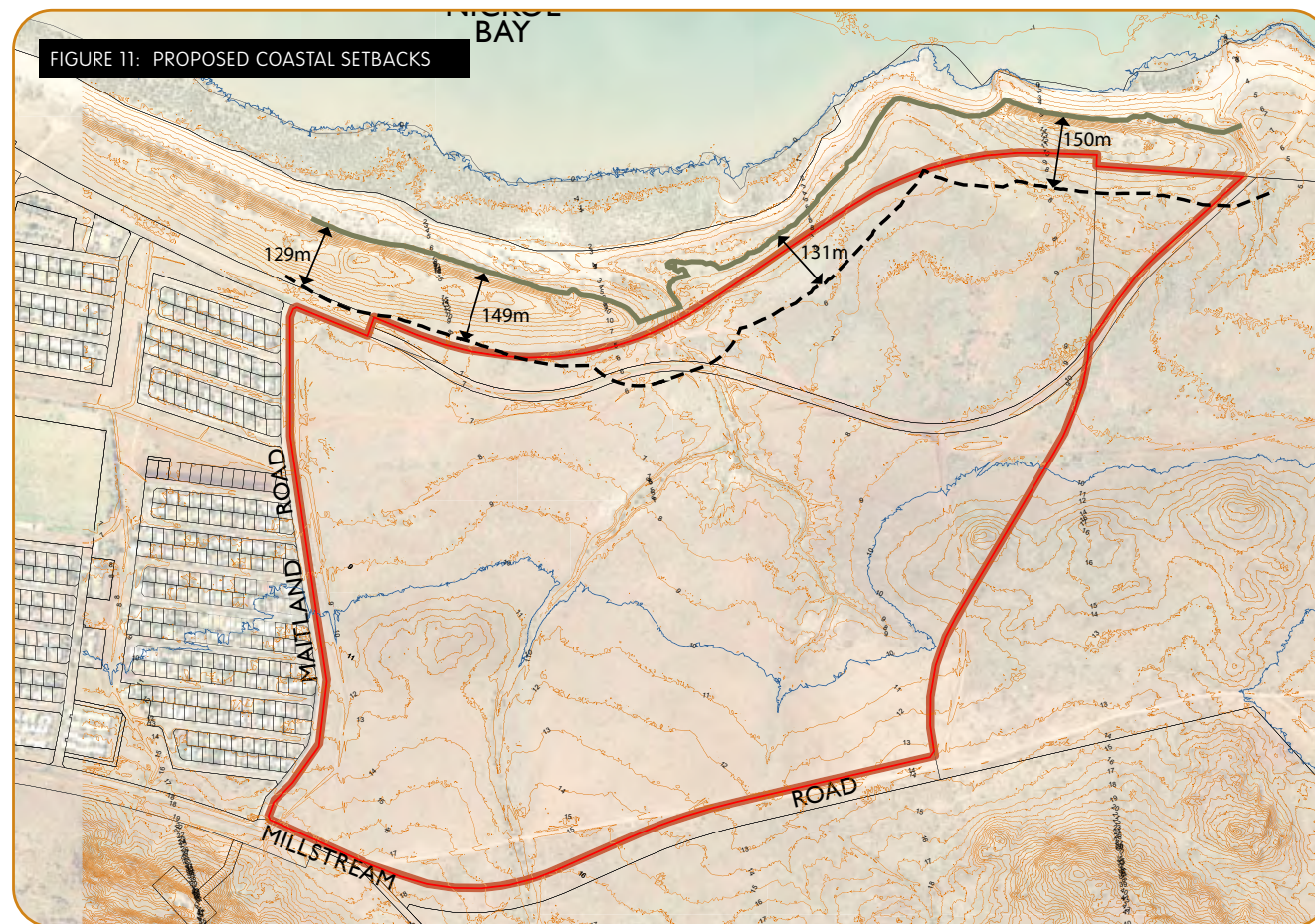
2.3 Coastal Vulnerability

A full analysis of coastal conditions, vulnerability and setback requirements is provided in Part 3 – Technical Studies “Mulataga Foreshore Coastal Hazard Risk Management and Adaptation Plan” (MP Rogers, & Associates, 2020).

In essence, the report found:

- > All freehold land (residential and commercial street blocks) avoid the risk posed by coastal hazards over the 100 year planning timeframe, by being located landward of the erosion line and achieving site levels that allows for the 500 year ARI water level allowance.
- > The proposed Structure Plan provides an extensive foreshore reserve, over and above that required to allow for the potential impact of coastal hazards over the 100 year planning timeframe.
- > Whilst there is a risk of coastal erosion and inundation hazards impacting the site area, these risks are limited to assets within the foreshore area and the risk is tolerable over the relevant assets service life.
- > Despite the level of risk being acceptable to the proponent, the ALARP approach has been adopted for the Structure Plan area and additional risk mitigation strategies have been proposed for implementation.

Figure 12 depicts the result of the Coastal Hazard Assessment, showing recommended setbacks to accommodate a 100 year planning horizon at different points along the coast from the Horizontal Shoreline Datum.



SOURCE: MP ROGERS - FEBRUARY 2020

- DEVELOPMENT PLAN AREA
- - - COASTAL EROSION HAZARD LINE
- HORIZONTAL SHORELINE DATUM

2.4 Hydrology

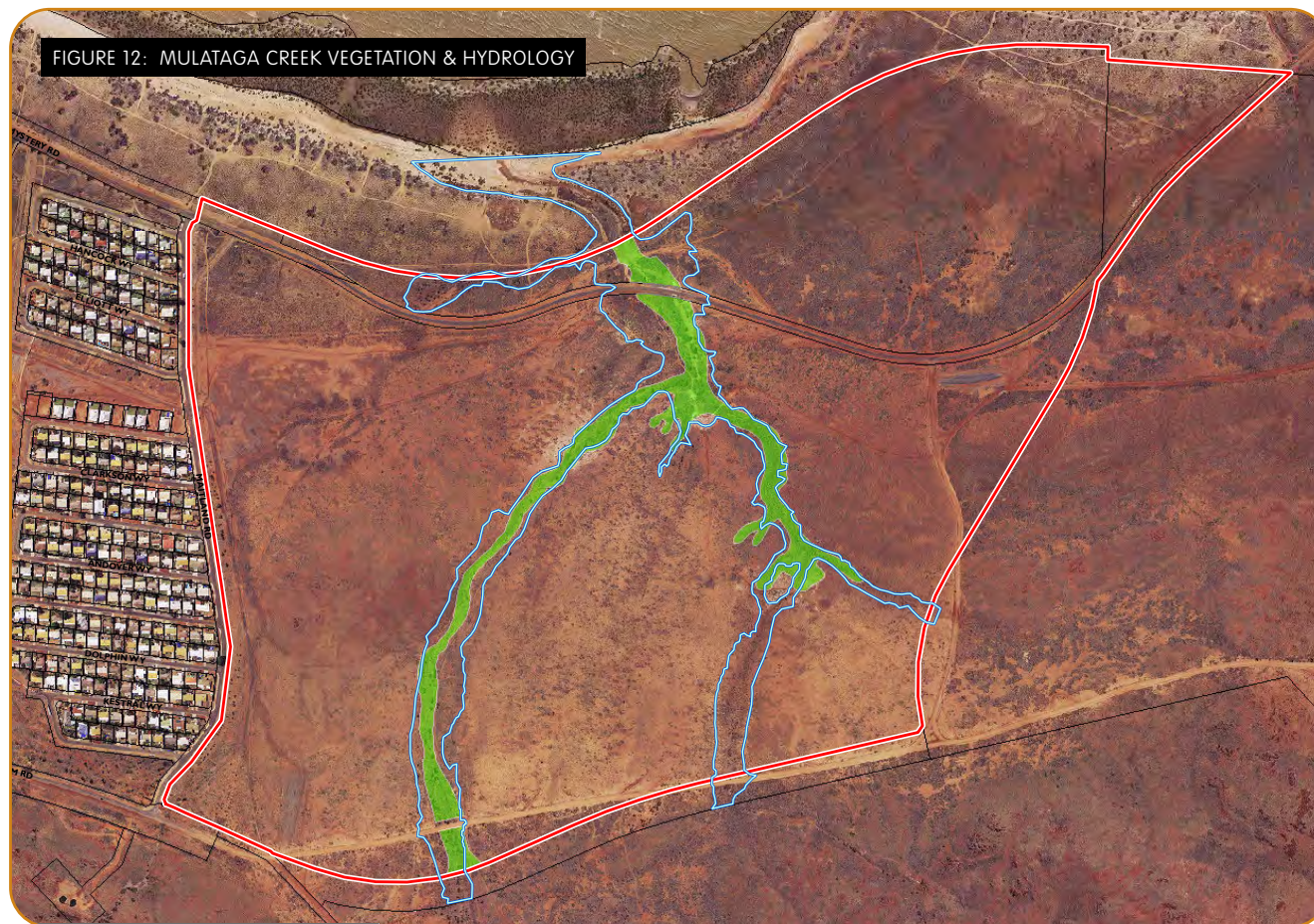
A full analysis of hydrology is provided in Part 3 Technical Studies in the report “Mulataga Development Plan, Karratha – Local Water Management Strategy” by JDA Consulting Hydrologist (December 2019).

Mulataga Creek, the surface water course that currently traverses the Mulataga Structure Plan area, conveys rainfall runoff from the local catchment in the Karratha Hills north through the Structure Plan area, prior to discharge into Nickol Bay.

Within the Structure Plan area, Mulataga Creek is well incised into the landscape with depths of up to 3m. The 1% Annual Exceedance Probability (AEP) floodplain mapping confirms the majority of the flow and flood extent is contained within the Mulataga Creek channel and is the main conveyance system.

The Local Water Management Strategy (LWMS) for the site preserves and enhances the Mulataga Creek through the connection of green linkages with the existing system and working with the land. No development shall be permitted in the floodway of Mulataga Creek which is consistent with the Department of Water and Environmental Regulation (DWER) Floodplain Management Policy and the City of Karratha’s Stormwater Design Guidelines.

There are opportunities to reduce flooding in the neighbouring development of Bugarra to the west of the Mulataga Structure Plan area. High rainfall runoff rates require the implementation of efficient stormwater conveyance systems to control peak flows and silt and sedimentation transport.



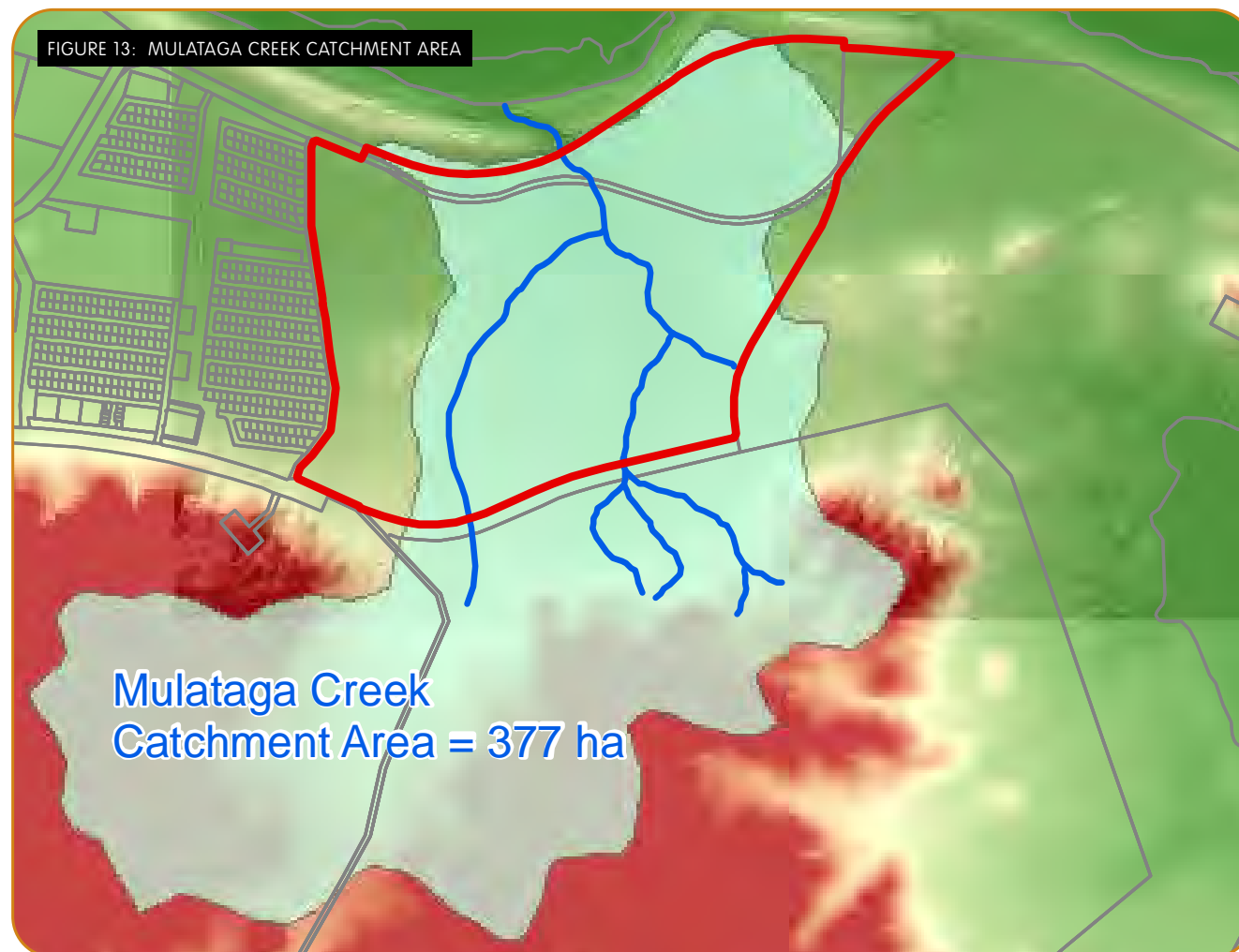
SOURCE: ENVIRONMENTAL ASSESSMENT REPORT -
RPS - FEBRUARY 2020

LEGEND
 Site Boundary
 Cadastre
 1 in 100 Year Average Recurrence Interval Floodline
 EvChLOW - Eucalyptus victrix and Corymbia hamersleyana Low Open Woodland over Acacia bivenosa, Acacia pyrifolia and Acacia coriacea subsp. pendens Tall Open Shrubland over Cenchrus ciliaris, Eulalia aurea, Themeda triandra and Chrysopogon fallax Tussock Grassland.

