Queensland Government
Department of Aboriginal and Torres Strait Islander Partnerships

MASTER PLAN

# PORUMA (COCONUT) ISLAND

DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER PARTNERSHIPS

AECOM

## CLIENT

Department of Aboriginal and
Torres Strait Islander Partnerships

Queensland Government Department of Aboriginal and Torres Strait Islander Partnerships

In partnership with -
Torres Strait Island Regional Council

## PREPARED BY

AECOM

AECOM Australia Pty Ltd
Level 8, 540 Wickham Street, PO Box 1307,
Fortitude Valley QLD 4006, Australia
T +61 7 3553 2000 F +61 7 3553 2050
Www.aecom.com
ABN 20 093 846 925

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| Prepared by | Brian Gibbs, Bronwyn van Gool, Sophie Gadaloff |
| Reviewed by | Dr Mike Gillen & James Jentz |

## REVISION HISTORY

| Rev | Revision Date | Details | Authorised Name/Position | Signature |
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| 1 | 20-May-2020 | Working draft for information purposes | Brian Gibbs - Project Manager | Original signed |
| 2 | 12-Jun-2020 | Final Draft for Review | Brian Gibbs - Project Manager | Original signed |
| 3 | 18-Jun-2020 | Final | Brian Gibbs - Project Manager |  |

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# 01 INTRODUCTION

## PROJECT BACKGROUND

The availability and cost of community residential housing in remote indigenous communities is affected by a range of factors including availability of residential land, unmet demand for housing and cost of building, limited housing choice options, and tenure restrictions on land. Housing is also periodically required for Government agencies, Councils and NGOs.

Industrial activity is one of the key pillars of employment in all communities. Councils recognise the need to provide diversity in local employment opportunities, and as such encourage growth by having suitable sites available for use by small business.

The right combination of housing choice and employment opportunity is a key ingredient in the achievement of successful and vibrant communities with a diversified economy.  A practical, long term plan for the delivery of new housing, industry and other employment generating land use is intended to provide a clear indication of future growth and development within the community.

In consultation with the Remote Indigenous Land and Infrastructure Program Office (RILIPO), within the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP), Torres Strait Island Regional Council (TSIRC) have identified the need to prepare a Future Residential and Industrial Land Use Master Plan for Poruma Island in line with their Town Planning Scheme.

## REPORT PURPOSE

The document encompasses the aspirations and hopes for Poruma Island and as such should be reviewed on an annual basis allowing for the update and addition of new priorities. Information in support of the community's growth should be added as annexures to this document allowing for a central repository of knowledge.

This report contains an overview of investigations and stakeholder consultation undertaken in the Poruma Island community. It seeks to provide Council and DATSIP with a readily accessible and easily interpreted summary of the preferred master plan option, associated infrastructure requirements and implementation strategy.

It should be noted that the preferred option (Figure 1) and implementation strategy do not represent a funding commitment. It is intended that this report will be utilised by the Torres Shire Regional Council as an evidence base to support future applications for a range of potential funding and/or grants. It is also a document which can be used to guide future investment and growth decisions with a clear understanding of the positive outcomes that can be leveraged for the community.

Future development should reflect planning scheme assessment benchmarks and consider the following design approaches:

- Disaster Resilience - Resilient Queensland 2018-2021
- Crime Prevention through Environmental Design (CPTED) - designing the built environment to create safer neighbourhoods by increasing the perceived likelihood of detection and apprehension
- Healthy by Design - practical guidance in designing walkable and ultimately more liveable communities
- Water Sensitive Urban Design (WSUD) - land planning and engineering approach which integrates the urban water cycle into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.
- Climate Change - carbon neutrality, carbon reduction, carbon farming, water security and energy efficiency.

# 02 COMMUNITY OVERVIEW


## LOCATION

Poruma Island is a remote indigenous community located 100 km off the northern tip of Queensland, within the Torres Strait. The closest township to Poruma Island is Iama Island, located 38 km north west. Poruma is a narrow coral island and is bound by shallow, fringing coral reefs. The closest major city is Cairns, approximately 815 km to the south.

Poruma Island is approximately 0.3 km² in size and forms part of the Torres Strait Island Regional Council (TSIRC) Local Government Area (LGA).

## COMMUNITY AND GOVERNANCE

Poruma Island (in local language) is otherwise known as Coconut Island, is located 130 km north east of Thursday Island. Poruma Island is a coral cay island in the Central Island Cluster Group.

A pearling station was established on Poruma in the 1870s and a semi-permanent floating bêche-de-mer station was established near the island around 1872. Encouraged by London Missionary Society Reverend Walker, the island community purchased their own pearling boats around 1905 providing income, a sense of community pride and improved transportation.

The community formed an autonomous council in 1985, which governed the island until 2007.

The main language spoken on Poruma is the original dialect of Kala Kawa Ya. Torres Strait Creole and English are also spoken.

## LAND USE CATEGORIES

Development of the Master Plan has been undertaken using a number of land use categories. This page provides a summary of each land use type.

### RESIDENTIAL

Residential land uses primarily relate to the provision of traditional detached housing. This aside, residential land may support a range of dwelling types including detached houses, duplexes and units. Residential land use is often co-located with open space which provides residents easy access to passive and active recreation.

### TOURISM

Tourism land uses are focussed on providing goods, facilities, services and entertainment for tourists. This may include caravan parks, camp grounds, short term accommodation, visitor centres or businesses operating tours.

### COMMUNITY FACILITIES

Community facilities land accommodates a broad range of activities which relate to core public or community services. Community facilities include uses for health services, education, arts and culture, religion, community support and utility infrastructure (e.g. water and sewage treatment, waste management).


### OPEN SPACE

Open space land uses support a range of informal and formal recreation activities. Informal recreation means the use of open space for activities such as bush walking, cycling, picnics and playgrounds. Formal recreation means the land includes facilities for specific sporting activities (e.g. football, tennis, netball).

### COMMERCIAL

Commercial land uses typically involve business activities which may include the sale of goods (e.g. shops, restaurants) or provision of services (e.g. offices). Commercial activity may be a component of a broader industrial land use.

### INDUSTRIAL

Industrial land uses generally involve the manufacturing, processing, treatment or repair of goods. Industrial uses are generally categorised based on their level of impact based on noise, air and odour emissions. Examples of industrial land uses include manufacturing plants, processing plants, workshops and warehouses. Certain industrial uses may also have components of, or similarities to, commercial land uses.


## LAND USE, FACILITIES AND SERVICES

The Poruma township area is approximately 15 hectares in size, located on the western side of the island. Houses are clustered towards the western foreshore, and industrial uses surround the airport.

The housing stock on the island is a mix of single and two-storey detached houses. Key land uses and features within the township area include:

- Regional Council Office
- Council workshop / compound
- Airport (including helipad)
- Barge ramp with small pier
- SES shed
- Ergon power station
- Water plant reservoirs / filtration collection wells
- Health Centre with permanent nurse
- Cemetery
- Two grocery stores
- Seafood (Crayfish) factory
- State school (Pre-prep to Grade 6)
- Sporting facilities - multi-purpose outdoor court, sports oval
- Motel
- Cultural Village
- Church

## TENURE

TSIRC is currently the Trustee for all land on Poruma Island which is Deed of Grant in Trust (DOGIT) tenure. Poruma Island, along with Hammond Island and St Pauls Community on Moa Island have been participating in a Queensland Government freehold pilot project since 2015.

There is an active native title claim over the entire island, QUD362/2010 / QC2010/003 – Kaurareg People #3, which has not yet been concluded.

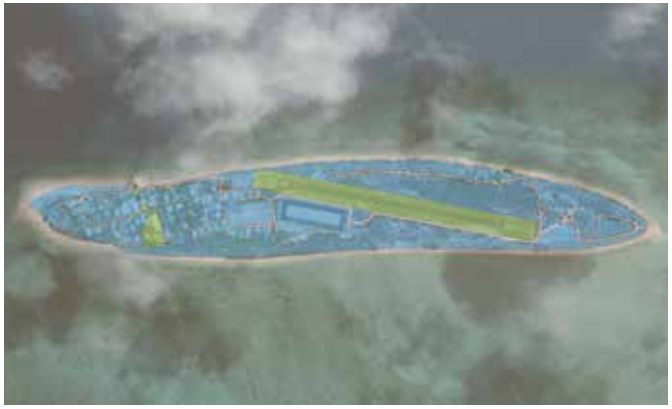


**FIGURE 1:** PORUMA ISLAND LAND TENURE

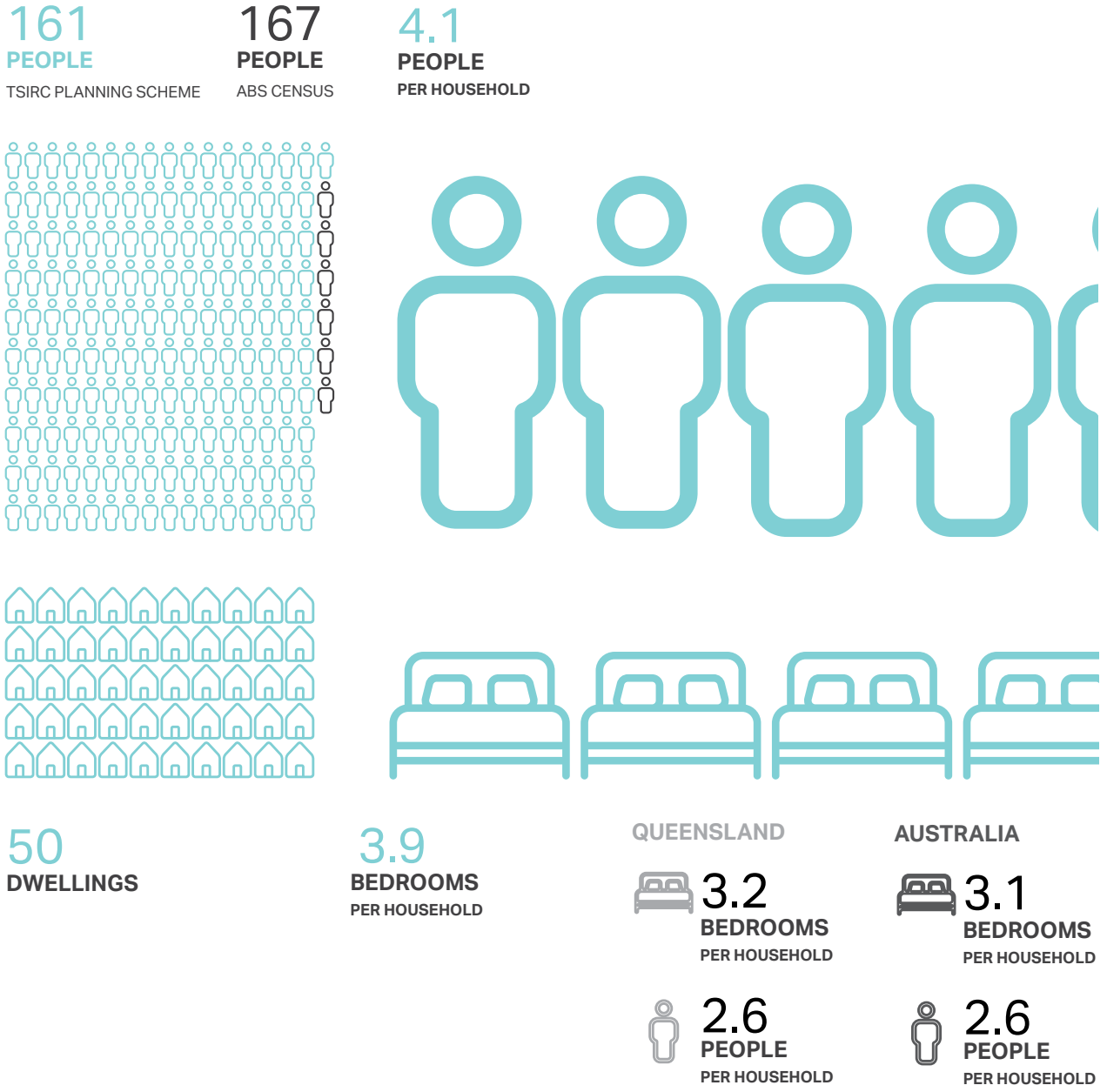

**FIGURE 2:** PORUMA ISLAND TOWNSHIP LAND TENURE

## DEMOGRAPHICS

An overview of key population and housing characteristics for Poruma Island has been derived from the following published sources:

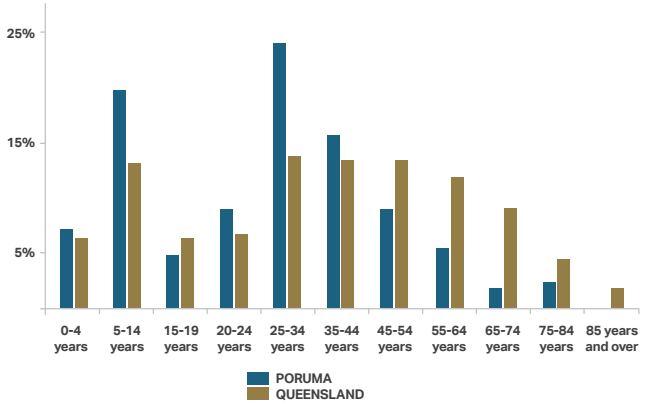
- Australian Bureau of Statistics – 2016 Census of Population and Housing data products (Poruma (Coconut) Island (L) (SCC32379) 0.3km2):
  - General Community Profile (Catalogue number 2001.0) (ABS 2016a)
  - Quickstats webpage (ABS 2016b)
- Australian Bureau of Statistics – 2016 Census of Population and Housing data products (Poruma (Coconut) Island (L) (SCC32379) 0.3km2):
  - Aboriginal and Torres Strait Islander Peoples Profile (Catalogue number 2002.0) (ABS 2016c)
- TSIRC Planning Scheme 2016 - Local Government Infrastructure Plan - Poruma Island.

The 2016 Census data products provide the most recent overview of existing population and housing statistics. Earlier custom projections, published within the TSIRC Planning Scheme, specific to Poruma Island, have therefore been utilised to characterise long term population trends within the community.



## POPULATION

The 2016 Census recorded the population within Poruma Island to be 167 persons. Graph 1 provides a summary of the total population and age structure for the 2016 census compared to 2041 population forecasts. It is evident that a large proportion of the population is aged below 14 years. The population profile indicates a lower representation of the 15-19 age group compared to the proportion of the population aged under 14 years. This is likely attributed to high school age students travelling outside the community to attend boarding school.




**GRAPH 1:** POPULATION COUNT AND AGE STRUCTURE
2016 CENSUS - PORUMA & QUEENSLAND

| SOURCE | 2011 | 2016 | 2021 | 2026 | 2031 | 2036 |
|---|---|---|---|---|---|---|
| **ABS Census** | 149 | 167 | - | - | - | - |
| **TSIRC Planning Scheme*** | 160 | 161 | 161 | 162 | 163 | 163 |

**QGSO provided TSIRC customised population projections, derived from the Queensland Government population projections, 2013 edition.*

*Source: (ABS 2016a) (ABS 2016d) (Torres Strait Island Regional Council 2016)*

**TABLE 1:** COMPARISON OF PROJECTION RECORDS OVER TIME

Table 1 benchmarks the 2016 ABS Census data against previous population projections prepared by the Queensland Government Statistician's Office for the Torres Strait Island Regional Council. It is evident that projections for 2016 were not consistent with the recorded census total.

The TSIRC projections forecast a population increase between 2011-16 of 0.6%, while Census recorded a 12% growth. Based on Queensland Government population projections for the TSIRC local government area, the Poruma population will increase by 6.77% to 179 people by 2036.

The 2036 - 2041 population forecasts drawn from Queensland Government population statistics shows the population aged over 45 years of age increases by 75%, impacting future development requirements.

Aging populations drive demand for increased health care services to address more complex healthcare issues. Increases in community services and aged care facilities are also required to support an aging community. In particular, Graph 1 shows the increase the over 65 year age group which will require mobility accessible single storey or low set residential housing.

## HOUSING

Based on the 2016 Census, there were a total of 63 occupied and 7 unoccupied dwellings on Poruma Island. Table 3 provides a summary of key housing statistics.

| ITEM | DETAIL |
|---|---|
| **DWELLING COUNT** | |
| Occupied | 49 |
| Unoccupied | 3 |
| **Total** | **50** |
| **NUMBER OF BEDROOMS** | |
| 1 bedroom | 0 |
| 2 bedrooms | 4 |
| 3 bedrooms | 26 |
| 4 or more bedrooms | 21 |
| Number of bedrooms not stated | 0 |
| Average number of bedrooms per dwelling | 3.9 |
| **TENURE** | |
| Rented | 48 |
| Other | 0 |
| Not stated | 0 |

**QGSO provided TSIRC customised population projections, derived from the Queensland Government population projections, 2013 edition.*

**Please note that there are small random adjustments made to ABS data values to protect the confidentiality of data. These adjustments may cause the sum of rows or columns to differ by small amounts from table totals.*

*Source: (ABS 2016a) (ABS 2016b) (Torres Strait Island Regional Council 2016)*

**TABLE 2:** HOUSING CHARACTERISTICS PORUMA ISLAND

# 03 INFRASTRUCTURE REVIEW

The following sections provide an overview of existing infrastructure on Poruma. Refer to Appendix B for further details.

## WATER

Water on Poruma is sourced from two sources, rainwater and saline groundwater extracted from two bores and treated by a reverse osmosis desalination unit. The rain water and water treated by the desalination unit is stored in a 12 ML lined and covered storage lagoon. The rainwater is collected from the covered area of the storage lagoon. Water from the lagoon is treated via media filtration and chlorination at the treatment plant located adjacent to the lagoon. After treatment, water is pumped to the 100 kL steel panel tank located adjacent to the treatment plant. Potable water is delivered to the community from the ground level reservoir via pressurised underground mains. All facilities are connected to the mains via branch lines and all facilities are individually metered.

The main source of water comes from the water collected on the covered area of the storage lagoons. The catchment area of lagoons is 13,000 m². Based on an average rainfall of 1,500mm/year, the average yield of the rainwater supply is around 19.5ML per annum.

An average day demand of 370 L/EP/day was reported for Poruma in the TSIRC Sustainable Water & Wastewater Management Plan and was adopted for this master plan. Table 3 outlines existing water supply demands.

| DESCRIPTION | AVERAGE DAY (AD) (L/S) | PEAK DAY (PD) (L/S) | PEAK HOUR (PH) (L/S) |
|---|---|---|---|
| **Res.** | 0.715 | 1.609 | 3.218 |
| **Non-Res.** | 0.158 | 0.351 | 1.496 |
| **TOTAL** | **0.874** | **1.960** | **4.715** |

**TABLE 3:** DESIGN FLOW RATES - EXISTING DEMANDS

## SEWERAGE

Poruma has a sewerage reticulation network and treatment plant which was constructed in 2013. The sewerage scheme comprises 2,158m of gravity sewer, 73 manholes, 2 pump stations, high level and emergency overflows, ocean outfall, and a packaged sewerage treatment plant located to the east of the Airport runway.

An Average Dry Weather Flow (ADWF) of 270 L/EP/day was adopted for Poruma based on value used in the design of the plant. The existing wastewater flows for Poruma shown in Table 4.

| DESCRIPTION | ADWF (L/S) | PWWF (L/S) |
|---|---|---|
| **Res.** | 0.522 | 2.609 |
| **Non-Res.** | 0.111 | 0.547 |
| **TOTAL** | **0.633** | **3.157** |

**TABLE 4 :** WASTEWATER FLOWS = EXISTING


**FIGURE 3:** WATER AND SEWER INFRASTRUCTURE - EXISTING

## ROADS

The majority of the main internal roads on Poruma are paved with concrete pavers. Some low volume roads are constructed from sandy soils at varying widths and are unsealed. There are no defined stormwater drainage systems on the island apart from minor culvert and above ground crossing of some roads. The main road connecting the airstrip to the Poruma community is a main thoroughfare and is paved with concrete pavers for durability. The barge area is also sealed as it supports a large amount of traffic being the primary access point for goods to the island from the ferry service.

## ELECTRICITY

Electricity is supplied to Poruma via overhead lines from a central power station located next to the lagoon and water treatment plant. The generation, distribution and supply of electricity is undertaken by Ergon Energy on behalf of the State government. Electricity is generated through multiple diesel generator sets (gensets).

## COMMUNICATIONS

Poruma has limited mobile phone reception. There is a telecommunications manhole located to the south of the barge ramp and telecommunication lines extend along the main road.

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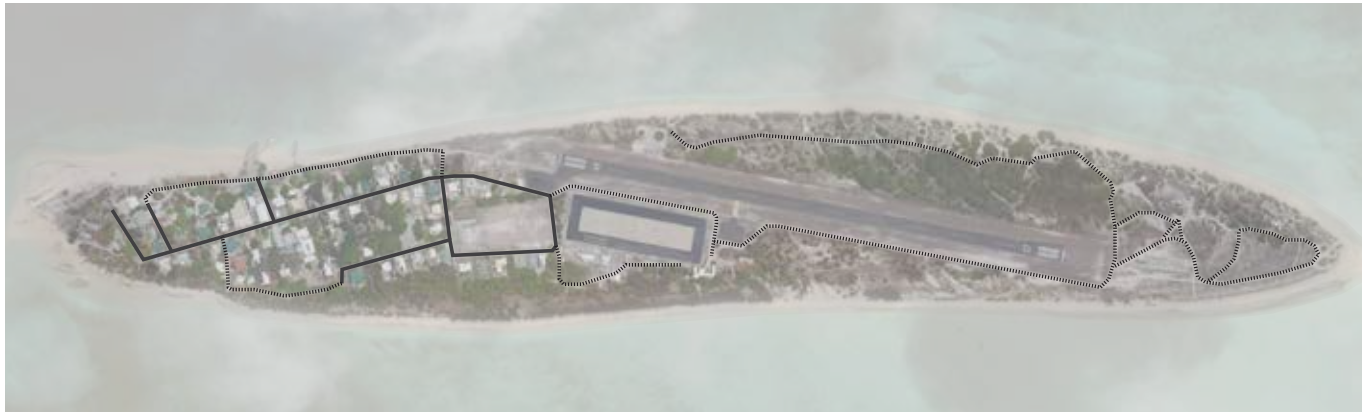



**FIGURE 4:** ROAD INFRASTRUCTURE - EXISTING


**FIGURE 5:** ELECTRICITY AND COMMUNICATIONS INFRASTRUCTURE - EXISTING

# 04 METHODOLOGY

The process to develop the master plan sought to balance community goals and aspirations with key social, economic and environmental factors. The intention was to produce a comprehensive framework for the growth and development of Poruma Island.

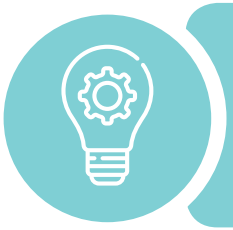
The adjacent infographic depicts the five stages of the master planning process undertaken for Poruma Island.

**Stage 1 - Planning Context**

Analysis of the current State and local planning framework, supporting the development of opportunities and constraints for future land uses and development.

**Stage 2 - Workshop**

A master planning workshop was held on Poruma on November 2019 with participants from Council, DATSIP and AECOM. The workshop aimed to establish aspirations for future development in the community and inform the development of the Concept Plan.



**Stage 3 - Concept Plan**

Based on the opportunities and constraints identified during the planning analysis and workshop, a concept plan identifying future land use patterns and opportunities was prepared for consultation.

**Stage 4 - Consultation**

The Concept Plan was provided to Council for community consultation, where community members were invited to provide feedback on the settlement pattern and land uses proposed.

**Stage 5 - Final Master Plan**

Through community consultation the concept plan was refined into the Final Master Plan. The Master Plan aims to guide the future growth and development of Poruma.

# 05 PLANNING REVIEW

## OVERVIEW

This chapter provides an overview of the following policies, plans and legislation which are relevant to the Poruma Master Plan:

- State
  - Queensland State Planning Policy 2017
  - *Vegetation Management Act 1999*
  - *Nature Conservation Act 1992*
- Regional
  - Torres Strait and Northern Peninsula Area Regional Plan 2009 - 2029
- Local
  - Zenadth Kes Planning Scheme 2016

## STATE PLANNING POLICY

The State Planning Policy (SPP) identifies State interests that must be reflected in all new Queensland Planning Schemes, ensuring that these interests are represented in development and land use decisions across Queensland. The State interests are grouped under five key themes:

- Liveable communities and housing
- Economic growth
- Environmental heritage
- Safety and resilience to hazards
- Infrastructure

At its time of preparation, the Zenadth Kes Planning Scheme appropriately integrated the State Planning Policy. Any future amendments to the planning scheme to align with this master plan would need to consider the current SPP.

## VEGETATION MANAGEMENT ACT 1999

A small patch of vegetation to the north east of the airstrip is mapped as Category B Regulated Vegetation which is regulated under the *Vegetation Management Act 1999*. The existing township and balance of the island are within the Category X area. Clearing of vegetation within a Category X area does not require approval under the *Vegetation Management Act 1999.*

The area of land mapped Category B Regulated Vegetation is contains Of Concern Regional Ecosystems. Appendix C contains a copy of regional ecosystem mapping for the township and surrounding area. Clearing vegetation in these areas would generally not be supported unless the land is located within an urban zone.

## NATURE CONSERVATION ACT 1992

The protected plants flora survey trigger map identifies high risk areas under the *Nature Conservation Act 1992* which are likely to contain endangered, vulnerable or near threatened flora species. A flora survey is required prior to any vegetation clearing in mapped high risk areas.

The island is not located within a high risk area.

Appendix C contains a copy of the flora survey trigger map for Poruma.

## TORRES STRAIT AND NORTHERN PENINSULA REGIONAL PLAN

Poruma is within the Torres Strait region, and is subject to the Torres Strait and Northern Peninsula Regional Plan (the Regional Plan) 2009-2029. The plan provides direction for land use and development with a planning horizon of 2029. The plan aims to identify the opportunities and challenges for each of the Council areas within the Region and support the implementation of the local Planning Scheme.

The opportunities available to Poruma include :

- Sustainable industries (marine based, Indigenous cultural tourism, arts and crafts, construction)
- Enhancing the liveability of the township to increase retention of families
- Localised energy generation through alternative and renewable technologies
- Improving the security and reliability of community water supplies
- Regionally significant projects providing social infrastructure supporting resident and non-resident populations

The challenges impacting the Poruma within the regional plan include:

- Preparing and implementing a community plans and planning scheme
- High cost of living due to population size, reliance on imports and distance to markets
- Maintaining a viable community population due to lack of opportunity and education
- Absence of secure individual title
- Significant and complex transportation requirements due to remote region and island form
- Job creation
- Addressing disadvantage
- Remoteness and limited infrastructure
- Climatic conditions and seasonal water availability

## PLANNING SCHEME

Poruma Island is a community within the TSIRC Local Government Area (LGA), with development subject to the provisions stipulated in the Zenadth Kes Planning Scheme 2016. The scheme, adopted in July 2016, was prepared in accordance with the Queensland Planning Provisions (QPP) version 4.0 dated January 2016. The State Planning Policy (SPP) was updated in July 2017, and State interests are not integrated in the current planning scheme. The SPP applies to the extent of any inconsistency.

The preferred land use pattern for Poruma Island Township and surrounding areas is expressed in the Local Government Infrastructure Plan map, contained within the Poruma Island Local Plan. The zone map for Poruma Island consists of two zones:

- Poruma Island township is centred along William Street.
- The township encompasses all commercial, government, industry and residential uses on Poruma Island.

A Township Expansion Precinct has been identified south east of the airstrip. This area may be suitable for urban development use.


**FIGURE 6:** PLANNING SCHEME ZONE MAP

## LOCAL AREA PLAN

The Planning Scheme includes a range of Local Area Plan maps which highlight particular environmental and physical matters which may affect development (similar to traditional overlays). These include:

- Gogobithiay (land, sea and sky) – waterways and areas of environmental values (high, moderate, low)
- Natural Hazards

  / Landslide and acid sulphate soils

  / Coastal

It is important to note that certain mapped features may trigger procedural and/or design requirements for development whereas other relate to physical constraints.

Key characteristics for each of these elements include:

- Environmental value – Most of the island including the existing township is identified as low environmental value. The coastlines of Poruma are classified as moderate to high environmental value, with potential re-vegetation areas identified on the north and north-eastern foreshores.
- Landslide – a ridgeline along the southern foreshore is identified as a landslide hazard area.
- Potential Acid Sulfate Soils – the township is wholly located on land below 5m AHD. A ridgeline along the southern foreshore is above 5m and below 20m AHD.
- Coastal – the Storm Tide Inundation Area is identified along the coastline of the island, and most of the eastern point.

For the purposes of master planning, the flooding and coastal hazards represent a physical constraint to future development. Figure 7 overlays these elements to indicate areas of town which are constrained.

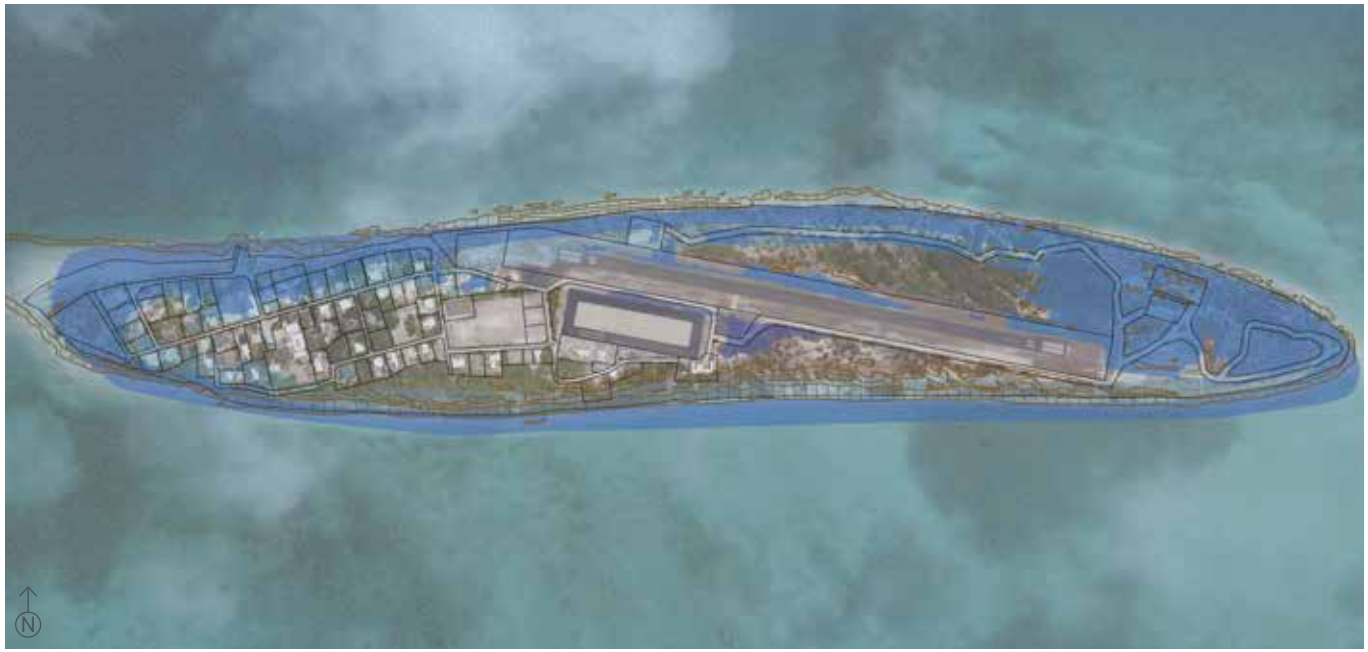



**FIGURE 7:** PLANNING SCHEME OVERLAYS - FLOOD AND COASTAL HAZARDS

# 06 CLIMATE CHANGE AND RESILIENCE

## CLIMATE CHANGE & PLANNING

Climate change is now a key consideration when undertaking community planning, with climate adaptation strategies common place for Queensland communities. The increased risk of natural hazards including bush fires, drought, flood and changed precipitation patterns needs consideration when planning for the future vitality and safety of Queensland communities.

The Queensland Government has developed two key strategies that identify the risks that climate change poses to Queensland communities including:

- Queensland Climate Transition Strategy
- Resilient Queensland 2018-2021.

### Queensland Climate Transition Strategy

The Queensland Climate Transition Strategy identifies the Queensland Government's commitment to addressing and mitigating climate change risks for Queensland. The strategy outlines three climate change commitments as follows:

- 50% renewable energy for Queensland by 2030
- Zero net emissions by 2050
- Interim emissions reduction target of 30% below 2005 levels by 2030.

The actions associated with achieving each of the commitments above are categorised into three pathways as shown in Figure 9. Pathway 3 has bearing on the master planning process for Poruma Island. Achieving the Strategy's goals at a regional community level hinges on empowering local governments to enact the actions outlined in Figure 10.