The key principles for developing a LWMS in the North West of WA, as provided by DWER, are as follows:

- > Towns in the Pilbara have been developed using open drains rather than piped drainage which is appropriate due to the high rainfall intensities and runoff rates compared with the South West of WA.
- > Safe conveyance of storm and flood waters to downstream areas without detention to pre-development flow rates is a high priority if erosion and sedimentation transport is managed correctly.
- > Existing creeks and drains are to be retained as far as possible - working with the existing drainage system, rather than against it.
- > Flood risk is the main issue from surface water, however groundwater levels need to be considered.
- > Management of erosion and sedimentation is important.
- > Other water quality issues such as nutrient concentrations are of lower priority in the Pilbara.
- > DWER accepts there will not be 2 years of predevelopment groundwater monitoring data and do not expect any groundwater monitoring data to be supplied, unless there are existing monitoring bores within the Study Area vicinity.
- > DWER may not require any post development surface water or groundwater quantity or quality monitoring.
- > The LWMS checklist contained in BUWM (WAPC, 2008) should still be used.

Based on the above, a summary of the key principles and objectives that guide the design and development of Mulataga are outlined in Table 3 overleaf.

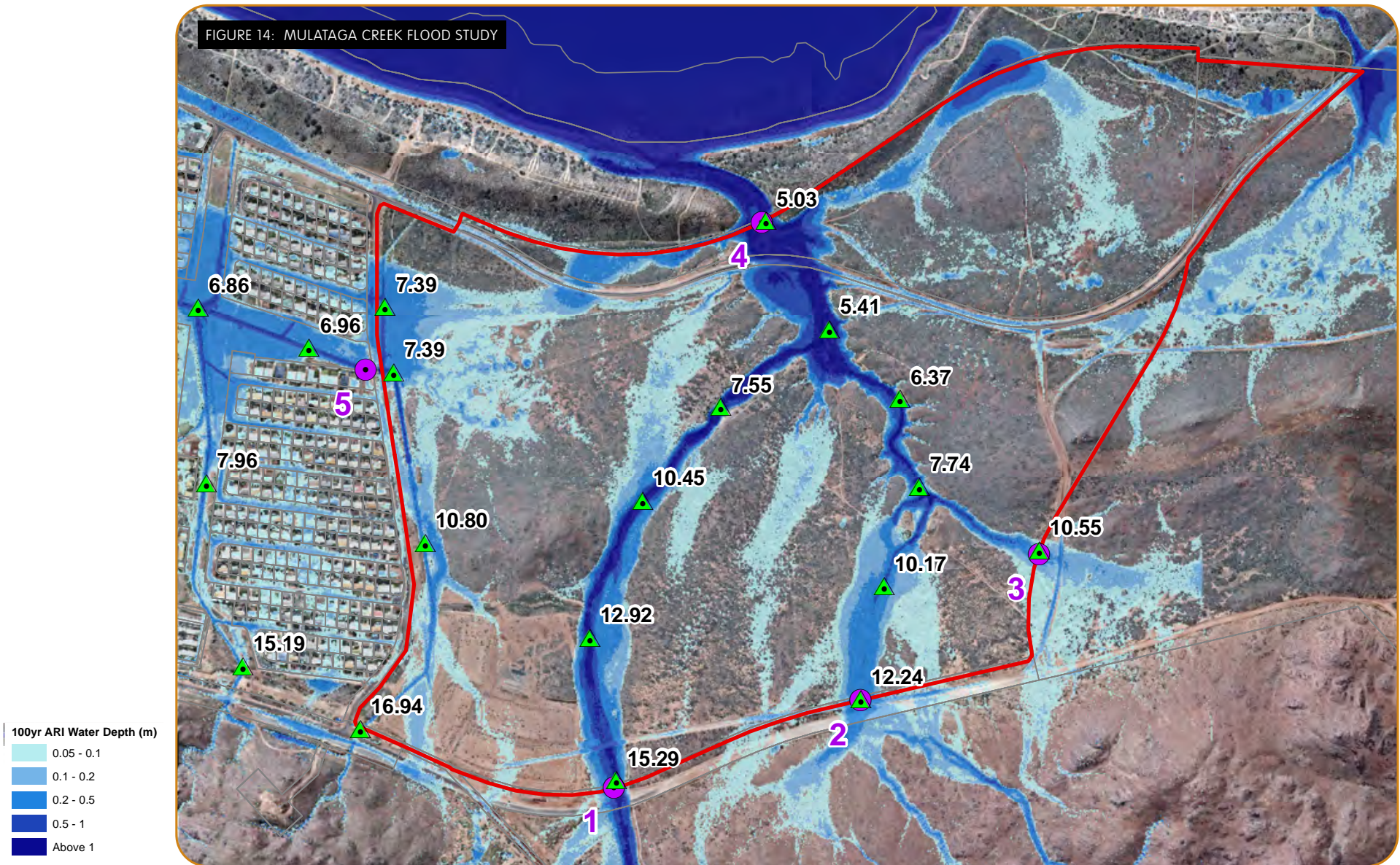


SOURCE: LWMS - JDA HYDROLOGY - DECEMBER 2019

TABLE 3: LWMS KEY PRINCIPLES AND OBJECTIVES (Refer to full LWMS report in Part 3)

KEY WSUD GUIDING PRINCIPLES		
<ul style="list-style-type: none"> > Facilitate implementation of sustainable best practice in water management in the Karratha region > Provide integration with planning processes and clarity for agencies involved with implementation > Minimise public risk, including risk of injury or loss of life > Protection of infrastructure from flooding and waterlogging > Encourage environmentally responsible development 		
CATEGORY	PRINCIPLES	DESIGN OBJECTIVES
Water Supply and Conservation	<ul style="list-style-type: none"> > Consider all potential water sources in water supply planning > Integration of water and land use planning > Sustainable and equitable use of all water sources having consideration of the needs of all users, including community, industry and environment 	<ul style="list-style-type: none"> > Minimise the use of potable water where drinking water quality is not essential, particularly ex-building use > Apply waterwise landscaping measures to streetscapes and POS areas to reduce/avoid irrigation > Investigate opportunities for wastewater recycling and reuse for ex-house and POS uses
Surface Water Flows and Velocity	<ul style="list-style-type: none"> > Protect development from flooding > Implement open drains for safe conveyance of flood waters. > Implement economically viable stormwater systems. > Retain natural drainage systems and protect and/or improve ecosystem health > Reduce the stormwater velocity to prevent export of sediments and manage erosion > Ensure that stormwater management recognises and maintains social, aesthetic, and cultural values 	<ul style="list-style-type: none"> > For flood management, manage up to the 100yr ARI event within the development > Finished floor levels 0.5m above 100yr ARI flood level > Use open drainage swales through the development to disperse flow throughout the development with the aim to minimise velocity and sedimentation > Drainage swales sized to safely convey up to the 100yr ARI to discharge points > Where there are identified impacts on significant ecosystems, maintain desirable environmental flows and/or hydrological cycles consistent with DWER's requirements
Groundwater Levels	<ul style="list-style-type: none"> > Protect development from waterlogging 	<ul style="list-style-type: none"> > Protect development from waterlogging
Water Quality	<ul style="list-style-type: none"> > Where development is associated with an ecosystem dependent upon a particular hydrological regime, minimise discharge or pollutants to shallow groundwater and receiving waterways and maintain water quality in the specified environment. 	<ul style="list-style-type: none"> > The receiving environment is Mulataga Creek which discharges to the Nickol Bay intertidal zone where mangroves are present > Minimise sediment export by appropriate drainage design

FIGURE 14: MULATAGA CREEK FLOOD STUDY



SOURCE: LWMS - JDA HYDROLOGY - DECEMBER 2019

2.5 Heritage

2.5.1 Aboriginal Heritage

A full description of the Aboriginal heritage context is provided in Part 3 - Technical Studies in the report "Mulataga Structure Plan Landscape Strategy" (UDLA, 2020).

The report states:

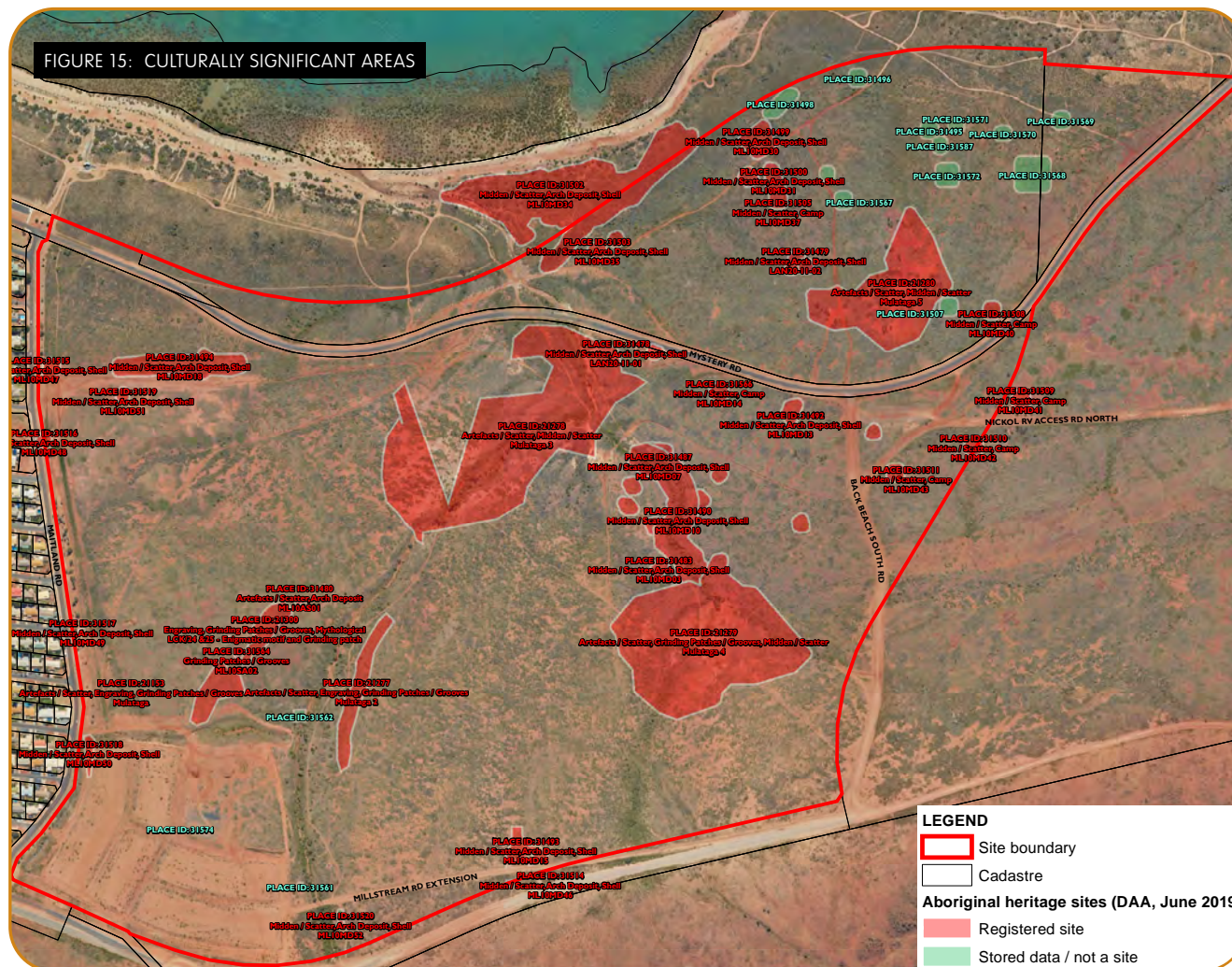
"For thousands of years the ancestors of Indigenous people have lived and travelled along the foreshores of Karratha and surrounding area, across the Pindan plains and along the fringes of the desert. It is understood that the Mulataga area is an important part of a broader cultural landscape, which is this context alone requires understanding and respect... ..Respecting and retaining the Traditional Owners strong connection and relationship to 'Country' is therefore an essential consideration of the public open space design."