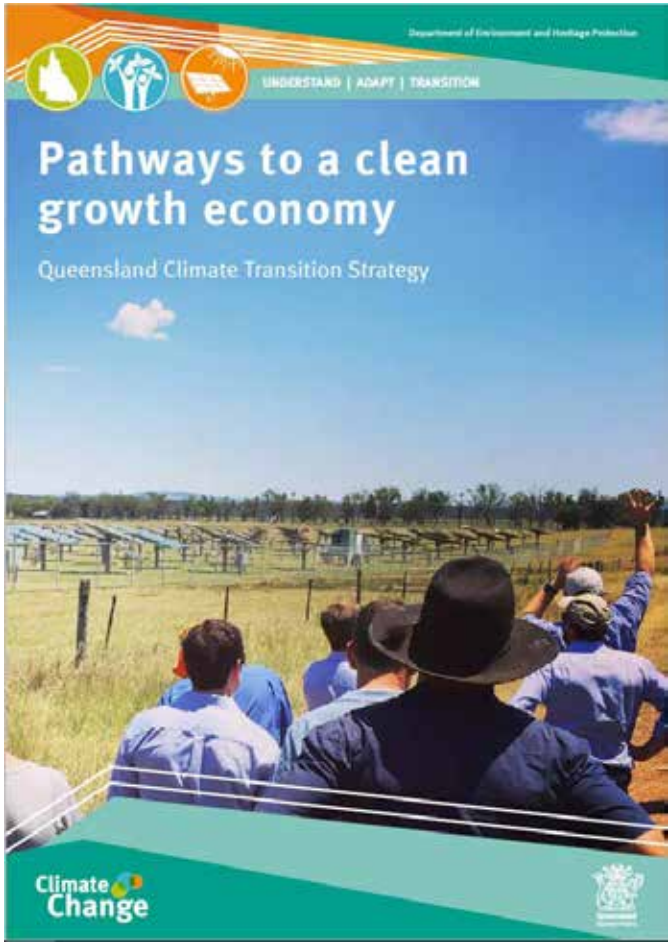



**FIGURE 8:** QUEENSLAND CLIMATE TRANSITION STRATEGY


**FIGURE 9:** QUEENSLAND CLIMATE TRANSITION STRATEGY - PATHWAYS

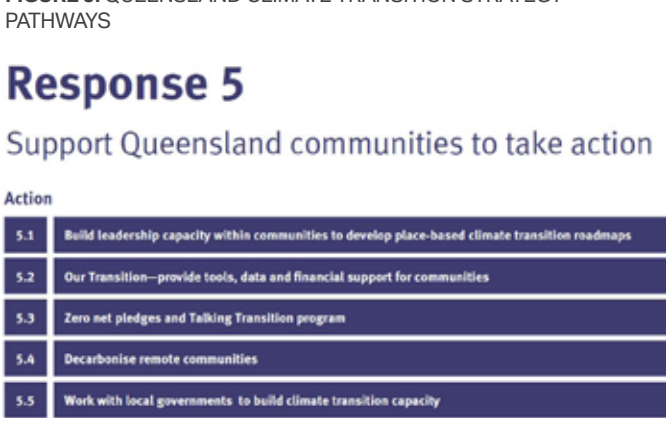



**FIGURE 10:** QUEENSLAND CLIMATE TRANSITION STRATEGY - PATHWAY 3, RESPONSE 5 ACTIONS

**Resilient Queensland 2018-21**

The Queensland Strategy for Disaster Resilience 2017, originally developed in 2014, was updated in 2017 to reflect international best practice on climate change risk and delivering a comprehensive, all-hazards approach to mitigating risk and building disaster resilience in Queensland. The strategy provides an overarching framework to achieve its four key objectives:

- Queenslander understand their disaster risk
- Strengthened disaster risk management
- Queenslander are invested in disaster risk reduction
- There is a continuous improvement in disaster preparedness, response and recovery.

The aim of the strategy is to build Queensland's disaster resilience through a collaborative whole of government approach to disaster resilience that is regionally coordinated, locally led and supported by state resources.

Resilient Queensland 2018-21 provides a set of actions aligned with the Queensland Strategy for Disaster Resilience 2017. The actions relevant to local governments include:

- Contribute to the development of local and regional resilience and recovery plans
- Talk to the Queensland Government about developing a community resilience assessment and a prioritised action plan.

The full set of actions associated with the strategy should be reviewed when considering implementation of this master plan. The strategy is included in Appendix D.

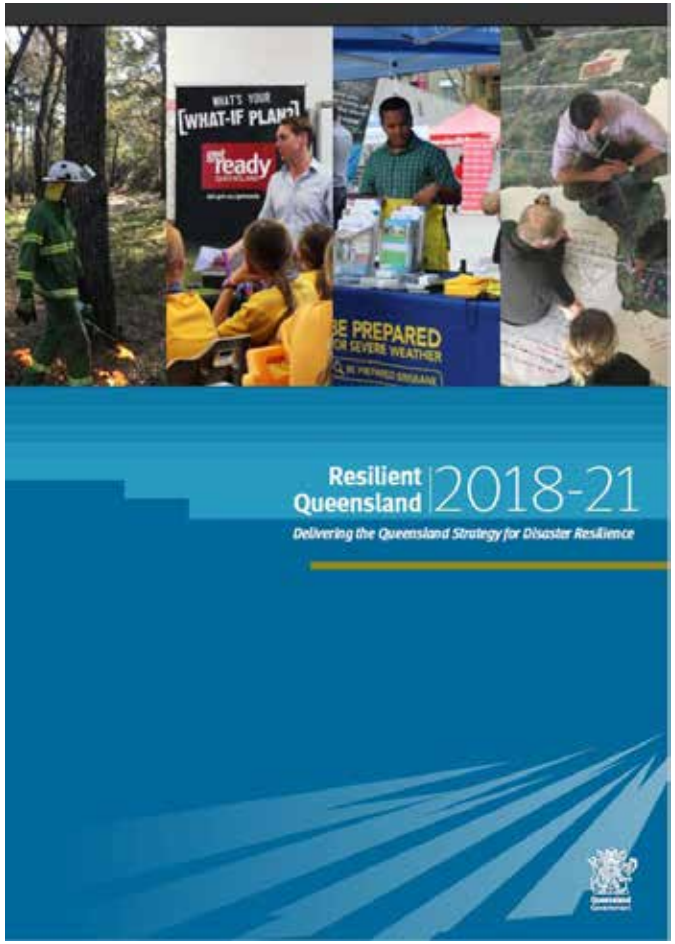



**FIGURE 11:** RESILIENT QUEENSLAND 2018-21 DRIVERS FOR DISASTER RESILIENCE

*Source: Queensland Government, 2018. Resilient Queensland 2018-21 Delivering the Queensland Strategy for Disaster Resilience*


**FIGURE 12:** RESILIENT QUEENSLAND 2018-21 DRIVERS FOR DISASTER RESILIENCE

*Source: Queensland Government, 2018. Resilient Queensland 2018-21 Delivering the Queensland Strategy for Disaster Resilience: Summary, May 2018*

# 07 STAKEHOLDER CONSULTATION

Development of the master plan has been informed by consultation with community stakeholders. The below chart outlines the phases of engagement and concept development for the Poruma Master Plan.

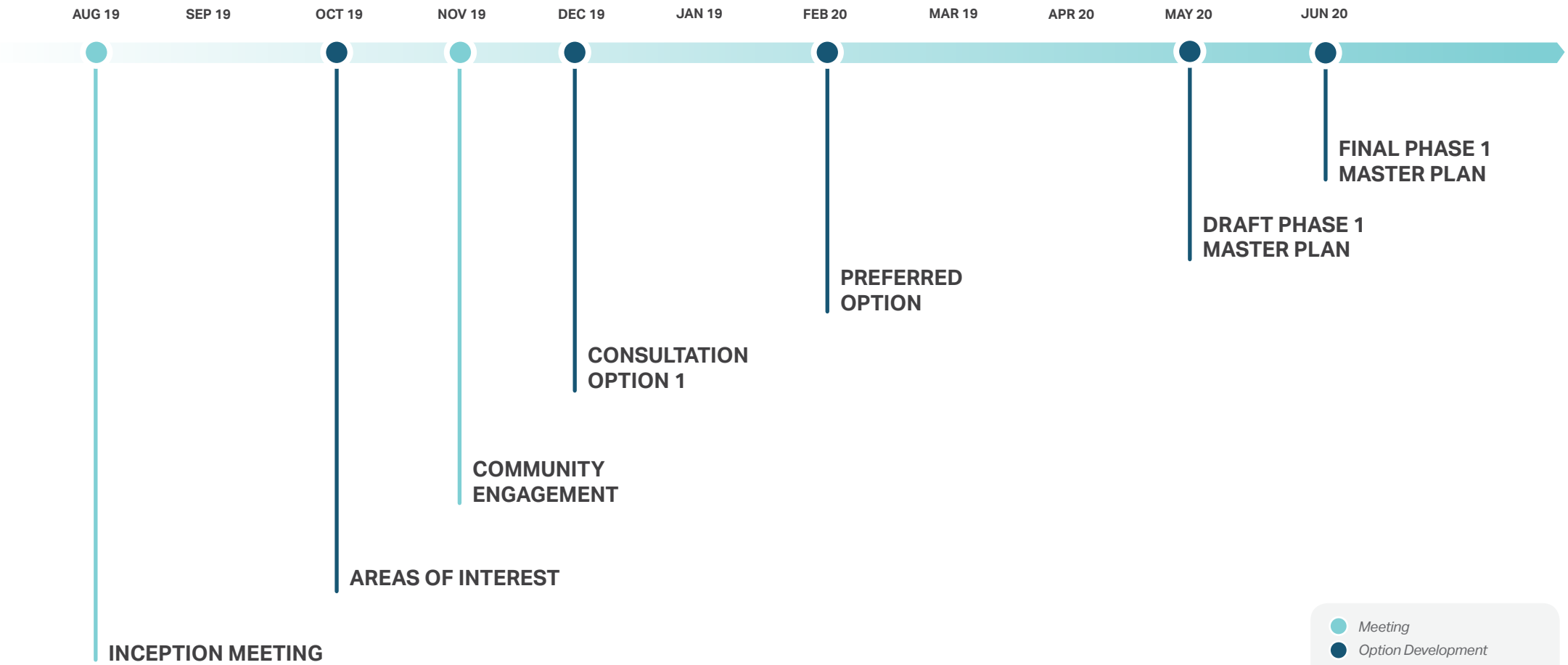


Table 5 provides an overview of consultation activities for the project.

| DATE | LOCATION | PARTICIPANTS | DETAILS |
|---|---|---|---|
| 05.08.2019 | TSIRC Poruma Office | Cr Francis Pearson, Frank Fauid (PBC Chair) & other key PBC stakeholders and Directors, Jeremy Kingsford (DATSIP), John Conroy (DATSIP), Gerhard Visser (DATSIP) | Inception meeting with Councillor and PBC to explain master plan process and obtain initial feedback and direction. |
| 05.11.2019 | TSIRC Poruma Office | Phillemon Mosby (TSIRC Events Coordinator), Frank Fauid (PBC Chair), Olandi Pearson, Jeremy Kingsford (DATSIP), John Conroy (DATSIP), Gerhard Visser (DATSIP), Brian Gibbs (AECOM), Bronwyn van Gool (AECOM) | Meeting with key Council and PBC representatives to kick off community engagement day. |
| | Lamont House | Cr Francis Pearson, Frank Fauid (PBC Chair), Jeremy Kingsford (DATSIP), John Conroy (DATSIP), Gerhard Visser (DATSIP), Brian Gibbs (AECOM), Bronwyn van Gool (AECOM), various community members | Drop-in information session from 11am-3pm to provide all community members the opportunity to provide feedback and comments. |
| | Walk-around: various locations | Jeremy Kingsford (DATSIP), Gerhard Visser (DATSIP) | Walk-around by DATSIP personnel to key service providers (Queensland Health, My Pathways, School etc) to obtain targeted feedback on key issues for current and future community |

**TABLE 5:** PROJECT MEETINGS


**FIGURE 12:** MARK-UPS FROM INITIAL CONCEPTION MEETING WITH COUNCIL AND PBC REPRESENTATIVES

# 08 CONCEPT DEVELOPMENT

## OVERVIEW

As part of the master planning process, it is also important to understand how Poruma Island functions now, and in the future, within the broader Torres Strait region (encompassing island communities within both Torres Shire Council and Torres Strait Island Regional Council).

To facilitate discussion and engagement with Council and community stakeholders an initial "areas of interest" map (Figure 14) was prepared based on the initial engagement with Cr. Pearson and PBC representatives.

Key questions which will influence the future planning and development on Poruma Island therefore include:

- What kind of recreation facilities would youth and families use?
- Is the barge ramp and jetty adequate?
- Is there sufficient industrial land?
- Are current houses overcrowded and meet resident needs?
- Is room required for any other government service providers?
- Is flooding or storm surge impacting residential dwellings?


**FIGURE 13:** TORRES STRAIT REGION AND TRANSPORT ROUTES

## AREAS OF INTEREST

Based on an understanding of the regional context of Poruma Island, an initial concept for the township was developed to facilitate initial discussions with Council (Figure 18).

Items for consideration included:

- Innovative, climate responsive, high set designs for future residential housing
- Marine Facility - do services need to be expanded? Is dredging required?
- Is communication coverage sufficient?
- Residential housing upgrades
- Coastal Zone - are cost-effective strategies and solutions available to address potential risks posed by coastal processes?
- Future burial options such as cremation or memorial walls
- Alternative energy generation
- Waste management and recycling options
- Tourism strategy linking to restored Resort

## 'HAVE YOUR SAY'

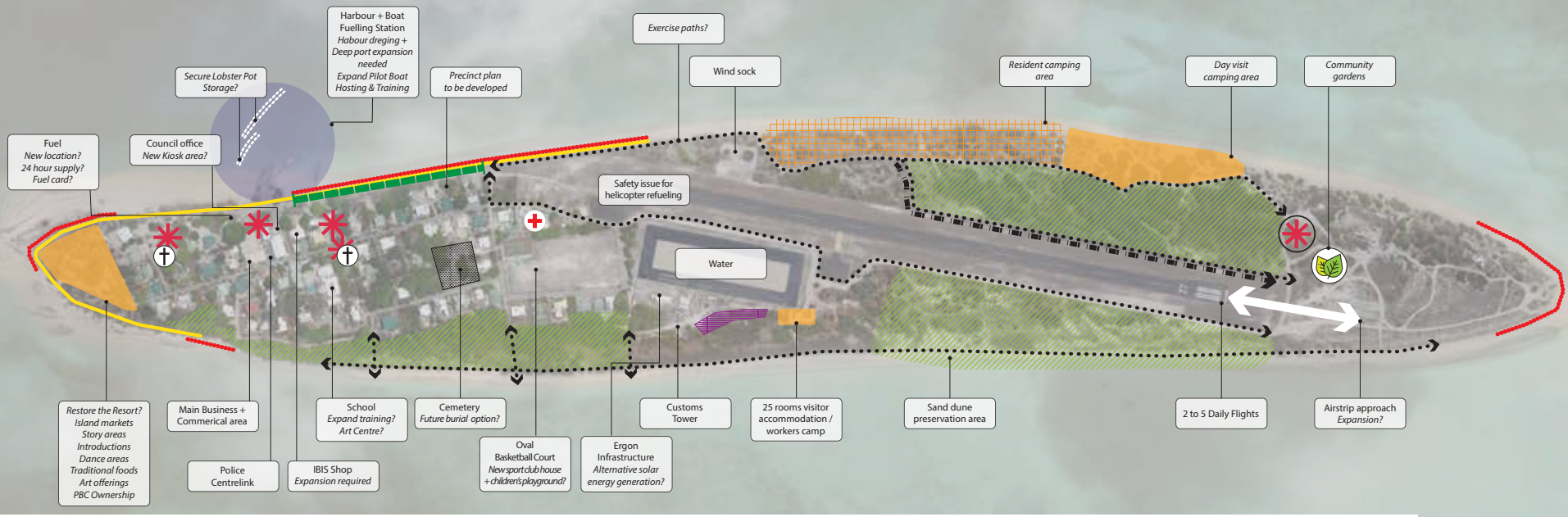
A Community "Have Your Say" day was held on 5 November 2019. A drop-in area was established outside Lamont House (opposite the Council building and next to the Ibis Store) where members of the public were able to come and provide feedback. DATSIP representatives also walked throughout the community, visiting key service providers such as the School and Health Clinic to discuss the master plan. Appendix F contains a copy of the information pack distributed on the day.


**FIGURE 15:** HAVE YOUR SAY INFORMATION PACK


**FIGURE 14:** ENGAGEMENT APPROACH INCLUDED IN "HAVE YOUR SAY" PACK

# PORUMA | MASTER PLAN AREAS OF INTEREST

**General Items**
- Marine infrastructure - expansion of services and dredging / upgrade
- Future burial options - Cremation? Memorial wall?
- Energy - alternative generation and supply
- Communication and coverage - is it sufficient?
- Sewer network - capacity and condition
- Water - pressure, supply, storage
- Waste management and recycling opportunities
- High-set design for future dwellings
- Tourism strategy linking to restored Resort
- Six houses for upgrade




## HAVE YOUR SAY

We are preparing a master plan for the future growth and development of Poruma.