Within the Mulataga Structure Plan area and foreshore there are significant cultural sites which have been recorded to Site Identification Standard. Aboriginal Heritage Surveys are being carried out in accordance with the Aboriginal Heritage Act to define the sites and their significance and seek permission for use under Section 18 approvals.

Ongoing consultation and design engagement with the local Ngarluma Traditional Owners in regard to the treatment of these sites is to continue with possible edge treatments discussed to discourage site intrusion and promote general respect for this age-old custodial relationship with the Pilbara landscape.

2.5.2 European Heritage

The Heritage Council of Western Australia's Places Database allows members of the general public to search for places or sites listed on the State Register of Heritage Places. A search of the database was undertaken by RPS and no matches were found for the Mulataga Structure Plan area.



SOURCE: RPS - FEBRUARY 2020

2.6 Bushfire Hazard

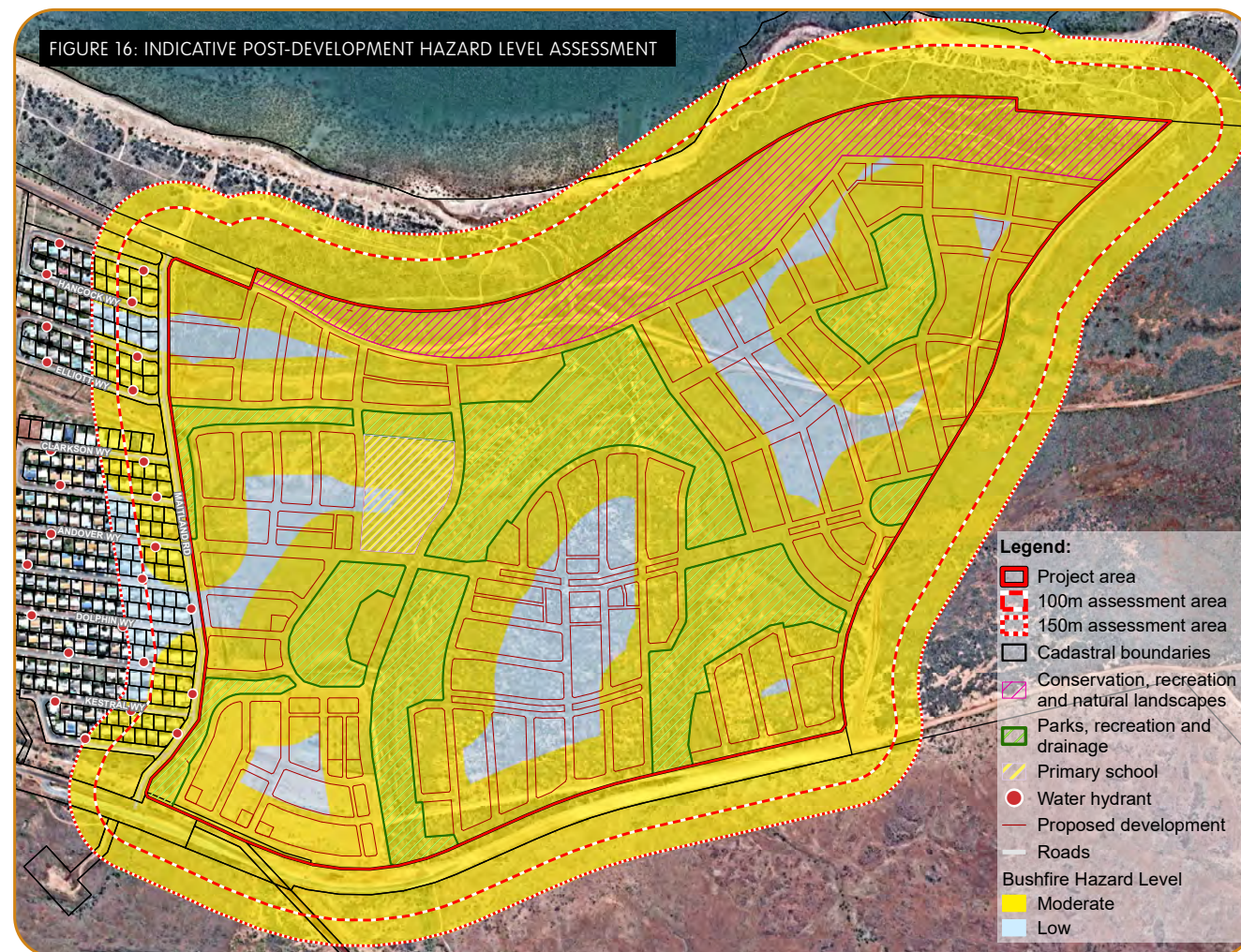
A full analysis of bushfire requirements specific to each planning stage is provided in Part 3 – Technical Studies “Bushfire Management Plan: Mulataga Structure Plan” (Strategen-JBS&G, 2019).

The entirety of the Structure Plan area is designated as a ‘Bush Fire Prone Area’ under the Department of Fire and Emergency Services online mapping (2019).

Strategen-JBS&G classifies the majority of the site as Class G Grassland, which carries a ‘Moderate’ bushfire hazard level.

In consideration of the urban development extent proposed as part of the Structure Plan, the post-development vegetation extent will result in a significant reduction to bushfire hazard. Post-development classified vegetation will be limited to undeveloped land outside of the Structure Plan area, as well as portions of the foreshore reserve and internal POS areas. Strategen-JBS&G has mapped the bushfire hazard levels within the project area and adjacent 150m as per these post-development conditions (Figure 16), which demonstrate that future development areas will be limited to areas of ‘Moderate’ or ‘Low’ bushfire hazard level.

A BAL (Bushfire Attack Level) contour assessment will need to be undertaken at future planning stages (ie. to accompany each stage of subdivision application) and a detailed BMP will need to be prepared to reflect the outcomes of each assessment, specific to each stage of subdivision. This assessment will inform whether any proposed development consisting of habitable buildings located within 100m of classified post-development vegetation (or 50m from Class G grassland) requires application of AS:3959 and increased building construction standards in response to the assessed BALs.



SOURCE: STRATEGEN-JBS&G - OCTOBER 2019

2.7 Transport

A full description of the regional and proposed Mulataga movement network is provided in Part 3 – Technical Studies under the report “Mulataga Structure Plan Revised Transport Impact Assessment” prepared by Transcore (2020).

The Mulataga Structure Plan area is provided with good accessibility to Karratha from surrounding key roads, namely the future extension of Millstream Road and the future re-alignment of Bayview Road. There are some constraints in the east-west movement options due to limited crossings over the Mulataga Creek tributaries.

Refer to section 3.3.3 for details on the Plan’s response to Transport.

2.8 Engineering and Servicing

A full analysis of the civil engineering proposal for Mulataga is contained within Part 3 – Technical Studies under “Mulataga Development Plan Engineering Servicing Report” prepared by Cossill and Webley (2019).

2.8.1 Site and Earthworks

The site generally grades from the southern boundary, at the foothills of the Karratha Range, down to the Coast. The significant features of the site are the natural drainage corridors running south to north through the site, and the dune ridge system at the coast.

The proposed development of Mulataga currently requires fill material to achieve the minimum clearance above the flood levels and storm inundation. Due to the cost of fill material it is critical for the development that the amount of fill required across the site is minimised as much as possible. Alternative built form solutions including spine walls for retaining may assist in minimising earthworks and use of fill in certain areas.



The majority of lots are likely to have a small grade of a 100 to 200mm, however some of the lots may grade up to 600mm.

Lots with minimal grade will be built up so that they grade towards the road pavement. The side fence will be non-permeable at the ground level, to prevent stormwater from flowing across the lot boundary, and all stormwater will be directed to the road reserve and into the public stormwater drainage system.

There is adequate separation to groundwater for the majority of the site, to mitigate the requirement for subsoil drainage or the importation of fill material to achieve the necessary separation to groundwater levels.

2.8.2 Wastewater

The existing wastewater infrastructure in Bulgarra is currently being upgraded which will enable the creation of an initial 400 lots within Mulataga to gravity feed into this area.

The Water Corporation has developed a strategy for wastewater following this first stage of development which proposes the construction of a pump station and pressure main discharge to Bulgarra. The pump station is required for the development of the Coastal Node and all future areas outside of the initial tranche.

This pump station will be upgraded through the duration of the Mulataga development and will ultimately pump all wastewater from Mulataga directly to the treatment plant. The upgrade works will be undertaken by the Water Corporation as required.

2.8.3 Water Supply

The initial stages created in the Mulataga development can be supplied from the existing main water supply in Maitland Road. Water Corporation has advised that this supply currently has the capacity to service approximately 400 residential allotments within Mulataga.

Further growth in the Mulataga area may require extension of the distribution mains from the Water Corporation Karratha tanks. These will be developed in a staged basis by the Water Corporation to meet the residential demand.

2.8.4 Electrical Power Supply

The power within the adjacent Bulgarra subdivision has recently been upgraded and undergrounded by Horizon Power. Horizon Power has advised that the feeders in Maitland Road will be able to provide power service to the first 400 lots in Mulataga.

Following this initial stage of development it is expected that a future distribution may be required from the Bulgarra Substation to supply further development.

Horizon Power currently has limited power generation capacity within Karratha. Any increases in power efficiencies that can be obtained through planning layout and built form may increase the number of lots which can be serviced immediately and reduce infrastructure costs.

2.8.5 Telecommunications

The Mulataga development will be constructed under the National Broadband Network system, which will provide high speed broadband to all newly created lots. The broadband network will have potential to carry services such as internet, pay television (no dish required) and telecommunications services (multiple fixed lines).

2.8.6 Gas

There is no existing gas distribution/reticulation infrastructure in Karratha.

2.9 Community and Recreation

An extensive analysis of community opportunities is contained in Part 3 - Technical Studies in the report "Mulataga Development – Community, Social and Economic Planning Recommendations" (September 2012) prepared by Creating Communities Pty Ltd and Taktics4.

2.9.1 Community Profile

Based on data from the 2016 ABS Census, the current population of the Karratha urban centre locality is approximately 16,000 people. Karratha has an aspirational population target of 50,000 people (City of Karratha Draft Local Planning Strategy), totalling an additional 34,000 people. Therefore, Mulataga will provide a home for around 11.5% of this additional population, assuming the Structure Plan area will accommodate approximately 3,900 people.

Using the current demographic profile of Karratha as a guide, the demographic profile of Mulataga may include the following:

- > A high proportion of family households with children (~50%) - particularly younger children, almost one third will be couples without children (~30%).
- > Almost one-fifth will be people living alone (~20%) .
- > Almost 5% of people will be in group/share housing arrangements.
- > A high weekly household income (43% earning more than \$3,000/week, compared with just 19.2% for WA average).
- > A high proportion of school aged children, particularly primary school and pre-school.
- > A skilled population, with approximately half of people aged 15 and over having some form of post school qualification.
- > A high proportion of people in the labour force working full time (~70%, compared with 57% WA average) and a relatively low proportion of unemployed people (5.6%, compared with 7.8% WA average).
- > A diverse population, including people from New Zealand, England, Philippines, India and South Africa, however the majority will be Australian (~70%), including Indigenous (~10%).

2.9.2 Sense of Place and Transformation

Currently Karratha's sense of place and uniqueness is strongly influenced by the landscape and landform (mangroves, hills, and the coast), climate (and seasons), cultural diversity and history, the resources industry and the lifestyle this mix provides to residents. The planning and development of Mulataga must reflect and build upon Karratha's sense of place and uniqueness to ensure the development truly reflects the Karratha lifestyle and links the new development to the rest of Karratha (both in the physical and community sense).

Refer to section 3.0 for the Structure Plan response to sense of place and transformation.

2.9.3 Social and Community Development

The key social and community opportunities are;

- > Developing and maintaining community fabric and social capital through social gathering spaces and community development and activation programs / events;
- > Addressing the cost of living and social divide created by variations in the local economy by providing diversity of accommodation and housing, provision of local services and family related facilities and services;
- > Providing high quality facilities and open spaces which support a safe and vibrant lifestyle and respond to climatic and environmental conditions;
- > Addressing key medical, education, youth and aged needs;
- > Creating seamless connections between Mulataga and surrounding areas through good internal and external movement pathways, including future development to the east;
- > Providing a unique range of recreational facilities (in addition to coastal node facilities), with culturally responsive facilities and amenities; and
- > Responding effectively to the local environment to create people friendly environments and focus on 'layers of place' in Mulataga, embracing the landscape to create destinations for all.

2.10 Activity Centres / Employment

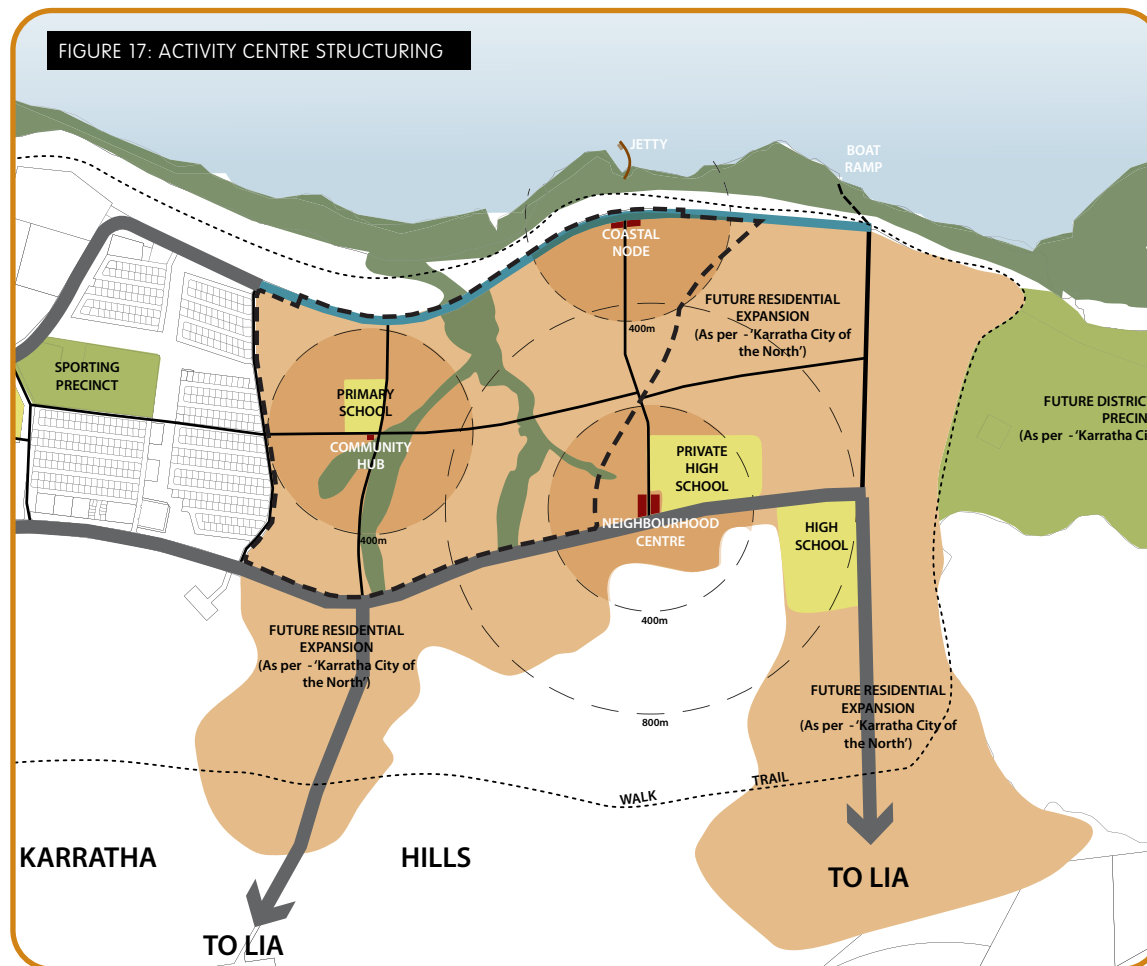
A full analysis of the economic context is provided in Part 3 Technical Studies in the report "Community, Social and Economic Planning Recommendations" (September 2012) prepared by Creating Communities Pty Ltd and Taktics4.

Mulataga is primarily a residential development with one potential commercial activity node on the coast, home-based business, and employment associated with education and community facilities. A number of activity centre /commercial floorspace scenarios are examined in the above report which embraces the opportunity to create an iconic commercial and civic node adjacent to the coast.

District structuring completed for the wider area at the 2012 PDF identified a potential opportunity for a complementary neighbourhood or district centre on Millstream Road, south-east of the site. The economic need and viability of this centre is highly reliant on development of other areas outside of the structure plan area. Economic advice received from Taktics4 was to focus economic efforts on the coastal node, or risk delivering two failing centres rather than one vibrant centre.

Creating a service offer focused on tourism, entertainment, recreation and local retail will help differentiate the coastal node from types of retail already available in the Karratha City Centre, and is consistent with opportunities identified in the City's Destination Management Plan (October 2018).

There is potential of a Community Hub to be provided in concert with the Primary School, which would contain education, child care, joint use community facilities, playing fields and the like.



SOURCE: ROBERTSDAY - PDF 2012

2.11 Neighbourhood Design and Housing

The issues and opportunities associated with the housing market and neighbourhood planning for Karratha are thoroughly documented in a number of plans including the Karratha City of the North (2010), Pilbara Towns Housing Study (Dept of Housing / Pilbara Development Commission 2010), the Pilbara Planning and Infrastructure Framework (2012) and the Karratha Regional Hotspots Land Supply Update (2010).

The Mulataga Planning Design Forum facilitated by RobertsDay in April 2012 provided an opportunity for a comprehensive array of stakeholders, including community representatives, to articulate housing needs and to confirm the vision for Mulataga. The issues and opportunities raised at the Forum to be addressed by the Mulataga Structure Plan include:

- > Facilitate greater choice in housing products and accommodation options, contribute to improved relative affordability, ensure housing products better match demographics and community needs and attract a diversity of longer-term residents to 'normalise' the community;

- > Continue to develop neighbourhoods that promote greater walking and cycling, providing shaded and highly connected paths and streets, with regular places of refuge and interest, especially through the preservation of the Mulataga Creek and development of multi-purpose drainage corridors, connecting to the wider Mulataga and Karratha areas;
- > Develop an authentic character and genuine response to landscape through the conservation of the Mulataga Creek and Aboriginal heritage, visual and physical connections and views to the coast and hills, development of a strong civic and community node around the primary school and a leisure / recreation node at the coast and improved guidance for built form and houses to develop a Karratha vernacular that responds to climatic conditions and lifestyle needs; and
- > Pay greater attention to the detailed design of houses and their relationship to the street.

BETTER EXAMPLES OF KARRATHA HOUSING

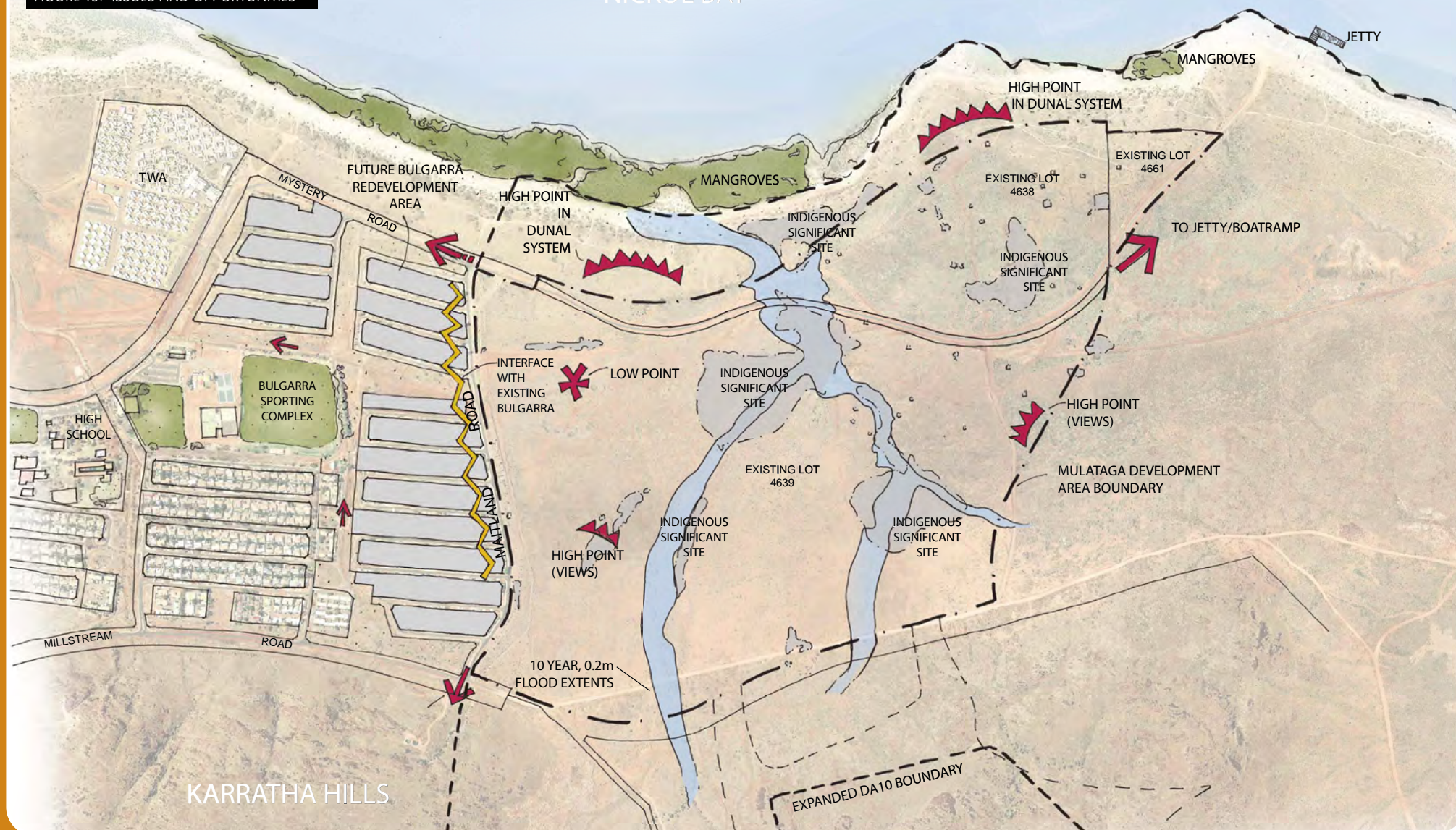


LESS DESIRABLE EXAMPLES OF KARRATHA HOUSING



FIGURE 18: ISSUES AND OPPORTUNITIES

NICKOL BAY



3.0 STRUCTURE PLAN

This section of the Part 2 Explanatory report provides a description of the core elements of the Structure Plan design and rationale. It outlines how the vision and broad framework for the development of Mulataga will be refined through future detailed planning stages.

3.1 Vision

Design excellence is to be manifested in all dimensions of project including the built form, landscape and streets to deliver a diversity of environments ranging from natural through to intensely urban in character.

A unique sense of place will unfold that reflects the local climate, landscape and cultural values and that draws upon the Mulataga's location nestled between the Karratha Hills and the Nickol Bay.

Public spaces and streets will tell the story of the Pilbara – including narratives of the local indigenous heritage; celebrations of the colour and textures of the Pilbara landscape; and community amenities and events that reflect the Pilbara lifestyle and provide an authentic window to daily life and culture.

Mulataga will become a place that captures a new way of living in the Pilbara that is a drawcard for a dynamic mixed community of permanent residents, visitors and fly-in / fly-out workers enticed to Mulataga for its superb lifestyle offering and quality of life.

Development will bring the highest level of amenity for future residents and visitors, including climate responsive housing, shaded meeting areas and streets, and great parks and civic spaces for community activity and enjoyment.

Walking and cycling will be given priority and paths and roads designed for safety and comfort. A legible street network connects to surrounding areas and destinations including the Karratha City Centre, schools, shops and the beach to promote a healthy and active lifestyle for residents and visitors.

The **VISION** for Mulataga is to become the quintessential coastal community that epitomises Karratha's transformation from a town to a vibrant and thriving regional city. It will be a community that celebrates the inimitable character and lifestyle of the Pilbara.

3.2 Guiding Principles

3.2.1 Lifestyle

Mulataga will offer a range of facilities that meet simple daily needs as well as the long-term comfort and amenity to entice long-term residency. It will include:

- > A coastal node main street that will become a focal place to take visitors, celebrate special events, enjoy the coastal environment, watch the world pass by or take in the sunset on Nickol Bay; and
- > A community primary school that will educate the next generation about sustainability the local history and heritage, indigenous heritage, and the resources industry driving the region's economy.

3.2.2 Connection

The spaces and streets of Mulataga are unique, they feel safe and familiar and are lush and shaded, making them perfect to explore. Moving around Mulataga is easy, whether journeying down to the beach or to the Karratha City Centre, each trip can be by foot, bike future bus service or car. The amazing natural setting breaks the formality of the streets and buildings, enticing people to stop and enjoy the Mulataga creek, local parks and paths that meander through Mulataga and beyond. The symbolic riparian corridors draw the sense of water up into Mulataga and provide easy access to the water's edge. The shaded beachside boulevard links the neighbourhood village to the foreshore. The transit parkway connects Mulataga to the City and foreshore, with opportunity to link to a future education campus to the east of Mulataga.

3.2.3 Identity

Mulataga will be more than a residential suburb. It will deliver a new way of living to Karratha that regenerates the existing community of Karratha with new daily life experiences, recreational and housing options.

The Mulataga community will have a distinctive character with well defined residential villages. Each village will be shaped by the immediate natural setting - the physical beauty and symbolism of the hills, riparian corridors, mangroves and bay. These natural elements will define identifiable and intimate villages within Mulataga that foster a strong sense of belonging and pride for residents.

3.2.4 Resilience

The realisation of Mulataga as a successful community will be measured by the people who call it home. Ultimate success can be claimed when people are proud to call Mulataga home and visitors are keen to share the experience.