We would like to hear your thoughts, so come and have a chat to the engagement team or take a copy and provide your feedback to Cr Pearson.

**Our questions for you include:**

What kind of recreation facilities would youth and families use? (e.g. playgrounds, pathways, parkland)
Is room required for any other government service providers? (e.g. office space, shopfront service desks)
Are current houses overcrowded?
Are current houses suitably designed for residents needs? (e.g. is specific seniors accommodation required?)
Is the proposed industrial land in the right place? Is there enough space?

Is flooding or storm surge a problem at your house? How deep has water been in the past?
Are more houses required or would it be better to rebuild bigger houses on current land?

N

200m

**FIGURE 16:** AREAS OF INTEREST

- ENVIRONMENTAL
- INDUSTRIAL
- TOURISM
- CULTURAL AREA
- CHURCH
- HEALTHCARE
- CEMETERY
- COMMUNITY GARDEN
- ESPLANADE
- FUTURE ROAD
- FUTURE PEDESTRIAN PATHS
- FUTURE SEAWALL
- FUTURE FLOOD MITIGATION BUND

## OPTION DEVELOPMENT

Following the initial discussions with Council representatives, and the 'Have Your Say' day with the community, the Areas of Interest map was further developed with greenfield expansion to the east of town and additional industrial and marine provisions. Features included:

- Residential
  - 5 residential dwellings at end-of-life identified for demolition and reconstruction
  - 4 x 700 $m^2$ residential lots following confirmation of service relocations (e.g. sewer)
  - Consider alternative housing types (e.g. units and townhouses) when replacing existing houses where at end-of-life
- Town centre
  - Prepare a precinct plan for town centre which considers redevelopment to provide additional commercial and office floor space.
  - Prepare a business case for art centre located at the school
  - Prepare a precinct plan for industrial land use on Williams Street
  - Structural assessment of Old Church to identify works required to install roof
  - Identify re-use options for Old Church
- Recreation and open space
  - Establish pedestrian esplanade along northern water front with lighting, shelters and public toilets
  - Provision of shaded playground, lighting, irrigation and shade structures at the oval
  - Retention of existing informal camping areas, embellished with new shelters, lighting and water access
  - Day use facilities and amenities on northern and eastern foreshores
- Airport Precinct
  - Preserve eastern runway approach for airport operations and potential runway extension for improved operational safety
- Harbour / Coast line
  - Undertake assessment to identify expansion options and mooring areas
  - Investigate marine industry training programs
  - Provide hardstand (e.g. crayfish pot storage)
  - Seawall and bund to reduce inundation and erosion
- Tourism and Conservation
  - Refurbish and recommence operation of island's Resort
  - Prepare a dune conservation strategy to preserve and enhance function of existing dunes
- Utilities and key community facilities
  - Refurbish and upgrade health centre, including provision of on-site staff accommodation
  - Identify alternative location for fuel supply allowing 24 hour access for customers
  - Investigate renewable energy generation and supply options (e.g. wind, solar, battery storage)
  - Undertake water supply capacity assessment and investigate feasibility of increased storage capacity
  - Determine remaining capacity of cemetery and next location
  - Establish community market garden to improve access to fresh produce
  - Prepare waste management strategy
  - Consider suitable site for waste transfer station with high tide barge access
  - Create network of pedestrian trails and paths
- General matters for consideration (no specific site identified)
  - Provide lighting along all roads to housing and public spaces
  - Resilience investigations for public utilities
  - Prepare water network model and undertake asset condition assessment of current water network to identify necessary repairs and upgrades New sewage infrastructure sized to ultimate community size
  - Consider environmental factors including solar access, orientation, wells, louvres for residential housing
  - Prepare recycling strategy.

# PORUMA | MASTER PLAN CONCEPT OPTION

**GENERAL ITEMS**
\ Provide lighting along all roads to housing / area
\ Resilience investigations for public utilities
\ Prepare water network model and undertake asset condition assessment of current water network to identify necessary repairs and upgrades
\ Consider alternative housing types (e.g. units and townhouses) when replacing existing houses where at end-of-life
\ Consider environmental factors including solar access, orientation, wells, louvres for residential housing
\ Prepare recycling strategy

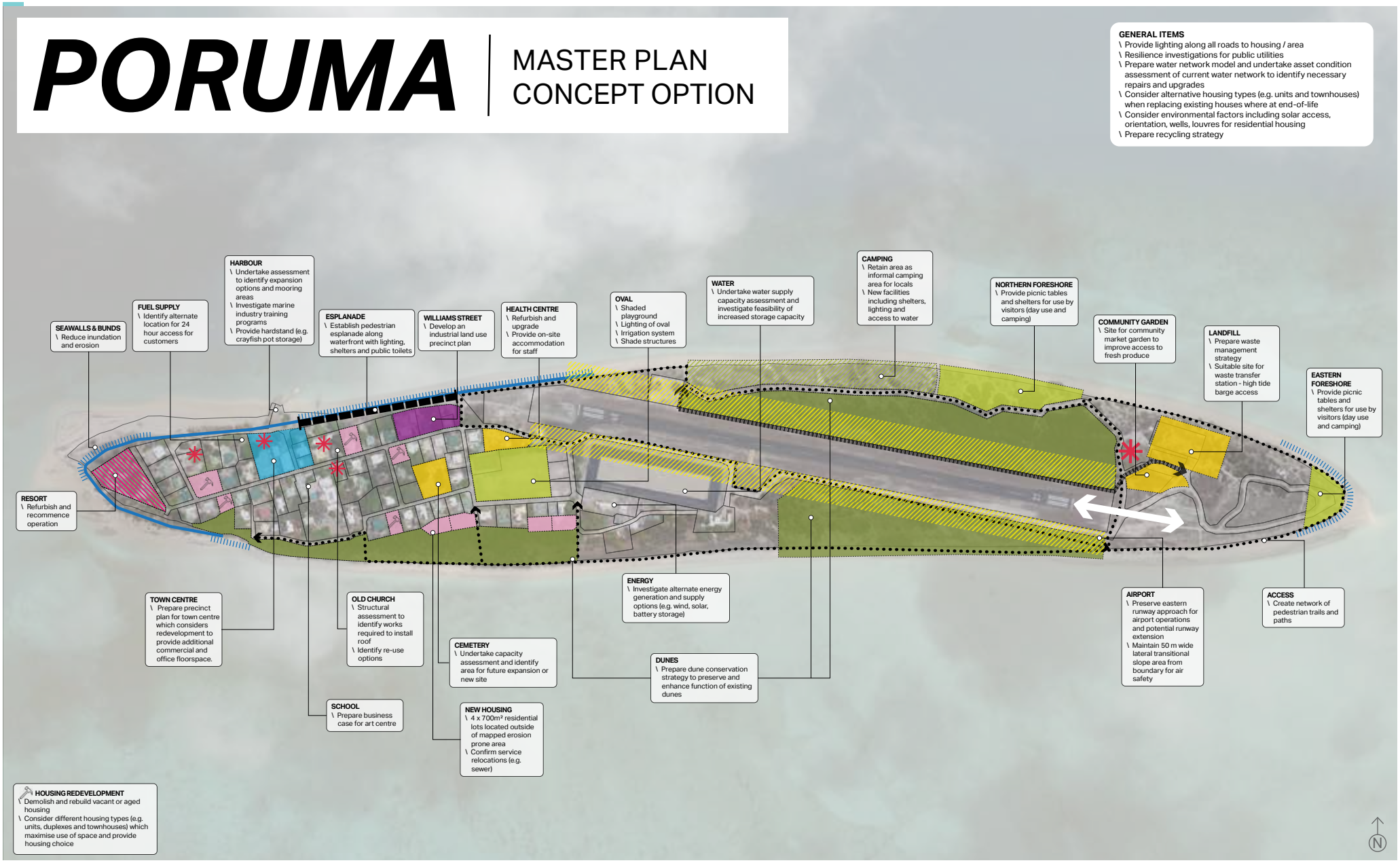



**FIGURE 17:** AREAS OF INTEREST

LOW DENSITY RESIDENTIAL
INDUSTRIAL
COMMERCIAL
COMMUNITY FACILITY
CAMPING SITE
CONSERVATION
RECREATION
TOURISM
AIRPORT BUFFER
CULTURAL AREA
DEMOLISH HOUSE
FUTURE ROAD
FUTURE WALKING PATH
ESPLANADE
FUTURE SEAWALL
FUTURE FLOOD MITIGATION BUND

200m

# 09 PREFERRED OPTION

Based on the feedback provided by Council and community members on the consultation option, a preferred option was developed for infrastructure assessment and costing. The preferred option, shown in Figure 20, comprises of residential, commercial, community facilities and industrial uses.

| | | |
|---|---|---|
| RESIDENTIAL | R1 | Housing redevelopment |
| | R2 | New housing – west |
| | R3 | New housing – east |
| COMMERCIAL | C1 | Town centre |
| TOURISM | T1 | Resort |
| INDUSTRY | I1 | Fuel station |
| | I2 | Williams Street |

| | | |
|---|---|---|
| COMMUNITY FACILITIES | CF1 | Art Centre |
| | CF2 | Old Church |
| | CF3 | Cemetery |
| | CF4 | Health Care Centre |
| | CF5 | Community Garden |
| | CF6 | Landfill |
| | CF7 | Seawalls and bunds |
| | CF8 | Harbour |
| | CF9 | Electricity and communications network |
| | CF10 | Water supply and sewerage |
| | CF11 | Airport |

| | | |
|---|---|---|
| OPEN SPACE | OS1 | Esplanade |
| | OS2 | Oval |
| | OS3 | Dunes |
| | OS4 | Camping |
| | OS5 | Northern foreshore |
| | OS6 | Access paths |
| | OS7 | Eastern foreshore |

**FIGURE 18:** PREFERRED OPTION - ISLAND

LOW DENSITY RESIDENTIAL
INDUSTRIAL
COMMERCIAL
COMMUNITY FACILITY
CAMPING SITE
CONSERVATION
RECREATION
TOURISM
AIRPORT BUFFER
WALKING PATH
ESPLANADE
SEAWALL
FLOOD MITIGATION BUND

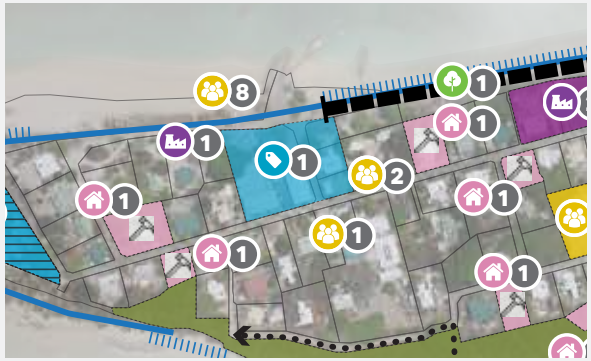
N

100m

## R1 - HOUSING REDEVELOPMENT

**Summary**

Demolition and rebuild of 5 existing house sites.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Short term |
| **Infrastructure Cost** | $0* |

**Recommendations**

R1.1: Undertake building inspection to confirm key requirements for demolition (e.g. asbestos).

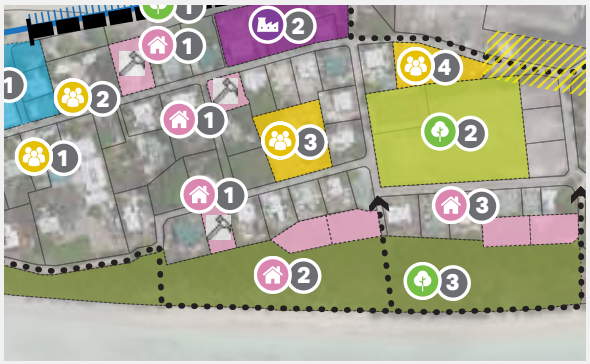
R1.2: Obtain building works approvals.

**Infill site in serviced area - no further enabling infrastructure required - subject to further detailed design / assessment.*

## R2 - NEW HOUSING – WEST

**Summary**

Subdivision to create 2 x 700m² residential lots.



| | |
|---|---|
| **New Lots** | 2 (700m² each) |
| **Associated Projects** | - |
| **Priority** | Medium term |
| **Infrastructure Cost** | $348,367.50 |

**Recommendations**

R2.1: Undertake planning scheme amendment to incorporate site in township zone.

R2.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

R2.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).

R2.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc). This should consider identification of a building envelope plan showing footprint of lot unencumbered by sewer main.

R2.5: Undertake civil engineering design for necessary infrastructureupgrades and extension.

## R3 - NEW HOUSING – EAST

**Summary**

Subdivision to create 2 x 700m² residential lots.

| | |
|---|---|
| **New Lots** | 2 (700m² each) |
| **Associated Projects** | - |
| **Priority** | Long term |
| **Infrastructure Cost** | $749,490.30 |

**Recommendations**

R3.1: Undertake planning scheme amendment to incorporate site in township zone.

R3.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

R3.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).

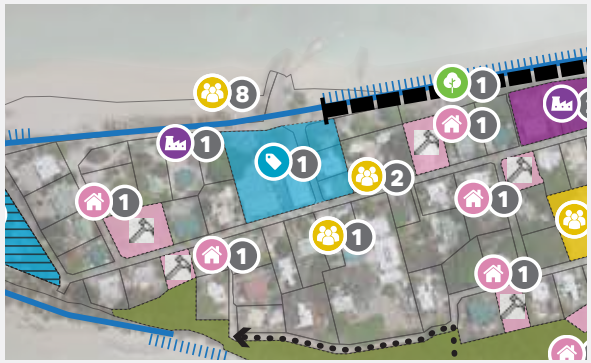
R3.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc). This should consider identification of a building envelope plan showing footprint of lot unencumbered by sewer main.

R3.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.

## C1 - TOWN CENTRE

**Summary**

Precinct plan for town centre which facilitates additional commercial and retail floorspace.




| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | OS1, CF8 |
| **Priority** | Medium term |
| **Infrastructure Cost** | $0* |

**Recommendations**

C1.1: Undertake stakeholder engagement between Council, Traditional Owners, service providers and commercial operators to identify potential future requirements for commercial and retail floorspace.

C1.2: Prepare town centre precinct plan which accommodates additional commercial and retail floorspace alongside urban design of public realm.

**Infill site in serviced area - no further enabling infrastructure required - subject to further detailed design / assessment.*

## T1 - RESORT

**Summary**

Refurbish and re-start vacant resort.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Short term |
| **Infrastructure Cost** | $0* |

**Recommendations**

*T1.1: Undertake building inspection to confirm asset condition and identify necessary repair works.*

*T1.2: Prepare business case for refurbishment and operation of vacant resort site.*

*T1.3: Prepare Tourism Strategy for Poruma which links the resort to other opportunities on Poruma and nearby island communities.*

**Infill site in serviced area - no further enabling infrastructure required - subject to further detailed design / assessment.*

## I2 - FUEL STATION

**Summary**

Identify alternative site for fuel storage which provides 24 hour access for customers.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Medium term |
| **Infrastructure Cost** | $0* |

**Recommendations**

I1.1: Undertake site selection exercise, including existing site, to confirm suitable long-term location for 24-hour accessible fuel station.

**Infill site in serviced area - no further enabling infrastructure required - subject to further detailed design / assessment.*

## I2 - WILLIAMS STREET

**Summary**

Investigate potential optimisation and redevelopment of industrial precinct.

| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Long term |
| **Infrastructure Cost** | $0* |

**Recommendations**

I2.1: Undertake site assessment, including engagement with existing site occupants, to identify opportunities and constraints for ongoing industrial land use on the site.

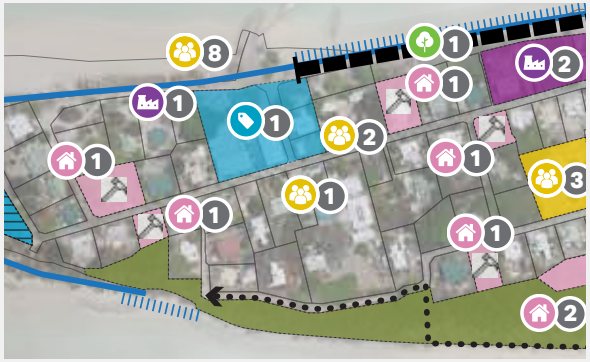
I2.2: Prepare industrial land use precinct plan which optimises site layout, accommodates both existing and future industrial land uses.

**Infill site in serviced area - no further enabling infrastructure required - subject to further detailed design / assessment.*

## CF1 - ART CENTRE

**Summary**

Potential for art centre at the school to support local artistic expression and training.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Short term |
| **Infrastructure Cost** | $0* |

**Recommendations**

CF1.1: Liaise with Department of Education regarding site utilisation and strategy for broadened scope of education and training activities on the site.