Mulataga will provide a range of living options to cater to a diverse range of life stages and levels of affordability – whether it be young singles or couples just starting out and renting or experiencing the sense of accomplishment with buying a first home; or young families upgrading to family homes; or more mature people to downsizing.

3.3 Design

The broad structure and arrangement of the roads, open spaces and land use areas within the Mulataga Structure Plan area can generally be described as follows.

3.3.1 Residential Development and Neighbourhoods

The majority of the Structure Plan area is zoned Residential to facilitate approximately 1,400 dwellings. The residential zoned land has been categorised into three separate density code ranges; Low (R15-R30), Medium (R20-R60) and High (R40-R100). The predominant density code range is Low, with pockets of Medium and High focussed around transport corridors and areas of high amenity (i.e. Coastal Node)

The use of density code ranges provides flexibility for detailed subdivision design to respond over time to changing market conditions, where required, while meeting the overall dwelling and density targets. The application of density code ranges will also assist with the delivery of a diverse mix of housing options to meet the needs of the local Karratha community in the short and longer term.

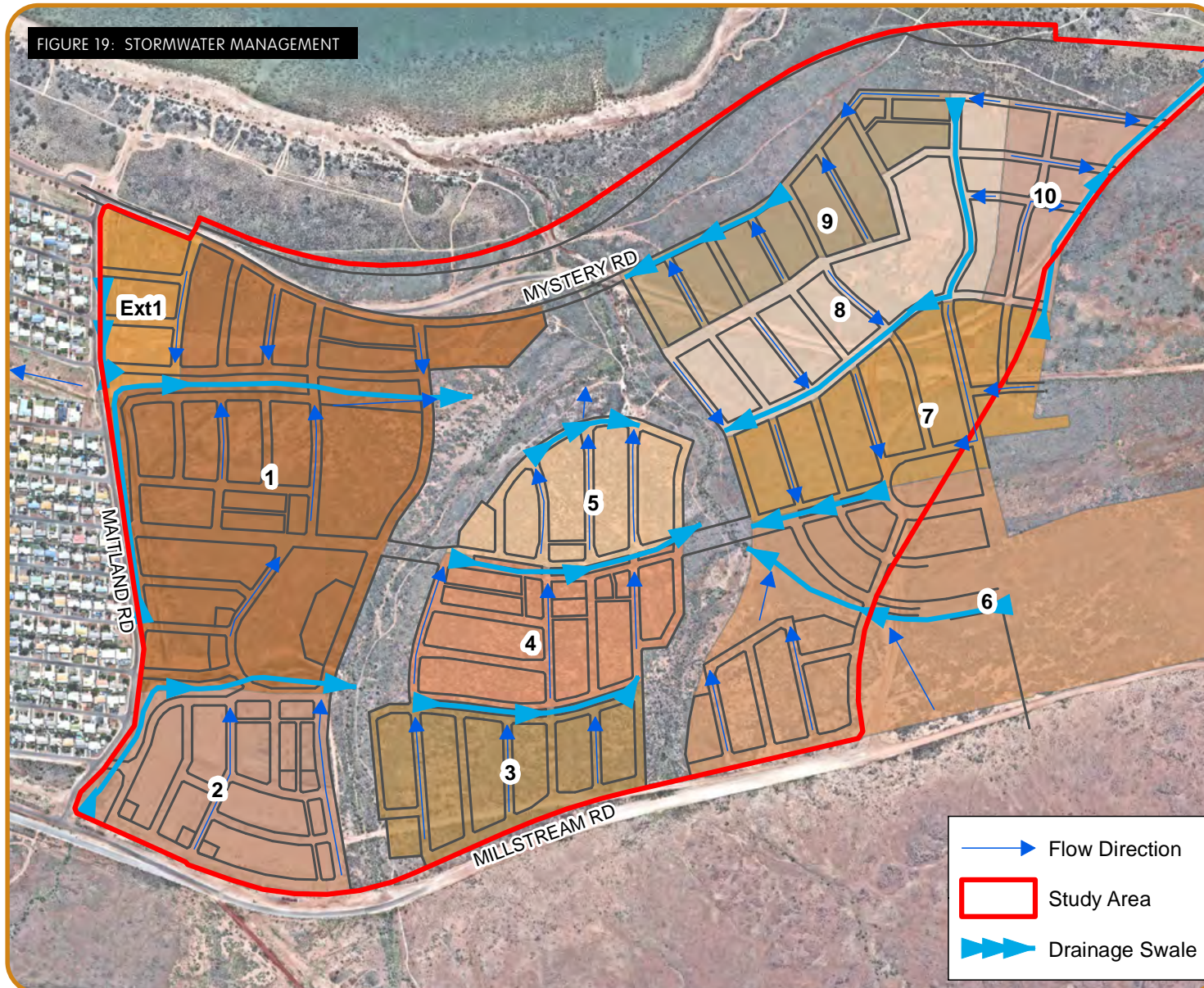
The proponent is undertaking a number of initiatives to address the timely delivery of more diverse and affordable housing options at Mulataga, specifically:

- > Continue to build strong working relationships with local and Perth builders to deliver housing solutions to the market in a timely and efficient manner;
- > Strategic partnering with builders will allow synergies and economies of scale to be realised, assist with delivery of more affordable housing products, provide a defined supply pipeline, allow advanced planning for management of labour and materials and reducing construction cost; and
- > The use of local trades and materials, where possible, will also be a key solution in keeping build costs down.

Discrete neighbourhoods are formed by the edges of the Mulataga Creek and the layout of open space and multi-use drainage corridors.

Local Development Plans may be required for lots abutting POS, lots affected by noise and/or Bushfire and any other lots required by the City and/or WAPC.

FIGURE 19: STORMWATER MANAGEMENT



SOURCE: JDA HYDROLOGISTS - DECEMBER 2019

3.3.2 Open Space

The vision for Mulataga is to create a variety of open spaces providing for leisure and recreation, sport, Aboriginal heritage conservation, drainage management and retention of the iconic Mulataga Creek.

The development of public open space will be complemented by an attention to the detailed landscaping of streets and paths. This is considered essential to contribute to quality of life, respond to climate and contribute to the transformation of Karratha as a highly attractive and desirable regional city, with a distinctive character.

Key considerations in developing the network and variety of space were to:

- > Retain the important values of Mulataga Creek – Aboriginal heritage, iconic Pilbara vegetation and stormwater hydrology;
- > Integrate stormwater drainage through a series of multi-use open space / drainage corridors to minimise wasted land used only for drainage and promote community focus on public spaces;
- > Provide convenient access to local parks in close proximity to homes; and
- > Retaining a number of Aboriginal heritage sites (subject to consultation and approvals under the Aboriginal Heritage Act).

The network of open space provision is well connected to neighbouring areas (and future urban areas) and the wider Karratha city through linear network to Bulgarra sporting complex, future Karratha Hills walking trails and Mulataga Foreshore and coastal areas beyond.

There is an opportunity to utilise the riparian corridors and, in particular, their significance to Traditional Owners, to provide facilities which build on the established Aboriginal heritage and relationships and provide an opportunity for interpretation and understanding by the broader community.

The Structure Plan provides:

GROSS SUBDIVISIBLE AREA	132.25 hectares
TOTAL OPEN SPACE	20.1 ha = 15.2% (Refer to Appendix 1 POS Schedule)

Refer to Table 4 for the Public Open Space Schedule as required by Liveable Neighbourhoods.

The specific provision of open space will be refined with detailed subdivision and engineering design. The Shire will maintain a cumulative total of open space with each subdivision approval to ensure that a minimum of at least 5% POS is met across the Structure Plan area in accordance with Element 4 of Liveable Neighbourhoods (R34) which permits a regional variation.

UDLA Landscape Architects have prepared a Landscape Strategy that inform will the design of the open space network, with specific guidance on the future function and layout of each space. A full copy of the Landscape Strategy is contained within Part 3 - Technical Studies.

At the detailed subdivision stage, the proponent will prepare Landscape Management Plans and Urban Water Management Plans for open spaces, including multi-functional drainage corridors, to enable co-location of recreational activity and water management.

In addition to high quality open spaces, future residents and visitors of Mulataga will benefit from a high level of amenity provided by the natural foreshore setting and investments planned for the coastal node, as outlined in forthcoming sections.

FIGURE 20: PUBLIC OPEN SPACE STRATEGY

Saltwater Pool
'Iconic food/beverage facility'
Boardwalk through mangroves
Lookout

Path network

Natural creekbed

Entry statement

Primary School /
Neighbourhood
Park/Education &
Community Node

Culturally significant
area to remain as
remanent vegetation

Entry statement



LANDSCAPE MASTERPLAN
1:10,000 AT A4

SOURCE: LANDSCAPE STRATEGY - UDLA - MARCH 2020

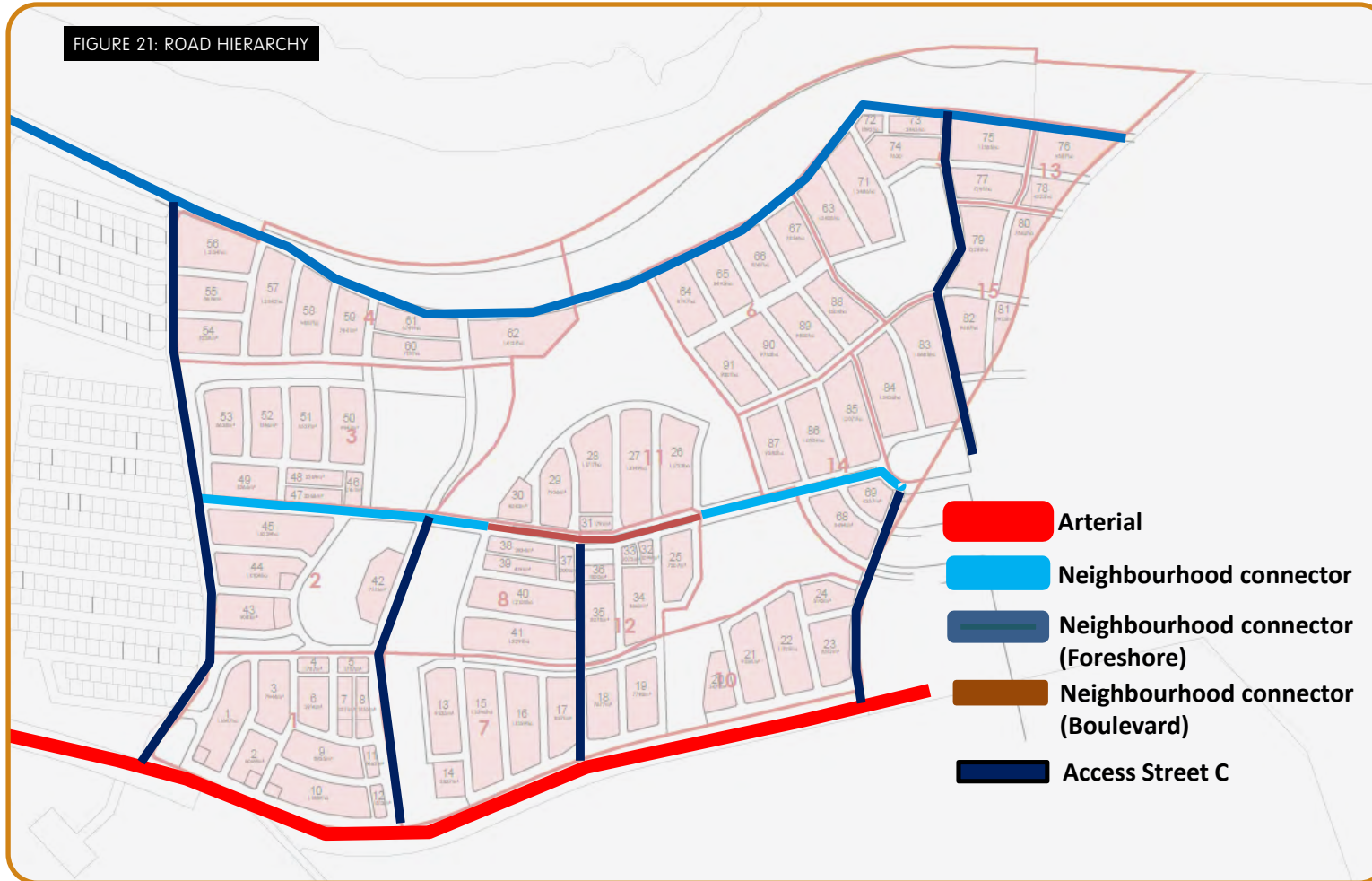
TABLE 4 - PUBLIC OPEN SPACE SCHEDULE

SITE AREA (HA)		171.5858
<i>Less Deductions (ha)</i>		
Restricted POS not included in POS contribution	0.0000	
Foreshore (north of re-aligned Bayview Road to Foreshore Reserve)	20.3803	
Aboriginal Heritage Sites	5.1470	
Dedicated Drainage - Mulataga Creek	8.4500	
Dedicated Drainage - Multi-Use Corridors - areas to TWL 1% AEP	1.3600	
Primary School	4.0000	
Total Deductions	39.3373	
GROSS SUBDIVISIBLE AREA		132.2500
PUBLIC OPEN SPACE @ min 5% (regional variation)		6.6100
PUBLIC OPEN SPACE @ min 10%		13.2250
POS CONTRIBUTION: may comprise:		
minimum 80% unrestricted POS	5.2900	
maximum 20% restricted POS	1.3200	
Unrestricted POS sites		
Entry Statement 1	0.1000	
Local Park 1	0.2000	
Local Park 2	0.4900	
Local Park 3	0.3500	

Local Park 4	0.2100	
Local Park 5	0.6060	
Local Park 6	0.1750	
Local Park 7	0.7200	
Local Park - Civic 1	0.1800	
Culturally Significant Park 1 (less aboriginal site deduction)	0.2583	
Culturally Significant Park 2 (less aboriginal site deduction)	0.5263	
Multiple Use Corridors	2.5150	
Mulataga Creek - areas above TWL 5% AEP	13.8040	
Unrestricted POS Total area	20.1346	
Restricted Use POS sites	0.0000	
Total Restricted POS	0.0000	
CONTRIBUTING POS		
Unrestricted POS	20.1346	
Restricted POS (maximum contribution at 2% of total 5% POS requirement)	0.0000	
TOTAL POS CREDITABLE PROVIDED	20.1346	15.2%
ALL POS PROVIDED IN THE SITE - incl. deductions	59.4719	45.0%

* SUBJECT TO ABORIGINAL HERITAGE ASSESSMENTS & APPROVALS

FIGURE 21: ROAD HIERARCHY



SOURCE: REVISED TRANSPORT IMPACT ASSESSMENT - TRANSORE - FEBRUARY 2020

3.3.3 Movement Network

Transcore Transport Engineers have modelled vehicle numbers and prepared a Transport Impact Assessment in support of the proposed Mulataga Structure Plan. A full copy of the Transport Impact Assessment is contained within Part 3 - Technical Studies.