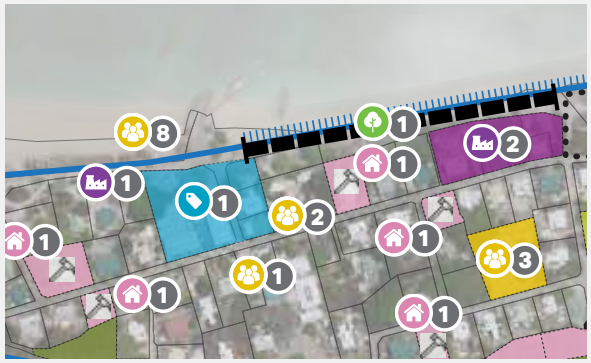
CF1.2: Prepare business case for art centre to confirm feasibility and alternatives.

**Infill site in serviced area - no further enabling infrastructure required - subject to further detailed design / assessment.*

## CF2 - OLD CHURCH

**Summary**

Re-use of existing structure.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | |
| **Infrastructure Cost** | $0 |

**Recommendations**

CF2.1: Undertake structural assessment to confirm stability of existing structure and, if necessary, identify remedial works to stabilise the structure.

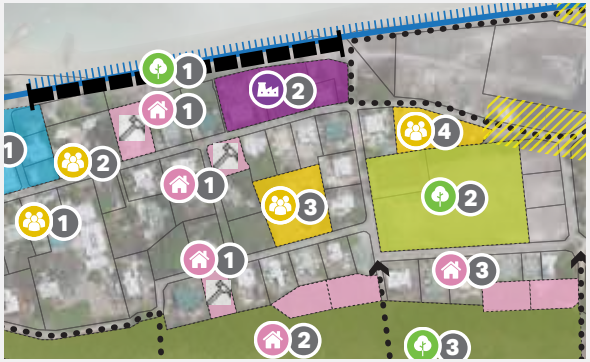
CF2.2: Seek expressions of interest from individuals and organisations for use of site (e.g. community art installation).

**Infill site in serviced area - no further enabling infrastructure required - subject to further detailed design / assessment.*

## CF3 - CEMETERY

**Summary**

Undertake capacity assessment of existing cemetery and identify areas for expansion or additional site.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Short term |
| **Infrastructure Cost** | $0* |

**Recommendations**

CF3.1: Undertake assessment to determine remaining capacity of cemetery.

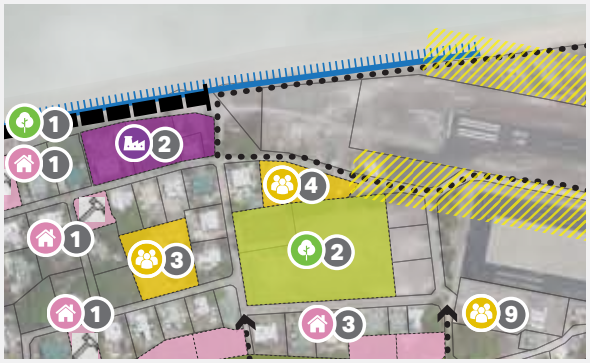
CF3.2: Undertake assessment to confirm opportunities for cemetery expansion (existing and new site) and alternatives.

**Existing site - no further enabling infrastructure required - subject to further detailed design / assessment.*

## CF4 - HEALTHCARE CENTRE

**Summary**

Refurbish and upgrade centre, including staff accommodation.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Medium term |
| **Infrastructure Cost** | $0* |

**Recommendations**

CF4.1: Department of Health to prepare site master plan which identifies staged development of health centre and staff accommodation.

CF4.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

CF4.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).

CF4.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

**Existing site - no further enabling infrastructure required - subject to further detailed design / assessment.*

## CF5 - COMMUNITY GARDEN

**Summary**

Site for community garden.

| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Short term |
| **Infrastructure Cost** | $150,447.38 |

**Recommendations**

CF5.1: Undertake community engagement to confirm demand for community garden and identify potential operators (e.g. community groups).

CF5.2: Undertake planning scheme amendment to incorporate site in township zone.

CF5.3: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

CF5.4: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).

CF5.5: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

CF5.6: Undertake civil engineering design for necessary enabling infrastructure.

## CF6 - LANDFILL

**Summary**

Potential site for waste transfer station.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Long term |
| **Infrastructure Cost** | $194,541.75 |

**Recommendations**

CF6.1: Prepare waste management strategy for TSIRC LGA.,

CF6.2: Pending CF6.1, prepare site layout for waste transfer station.

CF6.3: Undertake planning scheme amendment to incorporate additional area in township zone.

CF6.4: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

CF6.5: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).

CF6.6: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

CF6.7: Undertake design for necessary enabling infrastructure.

## CF7 - SEAWALLS AND BUNDS

**Summary**

Prior investigation to implement seawalls and bunds to mitigate effects of coastal processes.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | TI, C1, CF7, CF8, OS1, OS7 |
| **Priority** | Long term |
| **Infrastructure Cost** | >$5.5 million (based on prior assessment) |

**Recommendations**

CF7.1: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

CF7.2: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan)

## CF8 - HARBOUR

**Summary**

Expansion and formalisation of harbour precinct, including marine and landside facilities and integration of training.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | CF7, C1, OS1 |
| **Priority** | Long term |
| **Infrastructure Cost** | $0* |

**Recommendations**

CF8.1: Prepare facility master plan in conjunction with town centre precinct plan (C1.2) which identifies potential enhancements to capacity of marine access infrastructure and provision of landside facilities (e.g. hardstand, reef pilot facilities and training).

CF8.2: Undertake marine access assessment to confirm capital and maintenance dredging requirements to accommodate both existing and future vessels (e.g. supply barges, Queensland Police, Reef Pilots, tourism operators).

**Existing site - no further enabling infrastructure required - subject to further detailed design / assessment.*

## CF9 - ELECTRICITY AND COMMUNICATIONS NETWORK

**Summary**

Investigate options to improve and enhance electricity and communication networks.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Long term |
| **Infrastructure Cost** | $0* |

**Recommendations**

CF9.1: Prepare electricity supply strategy to identify long-term power generation and storage options which maximises renewable sources.

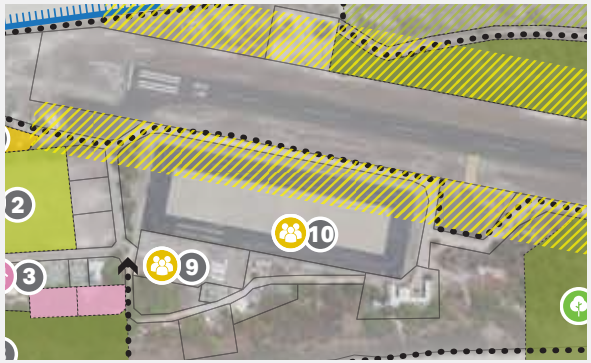
CF9.2: Liaise with communication providers to identify options for improved telecommunications coverage and reliability.

**No further enabling infrastructure required - subject to further detailed design / assessment.*

## CF9 - WATER SUPPLY AND SEWERAGE

**Summary**

Investigate options to improve and enhance electricity and communication networks.




| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Long term |
| **Infrastructure Cost** | $0* |

**Recommendations**

CF10.1: Prepare water network model and capacity assessment, including identification of options to augment existing supply sources.

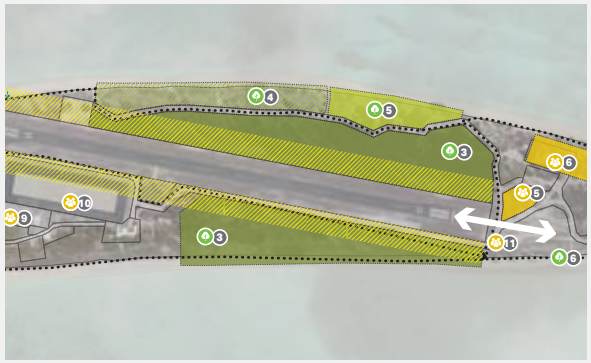
CF10.2: Prepare sewer network assessment to identify necessary capacity upgrade requirements.

**No further enabling infrastructure required - subject to further detailed design / assessment.*

## CF9 - AIRPORT

**Summary**

Preserve airport runway approach and side buffers for ongoing airport operations.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Long term |
| **Infrastructure Cost** | $0* |

**Recommendations**

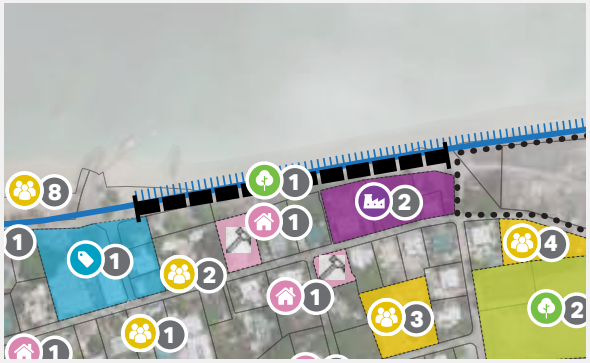
CF11.1: Undertake planning scheme amendment which includes overlays to restrict built form surrounding the airport.

**No further enabling infrastructure required - subject to further detailed design / assessment.*

## OS1 - ESPLANADE UPGRADE

**Summary**

Create pedestrian waterfront esplanade with lighting, shelters and public toilets.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | C1, CF8 |
| **Priority** | Medium term |
| **Infrastructure Cost** | $97,262.10 |

**Recommendations**

OS1.1: Prepare waterfront esplanade, in conjunction with town centre precinct plan (C1.2) and tourism strategy (T1.3) to create a pedestrian focussed pedestrian esplanade including lighting, shelters and amenities.

OS1.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

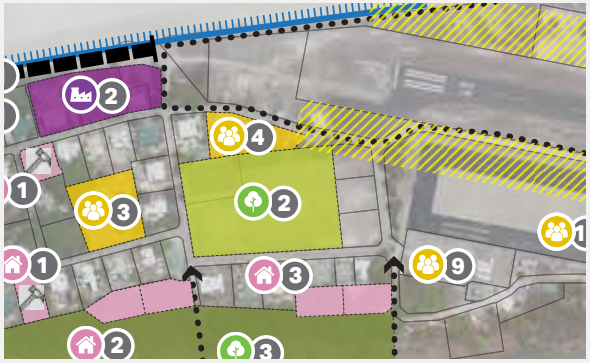
OS1.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).

OS1.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

## OS2 - OVAL

**Summary**

Provision of formal internal facilities and amenities (e.g. lighting, shaded playground and shade structures, irrigation).



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | Short term |
| **Infrastructure Cost** | $0* |

**Recommendations**

OS2.1: Prepare landscape concept plan for provision of formalised facilities including lighting, shade structures, playgrounds and irrigation.

OS2.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).

OS2.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).

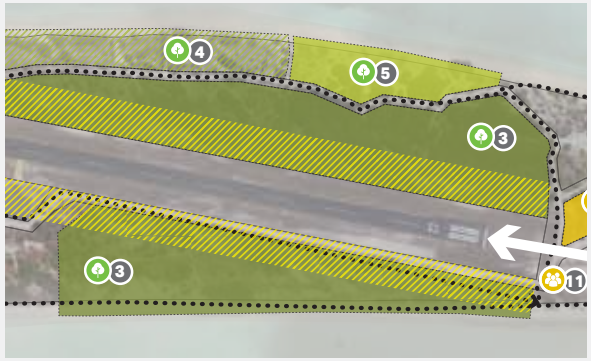
OS2.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

**Existing site - no further enabling infrastructure required - subject to further detailed design / assessment.*

## OS3 - DUNES

**Summary**

Conserve and enhance dune environments.



| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | OS4 |
| **Priority** | Short term |
| **Infrastructure Cost** | $0* |

**Recommendations**

OS3.1: Prepare land management plan, in consultation with Land and Sea Rangers, for conservation and regeneration of dune environments.

**Existing site - no further enabling infrastructure required - subject to further detailed design / assessment.*

## OS4 - LOCAL CAMPING

**Summary**

Retention of informal camping area for locals.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | OS3, OS5 |
| **Priority** | Short term |
| **Infrastructure Cost** | $0* |

**Recommendations**

OS4.1: Reflect intended use of area when developing management strategies as part of land management plan (OS3.1).

**Existing site - no further enabling infrastructure required - subject to further detailed design / assessment.*

## OS5 - NORTHERN FORESHORE

**Summary**

Creation of visitors day use and camping area including shelters and picnic tables.


| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | - |
| **Priority** | - |
| **Infrastructure Cost** | $260,617.50 |

**Recommendations**

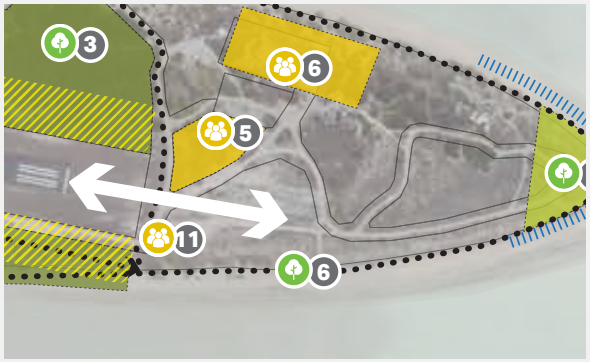
OS5.1: Undertake targeted engagement with Land and Sea Rangers and Traditional Owners to seek agreement for development of visitor day-use and camping areas.

OS5.2: Pending outcomes of OS5.1, prepare concept plan for layout and facilities.

## OS6 - ACCESS TRACKS

**Summary**

Create network of pedestrian trails and paths.




| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | CF7 |
| **Priority** | - |
| **Infrastructure Cost** | $0* |

**Recommendations**

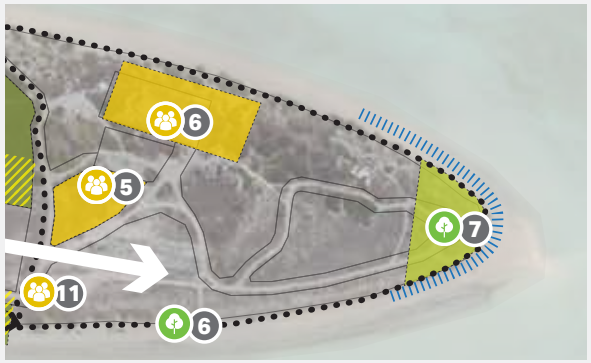
OS6.1: Liaise with Land and Sea Rangers, in conjunction with preparation of land management plan (OS3.1) to prepare a network map of pedestrian trails and paths.

**Existing site - no further enabling infrastructure required - subject to further detailed design / assessment.*

## OS7 - EASTERN FORESHORE

**Summary**

Creation of visitors day use and camping area including shelters and picnic tables.




| | |
|---|---|
| **New Lots** | - |
| **Associated Projects** | CF7 |
| **Priority** | - |
| **Infrastructure Cost** | $235,213.88 |

**Recommendations**

Refer OS5.1 and OS5.2

# 10 INFRASTRUCTURE REQUIREMENTS

The following sections provide an overview of proposed infrastructure to support the preferred master plan layout. Refer to Appendix B for further details. The following elements of the master plan do not require enabling infrastructure as they are located in a serviced area or the nature of the item does not require enabling infrastructure:

- R1 – Housing Redevelopment – existing serviced lots
- C1 – Town Centre – existing serviced area and scale of future development is to be determined as part of further investigation
- T1- Resort – existing serviced area
- I1 – Fuel Station – site to be determined as part of further investigation
- I2 – Williams Street – existing serviced area
- CF1 – Art Centre – existing serviced area
- CF2 – Old Church – existing serviced area
- CF3 – Cemetery – existing serviced area and expansion footprint/ location to be determined as part of further assessment
- CF4 – Health Care Centre – existing serviced area
- CF7 – Seawalls and bunds – no enabling infrastructure
- CF8 – Harbour – existing serviced area and scale of future development is to be determined as part of further investigation
- CF9 – Electricity supply – item relates to further investigations
- CF10 – Water supply – item relates to further investigations
- CF11 – Airport – no enabling infrastructure required to implement intended buffers
- OS2 – Oval – existing serviced area
- OS6 – Access Paths – no enabling infrastructure required

## WATER

Extension of water mains will be required to service the new housing areas (R2 & R3) and western end of the esplanade (OS1) where it is assumed that public amenities would be located. It has been assumed that due to the limited demand generation, the community garden (CF5), landfill (CF6) and foreshore areas (OS5, OS7) would include rainwater tanks to service any amenities.

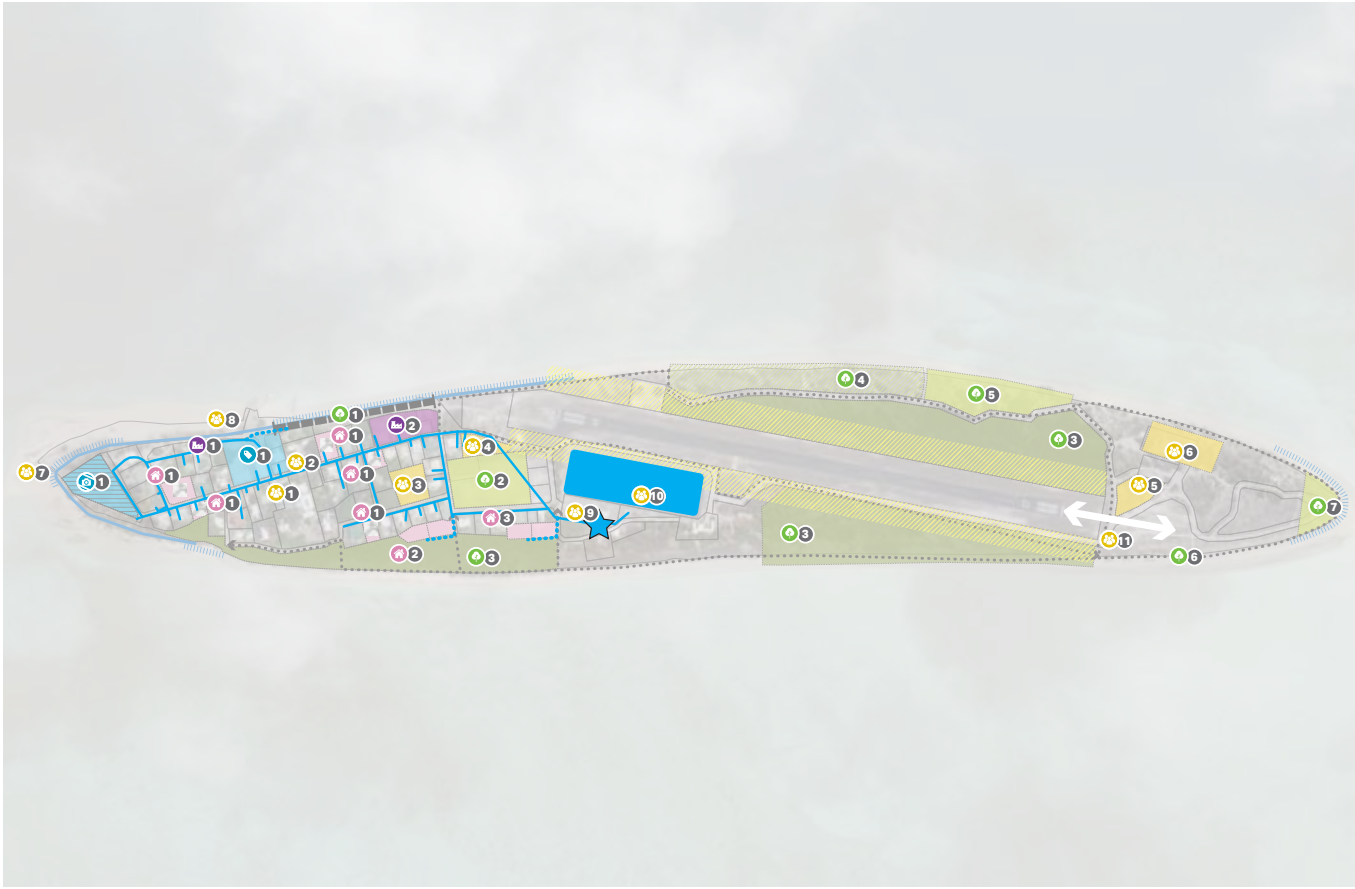



**FIGURE 19:** WATER INFRASTRUCTURE - PROPOSED

## SEWERAGE

The western new housing area (R2) has an existing gravity main along the northern boundary which can likely be retained providing the survey plan indicates a building envelope which avoids the area. In order to accommodate the two new eastern housing lots (R3), it will be necessary to decommission and relocate the existing gravity main and rising main which extends through the site. Gravity mains will be required to connect proposed uses at the eastern end of the island (CF5, CF6, OS5, OS7) to the sewage treatment plant.

## ROADS

Extensions of paved roads will be required to provide access to the new housing areas (R2 & R3). It has been assumed that the proposed uses to the east of the township (CF5, CF6, OS5, OS7) can operate with existing unsealed road access.


**FIGURE 20:** SEWERAGE INFRASTRUCTURE - PROPOSED

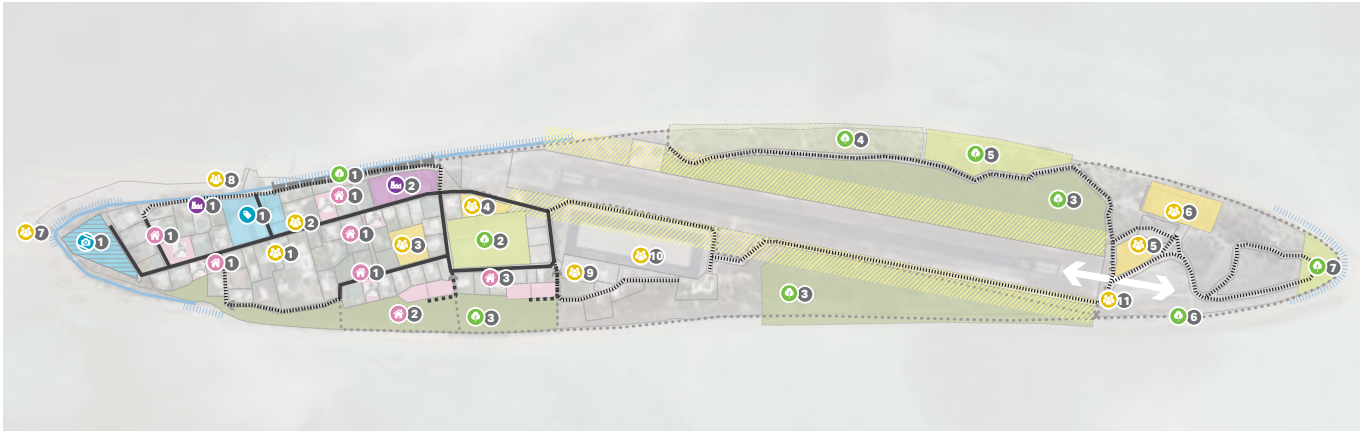



**FIGURE 21:** ROAD INFRASTRUCTURE - PROPOSED

## ELECTRICITY

Extensions will be required to provide power to the new housing areas (R2 & R3) and the proposed waterfront esplanade (OS1). Due to the limited network data available at the time of preparation of this master plan, it has been assumed that power is available at the sewage treatment plant. Connections from proposed uses CF5, CF6, OS5, OS7 to the frontage of the sewage treatment plant have been proposed. It is recommended that a consolidated asset survey for the island is prepared to confirm all existing services, including electricity.

## COMMUNICATIONS

Due to the limited network data available at the time of preparation of this master plan, it has been assumed that power is available in the roadways near each of the new housing areas (R2 & R3), requiring a minor extension. It has also been assumed that communication services are available at the sewage treatment plant. Connections from proposed uses CF5, CF6 to the frontage of the sewage treatment plant have been proposed. It is assumed that OS5 and OS7, due to their nature, will not require communications infrastructure. It is recommended that a consolidated asset survey for the island is prepared to confirm all existing services, including communications.


**FIGURE 22:** ELECTRICITY INFRASTRUCTURE - PROPOSED


**FIGURE 23:** COMMUNICATIONS INFRASTRUCTURE - PROPOSED

| ITEM | UNIT | RATE | R2 - NEW HOUSING WEST | | R3 - NEW HOUSING EAST | | CF5 - COMMUNITY GARDEN | | CF6 - LANDFILL | | OS1 - ESPLANADE | | OS5 - NORTHERN FORESHORE | | OS7 - EASTERN FORESHORE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRELIMINARIES | | | | | | | | | | | | | | | | |
| Establishment / disestablishment and miscellaneous site preparation | | 20% | | $39,700.00 | | $85,412.00 | | $17,145.00 | | $22,170.00 | | $11,084.00 | | $29,700.00 | | $26,805.00 |
| PROJECT MANAGEMENT | | | | | | | | | | | | | | | | |
| Survey, design and construction administration | | 15% | 15% | $29,775.00 | 15% | $64,059.00 | 15% | $12,858.75 | 15% | $16,627.50 | 15% | $8,313.00 | 15% | $22,275.00 | 15% | $20,103.75 |
| WATER SUPPLY | | | | | | | | | | | | | | | | |
| Water Mains - DN100 | m | $280 | 75 | $21,000.00 | 72 | $20,160.00 | | $0.00 | | $0.00 | 64 | $17,920.00 | | $0.00 | | $0.00 |
| Connection to existing mains | each | $2,000 | 1 | $2,000.00 | 1 | $2,000.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| ROADS | | | | | | | | | | | | | | | | |
| Bitumen sealed / concrete paved road, 5.5m wide | m | $1,170 | 83 | $97,110.00 | 98 | $114,660.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| SEWERAGE | | | | | | | | | | | | | | | | |
| Gravity Sewer - DN150 | m | $465 | | $0.00 | 170 | $79,050.00 | 75 | $34,875.00 | 50 | $23,250.00 | | $0.00 | 190 | $88,350.00 | 175 | $81,375.00 |
| Rising main - DN50 | m | $234 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| Rising main - DN100 | m | $340 | | $0.00 | 150 | $51,000.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| Manhole | no. | $10,050 | | $0.00 | 7 | $70,350.00 | 2 | $20,100.00 | 2 | $20,100.00 | | $0.00 | 3 | $30,150.00 | 3 | $30,150.00 |
| Decommission sewer | item | $5,500 | | $0.00 | 2 | $11,000.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| DRAINAGE | | | | | | | | | | | | | | | | |
| Stormwater Pipe | m | $600 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| Layback Kerb & Channel | m | $165 | 166 | $27,390.00 | 196 | $32,340.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| Reinforced concrete invert to open drain | linear m | $210 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| EARTHWORKS | | | | | | | | | | | | | | | | |
| Import fill | $m^3$ | $196 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 | | $0.00 |
| COMMUNICATIONS | | | | | | | | | | | | | | | | |
| Communications | m | $450 | 80 | $36,000.00 | 70 | $31,500.00 | 35 | $15,750.00 | 100 | $45,000.00 | | $0.00 | | $0.00 | | $0.00 |
| ELECTRICAL | | | | | | | | | | | | | | | | |
| Electrical | pole | $7,500 | 2 | $15,000.00 | 2 | $15,000.00 | 2 | $15,000.00 | 3 | $22,500.00 | 5 | $37,500.00 | 4 | $30,000.00 | 3 | $22,500.00 |
| CONTINGENCY | | | | | | | | | | | | | | | | |
| Contingency | | 30% | | $80,392.50 | | $172,959.30 | | $34,718.63 | | $44,894.25 | | $22,445.10 | | $60,142.50 | | $54,280.13 |
| **TOTAL** | | | | **$348,367.50** | | **$749,490.30** | | **$150,447.38** | | **$194,541.75** | | **$97,262.10** | | **$260,617.50** | | **$235,213.88** |

**TABLE 6:** OPINION OF PROBABLE CONSTRUCTION COSTS

# 11 KEY REFERENCES

This section summarises key reference documents and strategies which should be considered during implementation of the Master Plan.

## TORRES STRAIT ISLAND REGIONAL COUNCIL CORPORATE PLAN 2020 - 2025

The Corporate Plan 2020-2025 is the lead document for service provision and fulfils the Council's obligations under the *Local Government Act 2009*. The Corporate Plan highlights the following mission statement:

*"For youmpla for strete ples blo youmpla ene weis kaine youmpla stap lor pless blo youmpla - To improve our Communities' liveability in all we do."*

The goals identified in the corporate plan are:

- Bisnis Pipol - People
  - Preserve cultural heritage, history and place
  - Safe, healthy and active communities
  - Accessible community support services
  - Be a transparent, open and engaging council
- Bisnis Mekem las long - Sustainability
  - Plan for the future of our individual communities and region
  - Our communities are resilient to the effects of climate change and natural disasters
  - Our communities are consulted around liveable places, aligned to lifestyle and environmental suitability
  - Council affairs are managed responsibility to the benefit of the communities
  - We actively reduce our environmental footprint and manage our resources sustainably
- Bisnis Pruitpul - Prosperity
  - We advocate and foster regional prosperity through enterprise development
  - We invest in the retention of key skills within the region
  - We bring opportunity to our region and put our culture on the world stage.

## TORRES STRAIT ISLAND REGIONAL COUNCIL OPERATIONAL PLAN 2019 - 2020

The Operational Plan 2019 - 2020 provides detailed strategies, activities, timing and budget links for implementation of the following core program themes identified in the Corporate Plan 2020-2025:

- Executive office
- Corporate affairs and engagement
- Community and environment
- Engineering services
- Building services
- Housing and tenancy services
- Strategic projects and logistics
- Business services

## ACTIVATE! QUEENSLAND 2019-2029

Activate! Queensland 2019–2029 is the Queensland Government's 10 year strategy to further enrich the Queensland way of life; harnessing the pride of great sporting traditions, embracing iconic natural environment and building on strong community foundations to deliver better health and wellbeing outcomes, especially for those most vulnerable.

Activate! Queensland will be rolled out through three multi-year action plans. The first action plan, Our Active8, will outline the practical, whole-of-government actions to be implemented from 2019 to 2022 and will be delivered through eight strategies across four priority areas:

- Activate Queenslanders
  - 01 Enhance equity and inclusion
  - 02 Transform attitudes and behaviours
- Activate Environments
  - 03 Deliver quality and accessible places and spaces
  - 04 Improve liveability and activity in our communities
- Activate Success
  - 05 Grow elite success and keep Queensland winning
  - 06 Provide world-class fan experiences through major sports and entertainment facilities
- Activate Collaboration
  - 07 Transform the active industry's role
  - 08 Leverage knowledge, technology and innovation.

## CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Crime Prevention Through Environmental Design (CPTED) is designing using the built environment to create safer neighbourhoods.

Growing interest in environmental criminology led to the use of natural surveillance, access control and territoriality as a natural method in crime prevention.

The 'broken window' principle demonstrated how neglected zones invite crime, and reinforced the need for good property maintenance to assert visible ownership of space.

Appropriate environmental design can also increase the perceived likelihood of detection and apprehension, known to be the biggest single deterrent to crime.

## HEALTHY BY DESIGN

Healthy by Design has been developed in response to local government requests for practical guidance in designing walkable, and ultimately more liveable, communities.

This is encouraged by providing:

- well planned networks of walking and cycling routes
- streets with direct, safe and convenient access
- local destinations within walking distance from homes
- accessible open spaces for recreation and leisure
- conveniently located public transport within walkable distances
- local neighbourhoods fostering community.

## WATER SENSITIVE URBAN DESIGN

Water-Sensitive Urban Design (WSUD) is a land planning and engineering design approach which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.

This is encouraged through:

- natural channel design
- stormwater outlets as park and waterway systems
- erosion treatment for urban waterways
- sediment and retention basins as natural features
- landscape design of urban water systems.

## COASTAL BLUE CARBON: AN INTRODUCTION FOR POLICY MAKERS

Coastal blue carbon: an introduction for policy makers provides an introduction to the concept of blue carbon and coastal blue carbon ecosystems – mangroves, tidal marshes and sea grasses. It outlines:

- why blue carbon ecosystems are important
- the basic science of blue carbon as a basis for policy and practical action
- an overview of relevant policy frameworks, and
- a summary of finance sources that can support practical action.

It describes some of the challenges and opportunities in developing policies and undertaking projects to protect and restore coastal blue carbon ecosystems. It also highlights some of the projects and countries that are leading the way in managing these challenges and opportunities. It serves as a reference for those who are new to blue carbon and those who are seeking to bring a greater focus on blue carbon in their jurisdictions.

# 12 SUMMARY

The preferred master plan identifies a range of development opportunities which provide Council with a clear set of options to progress future residential and non-residential development into the future. The right combination of housing choice and employment opportunity will promote a successful and vibrant community with a diversified and strong local economy. Whilst each development area will require extension and/or connection to existing infrastructure and services, the overall capacity of these systems will not constrain implementation of the master plan.

Due to the limited availability of land on Poruma, a key element of the preferred Master Plan (and associated enabling infrastructure costs), is infill redevelopment opportunities such as community use facilities, arts centre and marine transport facilities which would serve to enhance quality of life for residents and provide employment opportunities.