Traffic modelling has been based on demand generated by Mulataga and future urban growth areas to the east and on the Karratha wide traffic model developed with the Karratha City of the North Plan.

The proposed movement network provides an opportunity for the even distribution of traffic generated by the development to the surrounding roads and gives flexibility in the location of the internal street network.

3.3.3.1 Road Network

The Structure Plan provides a hierarchy of roads to cater for the volumes modelled and recommends several intersection treatments. The road network for the Structure Plan area is proposed to connect into existing and potential future development at a number of locations to improve permeability and facilitate connections to surrounding areas.

In summary, the road network provides:

- > Access through existing perimeter roads of Millstream Rd to the south and Maitland Road to west;
- > Bayview Road realigned along the northern boundary to create a scenic coastal drive along the Mulataga Foreshore (to be retained as conservation and recreation area) with a strong sense of arrival at the Coastal Node;
- > Good permeability to Bulgarra locality through several intersections along Maitland Road;
- > A network of regularly spaced neighbourhood connector roads to provide convenient and legible access that efficiently distribute vehicles across the site and define the edges of the Mulataga Creek;
- > A major east-west neighbourhood connector to accommodate the future public transit services as envisaged by the Karratha City of the North Plan and a key link to Bulgarra to the west;
- > A direct road link between the coastal node and the future Neighbourhood Centre on Millstream Road; and
- > Opportunities for extension of neighbourhood connector roads to the east to integrate with future urban growth areas.

3.3.3.2 Street Design

Greater attention to streetscape design is considered essential to achieve transformational change at Mulataga, sense of place and exceptional quality of life to attract long-term permanent residents.

As such, the detailed design of streets and intersection treatments at subdivision stage will be guided by the 'Shaded Streetscapes' character described in UDLA's Landscape Strategy (March 2020) and the indicative cross-sections contained in this section. Attention will also be given to the interface of public realm with houses and the comfort of pedestrians and cyclists.

The layout of neighbourhood connectors and local streets (to be confirmed at subdivision stage) will result in a number of 4-way intersections at Mulataga. The Transport Impact Assessment prepared by Transcore (February 2020) recommends that some of these be constructed as roundabouts, however, the majority could be managed through give-way or threshold treatments (large medians), as depicted in Figure 25.

Refer to section 4.1 of the Transport Impact Assessment prepared by Transcore (February 2020) for details on street widths including cross-sections for each street typology. Refer to the Landscape Strategy prepared by UDLA (March 2020) for details on function and use of Neighbourhood Boulevards for multi-use corridors and shared streetscapes.

3.3.3.3 Pedestrian and Cycle Network

In accordance with Liveable Neighbourhoods, shared paths are proposed on one side of the Neighbourhood Connector roads and a footpath on the other side.

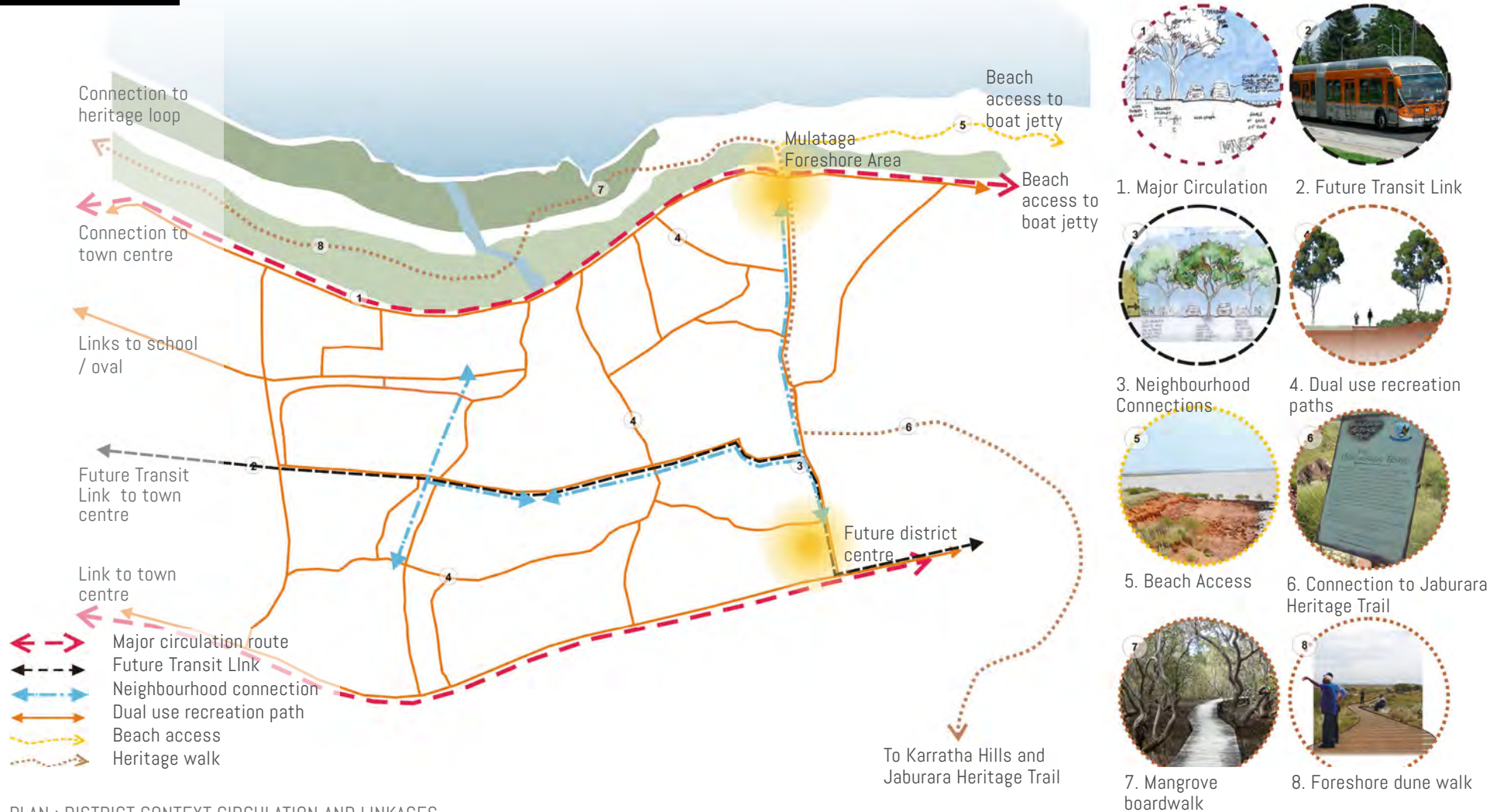
The Access Roads abutting the primary school site will have shared paths on one side and footpaths on the other side. All other Access Roads are proposed to have a footpath on at least one side of the road. The path network at Mulataga will connect into the wider district path network through the foreshore and Karratha hills heritage trails.

3.3.3.4 Public Transport

The recommended bus routes indicated for the City of Karratha indicate a potential bus route along the main east-west road which would run through the Mulataga Structure Plan area and would service the majority of the residential areas.

FIGURE 22: PATH NETWORK

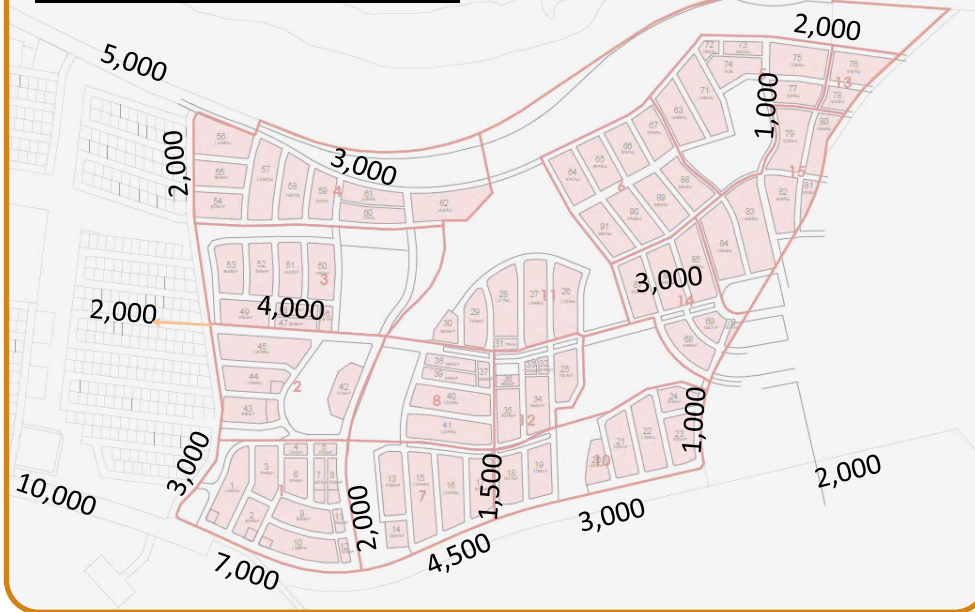
SOURCE: LANDSCAPE STRATEGY - UDLA - MARCH 2020



PLAN : DISTRICT CONTEXT CIRCULATION AND LINKAGES

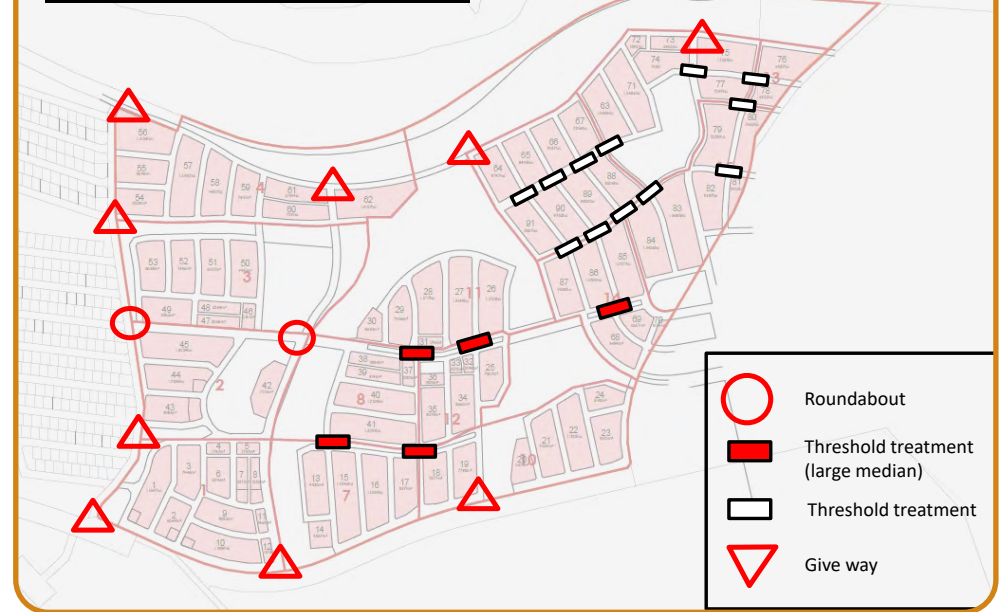
The District Context Circulation and Linkages plan shown above illustrates the Mulataga Development and connection to surrounding areas; including the Jaburara Heritage Trail, Karratha Town Centre, District Sporting Precinct, Boat Jetty etc.

FIGURE 23: PROJECTED DAILY TRAFFIC FLOWS



SOURCE: REVISED TRANSPORT IMPACT ASSESSMENT - TRANSORE - FEBRUARY 2020

FIGURE 24: PROJECTED DAILY TRAFFIC FLOWS



SOURCE: REVISED TRANSPORT IMPACT ASSESSMENT - TRANSORE - FEBRUARY 2020

FIGURE 25: INTERSECTION TREATMENTS

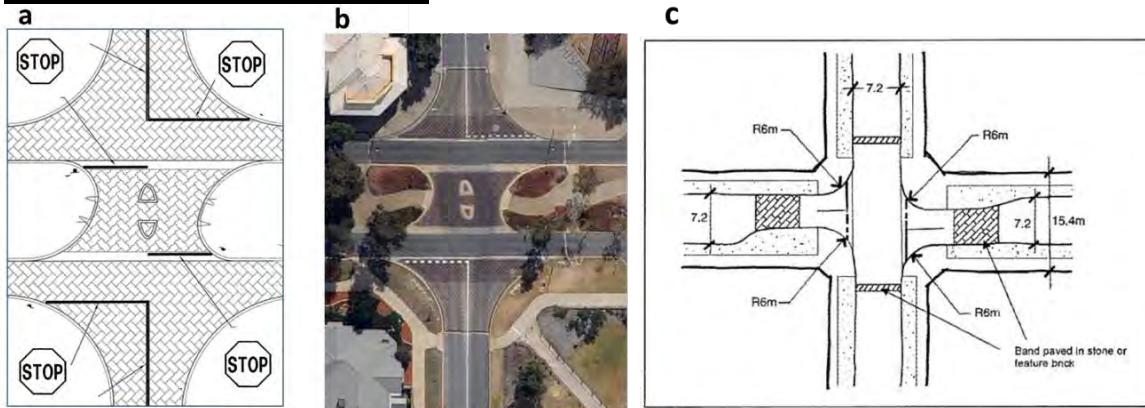
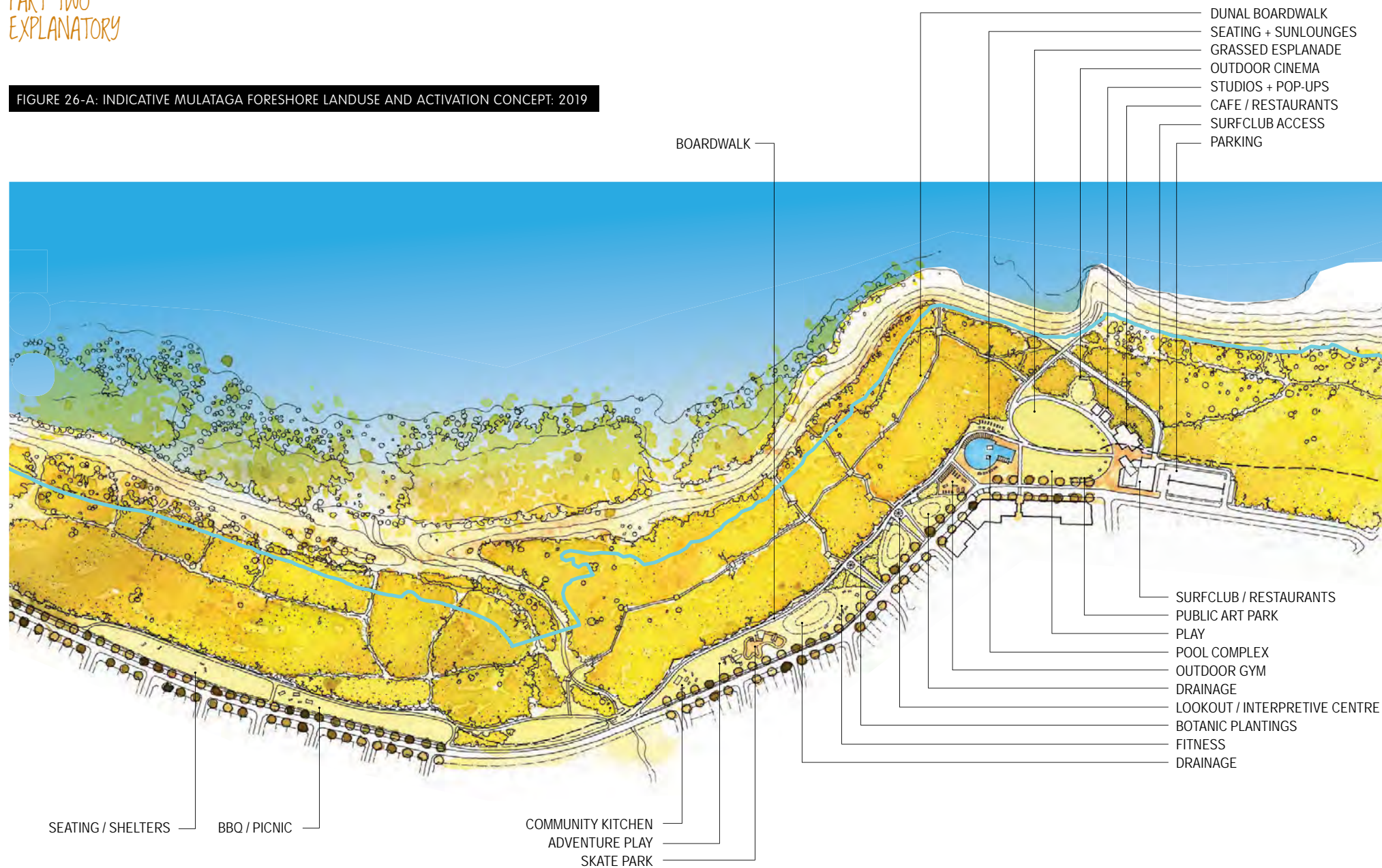


FIGURE 26-A: INDICATIVE MULATAGA FORESHORE LANDUSE AND ACTIVATION CONCEPT: 2019



SOURCE: ROBERTSDAY, 2019

3.3.4 Activity Centres

The Structure Plan provides two key activity centres, the Coastal Node (shown on Plan 1 as 'Commercial' zone) and the Education and Community Node (shown on Plan 1 as 'Public Purpose – Education' reserve). Each of these centres will provide local residents with access to essential services and facilities.

In addition, Mulataga residents will have access to a future Neighbourhood Activity Centre on Millstream Road (outside of the Structure Plan area) to be developed in future urban expansion areas to the east. It is envisaged this Centre will contain a small to medium sized supermarket to service the daily needs of Mulataga residents, but its size is ultimately dependant on broader growth within the district beyond the site. Advice received from Takicts4 (refer Appendix 8) suggests that any centre away from the coast, without the tourism and amenity point of differentiation from the already established centre within the City, would struggle to maintain its viability without a compelling offer or significant population catchment.

FIGURE 27: INDICATIVE AERIAL PERSPECTIVE OF MULATAGA DEVELOPMENT



SOURCE: ROBERTSDAY, 2012

3.3.4.1 Coastal Node

The development of a Coastal Node adjacent to the Mulataga Foreshore was identified in the Karratha City of the North Plan and provides a major opportunity in Karratha's transformation as an attractive and vibrant place to live. The Coastal Node is zoned Commercial under the Structure Plan.

The Coastal Node is located in the north-east sector of the site and will comprise a net site area of approximately 2.4554 ha (gross area is 3.1165 ha for land zoned Commercial). The Coastal Node is planned to accommodate up to 1,500 sqm retail floorspace, ideally in a mixed use built-form arrangement. There may be an opportunity to provide additional community facilities and uses within the Coastal Node, which would help to strengthen and diversify the role of the node.

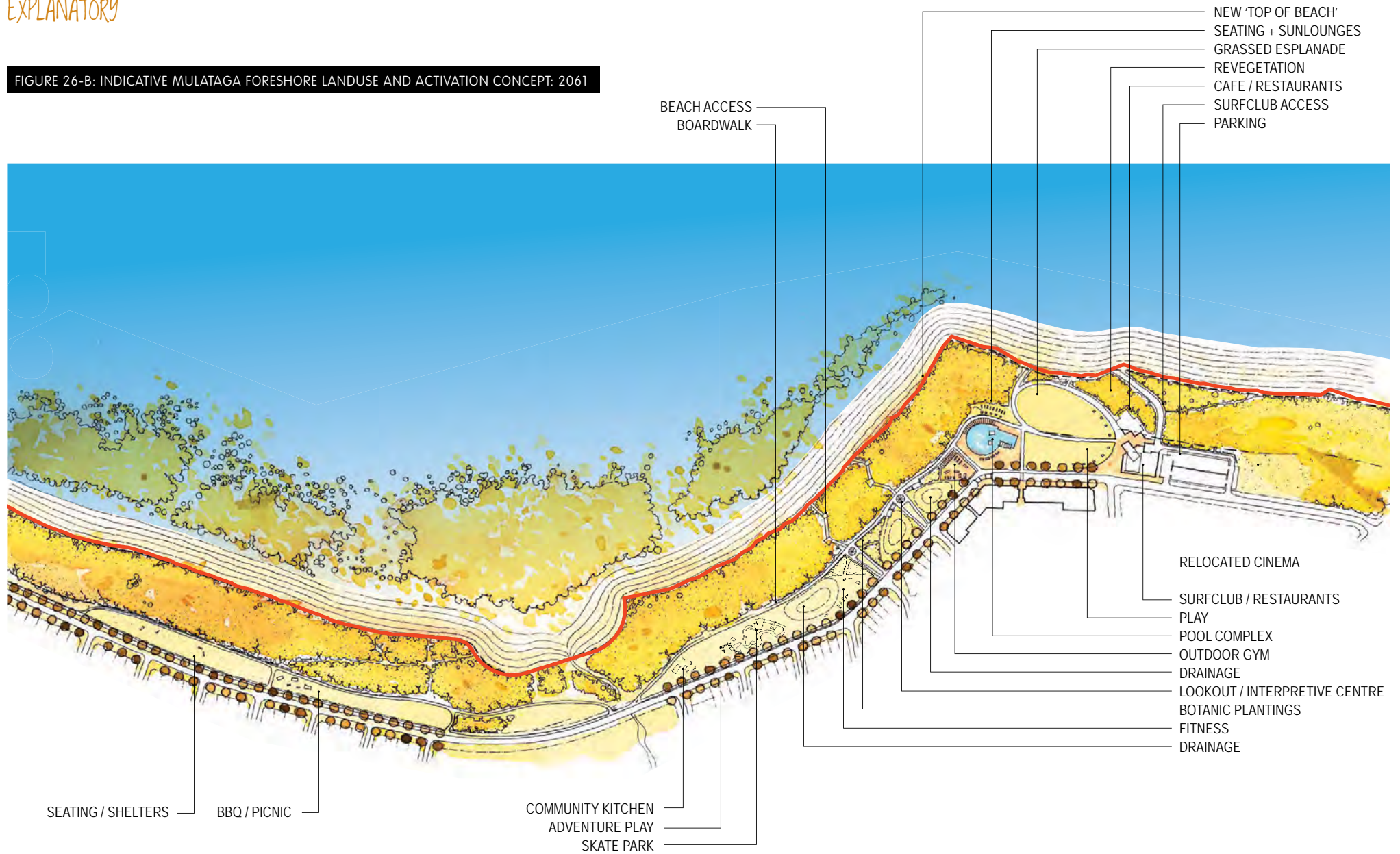
The vision is to develop an iconic place within the Pilbara region for leisure, tourism, retail, entertainment, food and beverage and short-stay accommodation, in conjunction with the development of an iconic food and beverage and/or community facility within the Mulataga Foreshore (subject to future detailed planning, environmental assessment and approvals). The Planning Design Forum facilitated by RobertsDay held in April 2012 elicited strong support for this type of facility.

This location is considered the optimal siting for the Coastal Node on the basis that:

- > The site is relatively central to the wider Mulataga district urban area;
- > The site conditions in the catchment provides the opportunity to develop higher densities around the Centre;
- > The site is elevated and captures magnificent views of the Nickol Bay and Burrup Peninsula through the break in the dunes whilst being afforded some protection from prevailing winds;
- > The site is relatively close to the Back Beach boat ramp which presents future opportunities for connection with the boat ramp should facilities be re-developed or upgraded in the future.

The Coastal Node is highly accessible to the residents of Karratha via a re-aligned Bayview Road, which will create a scenic coastal drive along the northern boundary of the Structure Plan area and a direct connection from the south from future Neighbourhood Centre on Millstream Road.

FIGURE 26-B: INDICATIVE MULATAGA FORESHORE LANDUSE AND ACTIVATION CONCEPT: 2061



SOURCE: ROBERTSDAY, 2019

A Local Development Plan will be required to be prepared for the Coastal Node, to provide detailed development controls for land use, development standards, public realm treatments, etc.

Given Appendix 6 of the Scheme provides for retail floorspace of up to 8,500sqm, it is not considered necessary to prepare a retail sustainability assessment to support the planned 1,500sqm of floorspace at the coastal node. Further precinct planning can coordinate development between the sites zoned for Commercial, and stipulate key design guidance.