The preferred Master Plan represents a long term guide for development throughout the Poruma community. Figure 18 provides an indication of the potential future land use framework based on the preferred Master Plan. Council will consider the indicative yields and enabling infrastructure costs when staging future development and infrastructure outlay. The yields and costs will also provide an important basis of information to inform discussions and negotiations with key agencies and stakeholders. Table 7 outlines the estimated costs.

| ITEM | | | YIELD | COST |
|---|---|---|---|---|
| | R1 | Housing redevelopment | 5 lots | ^N/A |
| | R2 | New housing – west | 2 lots | $348,367.50 ($174,183.75 per lot) |
| | R3 | New housing – east | 2 lots | $749,490.30 ($374,745.15 per lot) |
| | C1 | Town centre | - | *TBC |
| | T1 | Resort | - | ^N/A |
| | I1 | Fuel station | - | *TBC |
| | I2 | Williams Street | - | *TBC |
| | CF1 | Art Centre | - | ^N/A |
| | CF2 | Old Church | - | ^N/A |
| | CF3 | Cemetery | - | *TBC |
| | CF4 | Health Care Centre | - | ^N/A |
| | CF5 | Community Garden | - | $150,447.38 |
| | CF6 | Landfill | - | $194,541.75 |
| | CF7 | Seawalls and bunds | - | ^N/A |
| | CF8 | Harbour | - | *TBC |
| | CF9 | Electricity and communications network | - | *TBC |
| | CF10 | Water supply and sewerage | - | *TBC |
| | CF11 | Airport | - | ^N/A |
| | OS1 | Esplanade | - | $97,262.10 |
| | OS2 | Oval | - | ^N/A |
| | OS3 | Dunes | - | ^N/A |
| | OS4 | Camping | - | ^N/A |
| | OS5 | Northern foreshore | - | $260,617.50 |
| | OS6 | Access paths | - | ^N/A |
| | OS7 | Eastern foreshore | - | $235,213.88 |

**TABLE 7:** ENABLING INFRASTRUCTURE COST

*TBC - *Enabling infrastructure costs to be determined based on further investigations and assessment*

^N/A - *Item is either in a serviced area or does not require enabling infrastructure.*

| CATEGORY | ITEM | | ACTIONS |
|---|---|---|---|
| RESIDENTIAL | R1 | Housing redevelopment | R1.1: Undertake building inspection to confirm key requirements for demolition (e.g. asbestos).<br>R1.2: Obtain building works approvals. |
| | R2 | New housing – west | R2.1: Undertake planning scheme amendment to incorporate site in township zone.<br>R2.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>R2.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).<br>R2.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfigur-ing a lot, oper-ational works etc). This should consider identification of a building envelope plan showing footprint of lot unencumbered by sewer main.<br>R2.5: Undertake civil engineering design for necessary infrastructure upgrades and extension. |
| | R3 | New housing – east | R3.1: Undertake planning scheme amendment to incorporate site in township zone.<br>R3.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>R3.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).<br>R3.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, opera-tional works etc). This should consider identification of a building envelope plan showing footprint of lot unencumbered by sewer main.<br>R3.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure. |
| COMMERCIAL | C1 | Town centre | C1.1: Undertake stakeholder engagement between Council, Traditional Owners, service providers and commercial operators to identify potential future requirements for com-mercial and retail floorspace.<br>C1.2: Prepare town centre precinct plan which accommodates additional commercial and retail floorspace alongside urban design of public realm. |
| TOURISM | T1 | Resort | T1.1: Undertake building inspection to confirm asset condition and identify necessary re-pair works.<br>T1.2: Prepare business case for refurbishment and operation of vacant resort site.<br>T1.3: Prepare Tourism Strategy for Poruma which links the resort to other opportunities on Poruma and nearby island communities. |
| INDUSTRY | I1 | Fuel station | I1.1: Undertake site selection exercise, including existing site, to confirm suitable long-term location for 24-hour accessible fuel station. |
| | I2 | Williams Street | I2.1: Undertake site assessment, including engagement with existing site occupants, to identify oppor-tunities and constraints for ongoing industrial land use on the site.<br>I2.2: Prepare industrial land use precinct plan which optimises site layout, accommodates both existing and future industrial land uses. |

**TABLE 8:** ACTION PLAN (PART 1 OF 3)

| CATEGORY | ITEM | | ACTIONS |
|---|---|---|---|
| COMMUNITY FACILITIES | CF1 | Art Centre | CF1.1: Liaise with Department of Education regarding site utilisation and strategy for broadened scope of education and training activities on the site.<br>CF1.2: Prepare business case for art centre to confirm feasibility and alternatives. |
| | CF2 | Old Church | CF2.1: Undertake structural assessment to confirm stability of existing structure and, if necessary, identify remedial works to stabilise the structure.<br>CF2.2: Seek expressions of interest from individuals and organisations for use of site (e.g. community art installation). |
| | CF3 | Cemetery | CF3.1: Undertake assessment to determine remaining capacity of cemetery.<br>CF3.2: Undertake assessment to confirm opportunities for cemetery expansion (existing and new site) and alternatives. |
| | CF4 | Health Care Centre | CF4.1: Department of Health to prepare site master plan which identifies staged development of health centre and staff accommodation.<br>CF4.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>CF4.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage mgt. plan).<br>CF4.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, op-erational works etc). |
| | CF5 | Community Garden | CF5.1: Undertake community engagement to confirm demand for community garden and identify po-tential operators (e.g. community groups).<br>CF5.2: Undertake planning scheme amendment to incorporate site in township zone.<br>CF5.3: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>CF5.4: Address duty of care requirements under the Torres Strait Islander Cultural Herit-age Act 2003 (e.g. cultural heritage survey and cultural heritage mgt plan).<br>CF5.5: Obtain approvals under the planning scheme and State legislation (e.g. reconfigur-ing a lot, op-erational works etc).<br>CF5.6: Undertake civil engineering design for necessary enabling infrastructure. |
| | CF6 | Landfill | CF6.1: Prepare waste management strategy for TSIRC LGA.,<br>CF6.2: Pending CF6.1, prepare site layout for waste transfer station.<br>CF6.3: Undertake planning scheme amendment to incorporate additional area in township zone.<br>CF6.4: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>CF6.5: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage mgt plan).<br>CF6.6: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).<br>CF6.7: Undertake design for necessary enabling infrastructure. |
| | CF7 | Seawalls and bunds | CF7.1: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>CF7.2: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage mgt plan). |
| | CF8 | Harbour | CF8.1: Prepare facility master plan in conjunction with town centre precinct plan (C1.2) which identifies potential enhancements to capacity of marine access infrastructure and provision of landside facilities (e.g. hardstand, reef pilot facilities and training).<br>CF8.2: Undertake marine access assessment to confirm capital and maintenance dredging require-ments to accommodate both existing and future vessels (e.g. supply barges, Queensland Police, Reef Pilots, tourism operators). |
| | CF9 | Electricity and communications network | CF9.1: Prepare electricity supply strategy to identify long-term power generation and storage options which maximises renewable sources.<br>CF9.2: Liaise with communication providers to identify options for improved telecommunications cov-erage and reliability. |
| | CF10 | Water supply and sewerage | CF10.1: Prepare water network model and capacity assessment, including identification of options to augment existing supply sources.<br>CF10.2: Prepare sewer network assessment to identify necessary capacity upgrade requirements. |
| | CF11 | Airport | CF11.1: Undertake planning scheme amendment which includes overlays to restrict built form surrounding the airport. |

**TABLE 9:** ACTION PLAN (PART 2 OF 3)

| CATEGORY | ITEM | | ACTIONS |
|---|---|---|---|
| OPEN SPACE | OS1 | Esplanade | OS1.1: Prepare waterfront esplanade, in conjunction with town centre precinct plan (C1.2) and tourism strategy (T1.3) to create a pedestrian focussed pedestrian esplanade including lighting, shelters and amenities.<br>OS1.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>OS1.3: Address duty of care requirements under the Torres Strait Islander Cultural Herit-age Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).<br>OS1.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfigur-ing a lot, op-erational works etc). |
| | OS2 | Oval | OS2.1: Prepare landscape concept plan for provision of formalised facilities including light-ing, shade structures, playgrounds and irrigation.<br>OS2.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).<br>OS2.3: Address duty of care requirements under the Torres Strait Islander Cultural Herit-age Act 2003 (e.g. cultural heritage survey and cultural heritage management plan).<br>OS2.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfigur-ing a lot, op-erational works etc). |
| | OS3 | Dunes | OS3.1: Prepare land management plan, in consultation with Land and Sea Rangers, for conservation and regeneration of dune environments. |
| | OS4 | Camping | OS4.1: Reflect intended use of area when developing management strategies as part of land management plan (OS3.1). |
| | OS5 | Northern foreshore | OS5.1: Undertake targeted engagement with Land and Sea Rangers and Traditional Own-ers to seek agreement for development of visitor day-use and camping areas.<br>OS5.2: Pending outcomes of OS5.1, prepare concept plan for layout and facilities. |
| | OS6 | Access paths | OS6.1: Liaise with Land and Sea Rangers, in conjunction with preparation of land man-agement plan (OS3.1) to prepare a network map of pedestrian trails and paths. |
| | OS7 | Eastern foreshore | Refer OS5.1 and OS5.2 |

**TABLE 10:** ACTION PLAN (PART 3 OF 3)

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# A. APPENDIX A. PLANS

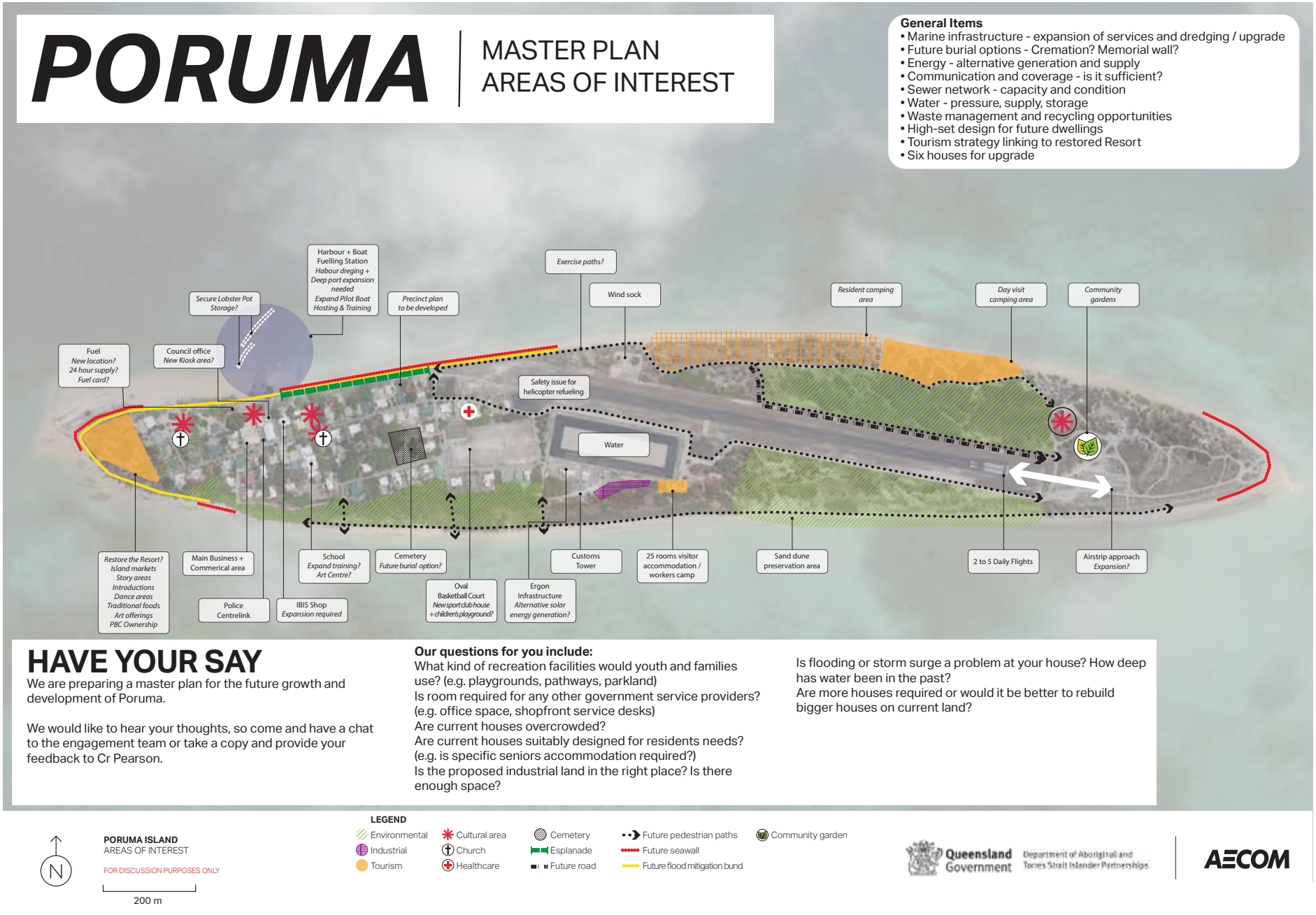



**FIGURE A1:** AREAS OF INTEREST

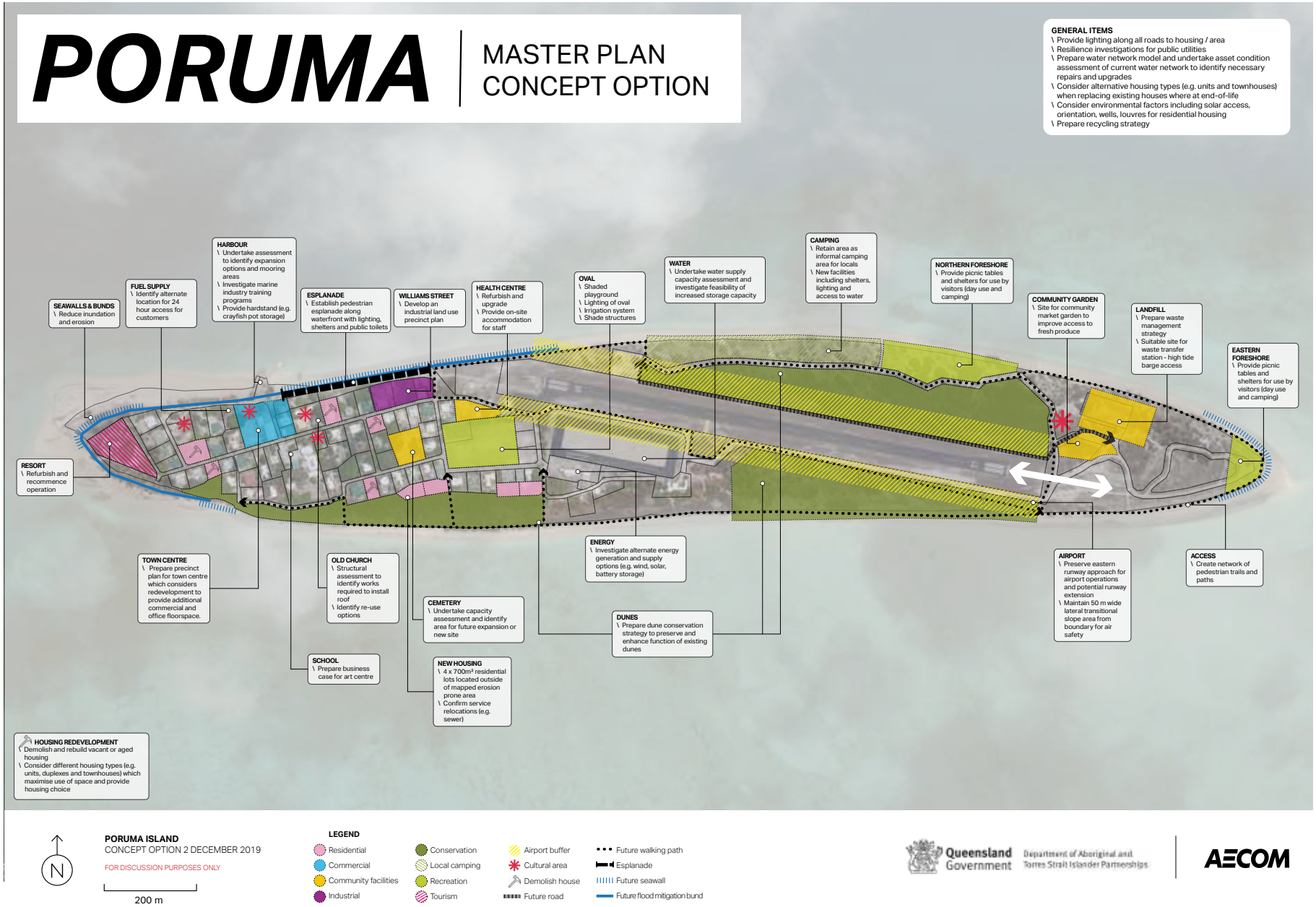



**FIGURE A2:** PREFERRED OPTION

# B. APPENDIX B. INFRASTRUCTURE

# B1 INFRASTRUCTURE REVIEW

The following section provides an overview of the nature and capacity of existing infrastructure servicing the island.

## WATER SUPPLY

Water supply infrastructure at Poruma comprises the following elements.