Further considerations are detailed in Part 3 - Technical Studies "Community, Social and Economic Recommendations Report" (Creating Communities / Taktic4, September 2012) to ensure that development of the Centre capitalises on the opportunity to transform Karratha:

Iconic Destination: As the most important and transformational opportunity of the Mulataga development, the coastal node will provide the key destination point for people from across the region.

Creating a single trading front: Development should where possible encourage a single trading front where all commercial activity can be accessed and seen from a single point.

Accessibility: The highly transient nature of the labour force and visitors means that access to a new activity away from Karratha Town Centre should be possible without having to extensively 'way find'. The activity should be directly accessible via the continuation of the Bayview Road and directly via an inland route.

Creating a strong sense of arrival: Physical integration of all community and commercial activity is imperative to creating a strong activity node. This can be strengthened with appropriate design elements.

Flexibility: The regional significance of the node will depend in part on the means by which it engages with the coast and its relationship to surrounding activities and land uses. In light of this, flexibility should be literally built into the node, with the creation of robust built form which can easily accommodate growth should it be warranted by demand and popularity.

Main Street: The alignment of the street or the orientation of the shop/café fronts will be crucial to success. Well-directed pedestrian movement will afford the smaller specialty shops exposure and awareness to trade successfully.

Alignment and Orientation of street and shops: The design and location of shops will need to balance the benefits of an attractive vista over the water with the synergy available from

a main street using both sides of the road. With a north-south main street which has an attractive terminating vista, the northern most tenants could be café/restaurant based and still take advantage of the coastal vistas while the street creates a logical and strong sense of arrival.

Planning for the coastal node has occurred in concert with the entire foreshore that abuts the Structure Plan area over a long term (100yr+) planning horizon, considering the progressive impact of coastal erosion over time, under the guidance of the WAPC State Planning Policy 2.6: State Coastal Planning Policy (SPP2.6).

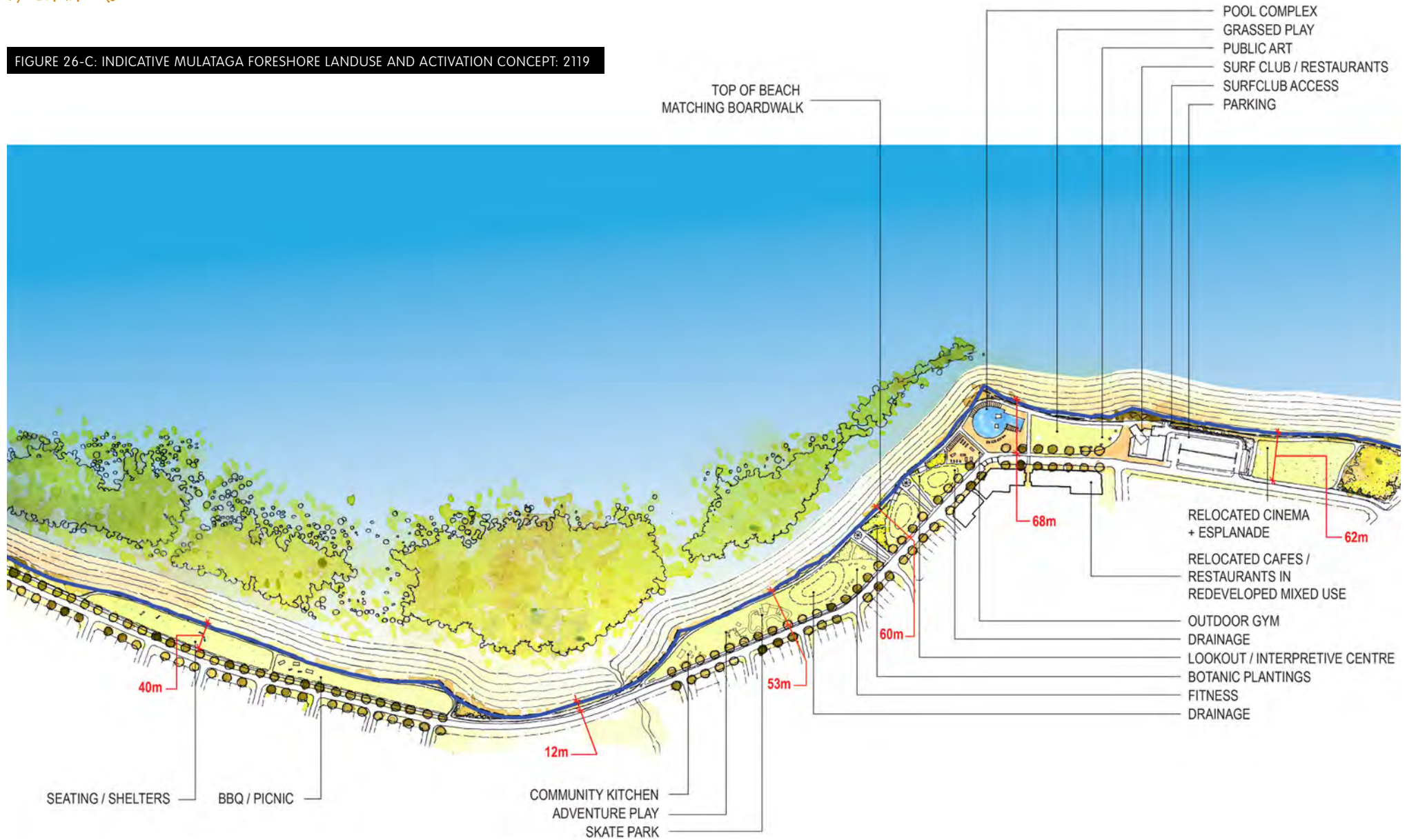
Figures 26-A (2019), 26-B (2061), and 26-C (2119) demonstrate how the coastal foreshore might adapt and evolve over time, including changes to built infrastructure and the natural environment. Refer to the Coastal Hazard Risk Management and Adaptation Plan prepared by MP Rogers & Associates (February 2020) for further information on coastal processes.



FIGURE 28: ARTIST'S IMPRESSION OF COASTAL NODE & FORESHORE

SOURCE: ROBERTSDAY, 2012

FIGURE 26-C: INDICATIVE MULATAGA FORESHORE LANDUSE AND ACTIVATION CONCEPT: 2119



SOURCE: ROBERTSDAY, 2019

FIGURE 29: MULATAGA COASTAL NODE PARK (SCHEMATIC ONLY)



DISTRICT PARK - MULATAGA COASTAL NODE PARK (Schematic Only)



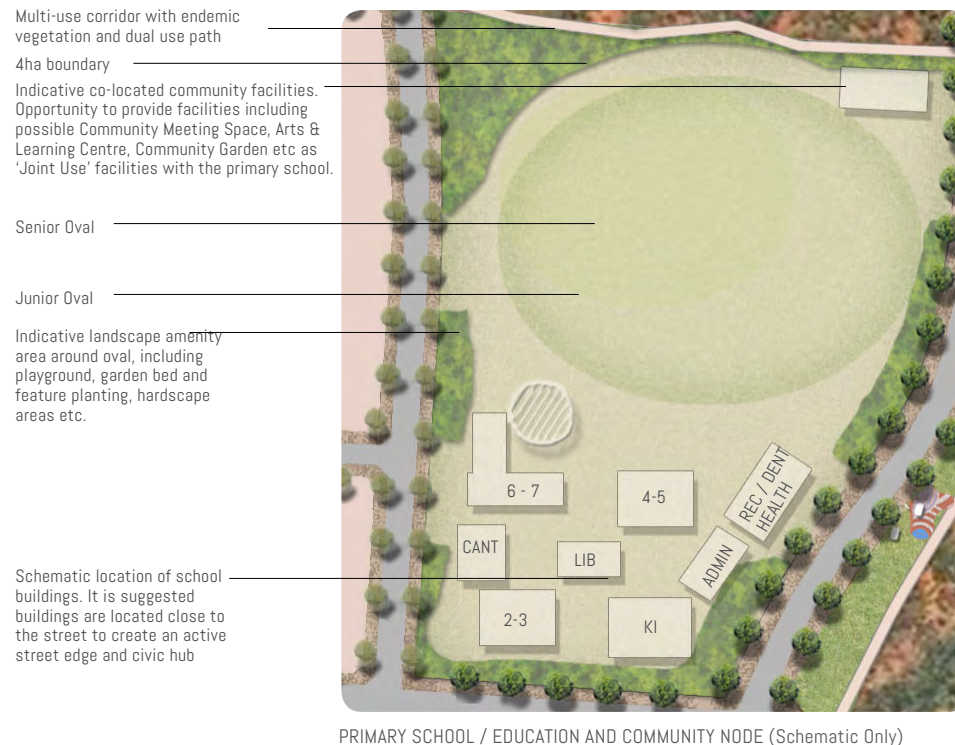
SOURCE: LANDSCAPE STRATEGY - UDLA - MARCH 2020

3.3.4.2 Education and Community Node

The proposed Education and Community Node is located in the western part of the site, at the confluence of the central east-west (transit) road and the Mulataga Creek, and is approximately 4 hectares in size (co-located with POS). At the Planning Design Forum facilitated by RobertsDay in 2012, the then Department of Education, supported a primary school at the proposed location as it is easily accessible through the extensive road and path network and will also be able to cater for children from the east part of the neighbouring Bulgarra development.

It is envisaged that a primary school at this location will be co-located in this node with a senior and junior playing oval, community facilities and potentially other community services (i.e. health and child care, etc.)

FIGURE 30: INDICATIVE LAYOUT - EDUCATION & COMMUNITY NODE



Please note; the Plan of the Primary School / Education and Community Node is schematic only. This will be subject to further consultation and approvals with appropriate authorities including the Department of Education and the Shire of Roebourne. This area will required a Detailed Area Plan in accordance with the Part 1 Statutory Provisions.

Plan
1:2000 at A4

SOURCE: LANDSCAPE STRATEGY - UDLA - MARCH 2020

3.4 Water Management And Infrastructure

3.4.1 Drainage Design and Infrastructure

Extensive work has been carried out by JDA Consulting Hydrologists and Cossill and Webley Consulting Engineers to inform the Structure Plan and prepare a Local Water Management Strategy and preliminary earthwork model – refer to Part 3 Technical Studies.

The Local Water Management Strategy sets out the broad framework for managing stormwater drainage which will be delivered through detailed Urban Water Management Plans at subdivision stage. The key water management strategies are:

- Consistent with the DWER's Floodplain Management Policy and the City of Karratha's Stormwater Design Guidelines restrict development within the Mulataga Creek floodplain where possible and provide finished lot levels a minimum 0.5 metres above the estimated 1% AEP flood level. The Mulataga Creek is well incised in the landscape at depths of up to 3 metres. Flood mapping of the 100 year ARI indicates the majority of the flow and flood extent is contained within the existing channel.
- Due to the large rainfall intensity and volumes experienced in the North West Region of WA, conveyance of stormwater is via overland flow paths and open drainage systems, rather than underground pipe systems. The stormwater management system will consist of the network of roads and shallow drainage swales with the aim of safely conveying stormwater to Mulataga Creek, and to integrate the network into the POS where possible.
- The stormwater drainage system will be designed using the arrangement of roads, drainage swales and open space areas planned to provide safe passage of stormwater runoff from extreme events. This will occur at detailed design stage, through the subdivision design process and associated modelling.

3.5 Staging

It is anticipated that Mulataga will be developed in stages, the duration of which will be dependent on the demand for residential land in Karratha and the extension of utility infrastructure and services to facilitate development.

The first stages of development will likely be in the south-west portion of the site, with access off Maitland Road and adjacent to the existing Bulgarra area. This location utilises existing utility infrastructure and existing roads and as such, provides the best opportunity to get land onto the market quickly to meet critical demand for housing.

The development of the proposed Coastal Node area (Commercial area in north-west) is encouraged to be developed as early as practicable, to assist in establishing neighbourhood identity and attractiveness. Additional costs associated with servicing extensions are anticipated. The proponent is encouraged to negotiate delivery timing of the coastal node with the City of Karratha.





PART THREE TECHNICAL STUDIES



DevelopmentWA



RobertsDay
planning.design.place

APPENDIX 1

ENVIRONMENTAL ASSESSMENT REPORT

(RPS GROUP, 2020)

APPENDIX 2

MULATAGA STRUCTURE PLAN

LANDSCAPE STRATEGY

(UDLA, 2020)

APPENDIX 3

FORESHORE COASTAL HAZARD
RISK MANAGEMENT + ADAPTION PLAN

(MP ROGERS & ASSOCIATES, 2020)

APPENDIX 4 LOCAL WATER MANAGEMENT STRATEGY (JDA, 2019)

APPENDIX 5

BUSHFIRE MANAGEMENT PLAN

(STRATEGEN, 2019)

APPENDIX 6

MULATAGA STRUCTURE PLAN
REVISED TRANSPORT IMPACT ASSESSMENT
(TRANSCORE, 2020)

APPENDIX 7

MULATAGA DEVELOPMENT PLAN ENGINEERING SERVICING REPORT

(COSSILL AND WEBLEY, 2020)

APPENDIX 8
MULATAGA DEVELOPMENT
COMMUNITY, SOCIAL + ECONOMIC
PLANNING RECOMMENDATIONS
(CREATING COMMUNITIES, 2012)

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