### Raw water

The raw water for Poruma is drawn from two sources as follows:

- Saline groundwater:
  - Brackish water is extracted from coral as the water has lower salinity than seawater
  - Water is extracted using two bores, anecdotally ~13 m deep
  - The water quality is generally good with minimal grit/sand/turbidity
  - The water is treated in the desalination plant before being stored in the storage lagoon
- Rainwater:
  - Rainwater which falls on the surface or on the aprons of the storage lagoon is collected
  - The water quality is extensively contaminated from bird activity.

### Water Treatment Systems

The water treatment systems on Poruma include a Desalination plant for the saline groundwater and a combined treatment plant, with the following details:

- Desalination Plant:
  - 1 permanent desalination treatment train with space for a second
  - Filtration – pressure media filter with cartridge 5 micron and 1 micron pre-filters
- Water treatment plant (combined treatment)
  - Filtration using two media filters
  - Automated disinfection (chlorine dosing).

### Water Storage

- Storage lagoon:
  - Lined and covered 12 ML storage lagoon, consisting of two segments. The lagoon holds approximately 160 days storage when full
- Ground water reservoir:
  - A 100 kL steel panel reservoir located adjacent to the water treatment plant. The reservoir holds approximately 1 days treated water storage at average consumption

### Pumps

A VSD booster pump station is used to boost the supply from the ground level reservoir to the community and to ensure adequate pressures are provided

### Reticulation system:

Anecdotally, the reticulation system is predominately 80 mm PVC.

### Assumptions

An average day demand of 370 L/EP/day was reported for Poruma in the TSIRC Sustainable Water & Wastewater Management Plan.

The existing water supply demands are outlined in Table B1.

| DESCRIPTION | AD (L/S) | PD (L/S) | PH (L/S) | PH (L/S) |
|---|---|---|---|---|
| Residential Lots | 0.715 | 1.609 | 3.218 | 5.4 |
| Non-Residential Loads | 0.158 | 0.351 | 1.496 | 0.5 |
| **TOTAL** | **0.874** | **1.960** | **4.715** | **5.9** |

**TABLE B1:** WATER SUPPLY DEMANDS - EXISTING

## SEWERAGE

Sewerage infrastructure at Poruma includes the following elements.

### Collection system

A conventional gravity sewerage system that flows into two pumping stations. The sewerage reticulation network was installed circa 2013 with DN150 PVC pipework. The system consists of approximately 2,158 m of DN150 PVC gravity mains and 73 manholes.

### Pump stations

Two wastewater pump stations as follows:

- Pump Station No. 1 located on the south eastern side of the water lagoon.
- Pump Station No. 2 located off John Kelly Road
- The pump stations consist of a FRP wet well and valve chamber. Duty/standby submersible sewage pumps. Precast concrete collection MH immediately upstream of the pump station wet well.

### Rising mains

A total of approximately 1,654 m length split between two rising mains as follows:

- Rising main 1: DN110 poly rising main located between Pump Station No.1 and Pump Station No. 2
- Rising main 2: DN100 mm uPVC rising main located between Pump Station No. 2 and the wastewater treatment plant

### Treatment plant

Wastewater treatment plant located on the eastern edge of the island close to the airport, built circa 2013 with a capacity of 371 EP and an ability to treat a lower flow of 205 EP at 270 L/EP/day. The WWTP is an EPCO style packaged plant and consists of:

- Static Rundown Screen
- Aerated Balance Tank
- Blowers
- Transfer pumps
- Primary Clarifier

- Pre-Anoxic (Pre-Anox) Tank
- 2 No. Rotating Biological Contactors (RBC)
- De-Oxygenation (De-Ox) Tank
- Secondary Clarifier
- Sodium aluminate dosing (not operational according the latest condition assessment report)
- Carbon dosing (not operational according the latest condition assessment report)
- Ultraviolet Disinfection (not operational according the latest condition assessment report)
- Sludge Drying Beds
- Filtrate return pump station
- Ocean Effluent Outfall (DN110 PE100 PN16).

### Effluent Disposal

Effluent is disposed of via the ocean effluent outfall, a DN110 Polyethylene main.

### Assumptions

An Average Dry Weather Flow (ADWF) of 270 L/EP/day was adopted for Poruma based on value used in the design of the plant. The existing wastewater flows for Poruma are outlined in Table B2.

| DESCRIPTION | ADWF (L/S) | PWWF (L/S) |
|---|---|---|
| Residential Lots | 0.522 | 2.609 |
| Non-Residential Loads | 0.111 | 0.547 |
| **TOTAL** | **0.633** | **3.157** |

**TABLE B2:** WASTEWATER FLOWS - EXISTING

## STORMWATER

Poruma is a coral cay island, which is reasonably flat and composed largely of medium to coarse grain sand. A limited number of stormwater pits assist with the removal of stormwater from within the community and out to sea and kerbing is provided on some of the existing roads. The remainder of the community is serviced by overland flow. The provision of overland flow paths and kerbing to the roads should be provided to service any new development and to maintain the drainage of flows from the community to the sea.

## ELECTRICITY SUPPLY & COMMUNICATIONS

Poruma receives power from 3 Ergon Energy diesel generators which operate in a duty/duty/standby arrangement and are located near the water storage lagoon. Solar panels have been installed at the water lagoon and will ultimately provide supplementary power to the generator supply. At the time this master plan was prepared, the solar panels were not yet operational.

Electricity is supplied to the community by an overhead supply to the property boundary. Extension of existing supply to new properties will be required.

A communications tower is located near the water supply ground level reservoir. Communications is provided to the community by underground cabling. Extension of conduiting to the frontage of new properties will be required.

## TRANSPORT

Poruma Island is part of the Torres Strait central group of islands and is located approximately 107 km north east of Horn Island and 32 km from Warraber Island. Access to Poruma is by air or by barge. The airstrip and helicopter landing pad is located in the centre of the island to the east of the community and the barge ramp and finger pier is located on the northern side of the island towards the western end.

Poruma contains a network of paved local roads, along with formed dirt roads. The paved roads are typically 4.5 to 5 m wide and are generally in good condition. Where new developments are proposed that require new roads to access the sites, paved roads with 200 mm wide concrete edge strips to match the existing roads will be required.

# B2 INFRASTRUCTURE REQUIREMENTS

The assumptions used to assess the infrastructure requirements for each site are summarised in the following sections.

## ASSUMPTIONS

The assumptions used to assess the infrastructure requirements for each site are summarised in the following sections.

### Design Populations for Residential Lots

The infrastructure requirements for the proposed residential lots are based on the lot layouts presented in the preferred option. The following occupancy rates were adopted for the proposed residential lots:

- Single family dwelling (detached house): 4.1 EP/house in line with the current population rate
- 2 bedroom units: 1.6 EP/unit.

The design populations adopted for the proposed residential lots are summarised in Table B3.

| LOCATION | NO. OF LOTS | EP/LOT | POPULATION |
|---|---|---|---|
| R1 Housing redevelopment | Demolition and rebuild of 5 existing house sites – no increase in population | | |
| R2 New housing - west | 2 | 4.1 | 8.2 |
| R3 New housing - east | 2 | 4.1 | 8.2 |
| **TOTAL** | **4** | | **16.4** |

**TABLE B3:** DESIGN POPULATIONS - RESIDENTIAL LOTS

### Design Populations for Proposed Non-Residential Land Uses

The following assumptions were adopted in determining the infrastructure requirements for the proposed non-residential lots.

C1 Town Centre

- The Town Centre was assumed to include redevelopment of an existing area to allow for additional commercial and retail floorspace
- A typical equivalent population for shops and offices of 1.0 EP per 90 m² of Gross Floor Area (GFA) was adopted to calculate water demands and sewage flows (reference: FNQROC Regional Development Manual – Design Guidelines)
- The GFA was assumed to cover a total of 50% of the 5250 m² precinct, resulting in an additional 1000 m² of GFA above that currently in use. The remaining area of the lot was assumed to be utilised for building setbacks, awnings, off-street car parking and landscaping.

T1 Resort

- This development involves refurbishing and reopening the existing vacant resort
- The resort was assumed to include a reception area, food preparation area and 2 x 1-2 bedroom units
- The units water demand and sewage flow was sized in accordance with a two bedroom unit
- The reception area and food preparation area was assumed to have a gross floor area (GFA) of 20 m². Water and sewage flows were assumed to be as follows:
  - A water usage of 600 L/day per 100 m² of Gross Floor Area (GFA)
  - A sewage usage of 450 L/day per 100 m² of Gross Floor Area (GFA).

I1 Fuel Station

- The Fuel station development involves identification of an alternative site for fuel storage which provided 24 hour access for customers
- The fuel station is assumed to be a card based 24 hour bowser. There will not be an office on the site
- No enabling infrastructure is to be assessed for this site at this stage.

I2 Williams Street Industrial Precinct

- The Williams Street precinct was assumed to be used for light industrial applications such as sheds/workshops and lay-down areas. It was assumed that a maximum of 60% of the 3,700 m² site will be used for sheds and workshops
- Water and sewerage flows were assumed based on the low end of the typical usage for light industry provided in the DEWS guidelines as follows:
  - A typical water usage for light industrial applications of 10,000 L/day/ha was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Light Industry).

CF1 Art Centre

- The art centre was assumed to include the construction of a new 50 m² building within the school grounds
- A typical water demand of 600 L per 1,000 m² of Gross Floor Area (GFA) for a public building was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Public Building)
- A typical sewage flow of 450 L per 1,000 m² of Gross Floor Area (GFA) for a public building was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Public Building).

CF2 Old Church

- This development assumes the refurbishment of the old church. The building was assumed to include public toilets
- The church was assumed to have a gross floor area (GFA) of 170 m², based on measurements from aerial imagery. Water and sewer demands were based on the high end of the typical range for water and sewage flows for a Place of Worship provided in the Planning Guidelines for Water Supply and Sewerage (DEWS 2010). The following values were adopted:
  - A water usage of 400L/day per 100 m² of Gross Floor Area (GFA) was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Place of Worship)
  - A sewage usage of 180L/day per 100 m² of Gross Floor Area (GFA) was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Place of Worship).

CF3 Cemetery

- A capacity assessment of the existing cemetery is required to determine either an area for expansion or an additional site. No enabling infrastructure requirements will be assessed at this stage.

CF4 Health Care Centre

- The existing health care centre is to be refurbished and upgraded, including the staff accommodation
- The upgrade to the existing health centre was assumed to result in loads from two new staff accommodation units. The accommodation units were assumed to have a load equivalent to 1.0 EP per unit.

CF5 Community Garden

- The community garden development is assumed to include a small 20m² office with a toilet and kitchenette
- As the community garden is located a significant distance away from the nearest water infrastructure, site based water supply such as a bore is assumed
- A typical equivalent population for shops and offices of 1.0 EP per 90 m² of Gross Floor Area (GFA) was adopted to calculate sewage flows (reference: FNQROC Regional Development Manual – Design Guidelines)
- It is assumed that this site will be serviced by the existing unsealed road.

CF6 Landfill

- The existing landfill site has been identified as a potential site for a waste transfer station. The waste transfer station is expected to include a shed complete with a toilet and a small kitchenette
- As the landfill is located a significant distance away from the nearest water infrastructure, site based water supply such as a rainwater tank is assumed
- A typical sewage flow for light industrial applications of 10,000 L/day/ha was adopted was adopted
- It is assumed that this site will be serviced by the existing unsealed road.

CF7 Seawalls and bunds

- Seawalls and bunds are to be installed to mitigate the effects of coastal processes in accordance with the designs previously developed for this site. No enabling infrastructure is required.

CF8 Harbour

- This development includes and expansion and formalisation of the harbour precinct. It is assumed to include marine and landside facilities and the integration of training
- This site is currently serviced by water, sewer and electrical infrastructure, and there is a paved road to the site. No additional infrastructure is required
- It is assumed that the development of this site does not increase the water and sewerage loads above the current loads.

CF9 Electricity supply

- An investigation of alternate energy generation, supply and storage options is required
- No enabling infrastructure is required for this development.

CF10 Water supply

- An investigation of water supply capacity and any required upgrade options is required
- No enabling infrastructure is required for this development.

CF11 Airport

- This development involves preserving the airport runway approach and side buffers for ongoing airport operations
- No enabling infrastructure is required for this development.

OS1 Esplanade

- The esplanade development includes the provision of a pedestrian waterfront esplanade including lighting, shelters and public toilets
- A water demand and sewage flow for the public toilets has been developed based on the assumption of the usage of 20L of water per use, including both toilet flushing and hand washing, with a total of 20 uses per day
- It is assumed that this site will be serviced by the existing unsealed road.

OS2 Oval

- This development includes the provision of formal internal facilities and amenities at the existing site, including lighting, shaded playground, shade structures, public toilets and irrigation
- A water demand and sewage flow for the public toilets has been developed based on the assumption of the usage of 20L of water per use, including both toilet flushing and hand washing, with a total of 50 uses per day.

OS3 Dunes

- This development includes the conservation and enhancement of the existing dunes
- No enabling infrastructure is required for this development.

OS4 Camping

- This development includes the retention of the informal camping area for locals
- No enabling infrastructure is required for this development.

OS5 Northern foreshore

- This development includes the creation of a visitors day use and camping area which includes shelters and picnic tables
- Water and sewer demands were assumed based on the maximum numbers of campers that can use this area. It was assumed that the site will allow for up to 10 camping sites to be in use at any one time
- As the northern foreshore is located a significant distance away from the nearest water infrastructure, site based water supply such as a rainwater tank is assumed
- 1.2 EP/site was adopted for sewage loads from the grassed camping sites (reference: FNQROC Regional Development Manual – Design Guidelines)
- It is assumed that this site will be serviced by the existing unsealed road.

OS6 Access paths

- This development includes the development of a network of pedestrian trails and paths

- No enabling infrastructure is required for this development.

OS7 Eastern foreshore

- This development includes the creation of a visitors day use and camping area which includes shelters and picnic tables
- Water and sewer demands were assumed based on the maximum numbers of campers that can use this area. It was assumed that the site will allow for up to 5 camping sites to be in use at any one time
- As the eastern foreshore is located a significant distance away from the nearest water infrastructure, site based water supply such as a rainwater tank is assumed
- 1.2 EP/site was adopted for sewage loads from the grassed camping sites (reference: FNQROC Regional Development Manual – Design Guidelines)
- It is assumed that this site will be serviced by the existing unsealed road.

### Design water supply flow rates

Design water supply flow rates for proposed residential lots

The design flow rates adopted for the proposed residential lots are summarised in Table B4.

| LOCATION | NO. OF LOTS | AD (L/S) | PD (L/S) | PH (L/s) |
|---|---|---|---|---|
| R1 Housing redevelopment | | 0.000 | 0.000 | 0.000 |
| R2 New housing - west | 2 | 0.035 | 0.079 | 0.158 |
| R3 New housing - east | 2 | 0.035 | 0.079 | 0.158 |
| **TOTAL** | **4** | **0.070** | **0.158** | **0.316** |

**TABLE B4:** DESIGN FLOW RATES - RESIDENTIAL LOTS

Design water supply flow rates for proposed non-residential lots

The design flow rates adopted for the proposed non-residential lots are summarised in Table B5. These demands are based on the previously stated assumptions.

| ITEM | DEVELOPMENT SIZE | AD (L/S) | PD (L/S) | PH (L/s) |
|---|---|---|---|---|
| C1 Town Centre | 1000 m² new GFA for commercial uses | 0.048 | 0.107 | 0.214 |
| T1 Resort | 2 units and food preparation and restaurant area | 0.015 | 0.034 | 0.068 |
| I2 Williams Street Industrial Precinct | 3700 m² industrial area | 0.026 | 0.058 | 0.116 |
| CF1 Art Centre | 50 m² art centre | 0.003 | 0.008 | 0.035 |
| CF2 Old Church | Refurbishment of 170 m² church building | 0.008 | 0.018 | 0.080 |
| CF4 Health Care Centre | Refurbishment of existing centre, with additional 2 new staff accommodation units | 0.009 | 0.019 | 0.039 |
| CF5 Community Garden | Small office with toilet and kitchenette | | | |
| CF6 Landfill | Transfer station shed with toilet and kitchenette | | | |
| OS1 Esplanade | Public toilet block | 0.005 | 0.010 | 0.021 |
| OS2 Oval | Public toilet block | 0.012 | 0.026 | 0.052 |
| OS5 Northern foreshore | Amenities block for 10 camping sites | | | |
| OS7 Eastern foreshore | Amenities block for 5 camping sites | | | |
| **TOTAL** | | **0.124** | **0.280** | **0.624** |

**TABLE B5:** DESIGN FLOW RATES- NON-RESIDENTIAL LOTS

Summary Total Design Flow Rates for Proposed Development

The total design flow rates are summarised in Table B6.

| DESCRIPTION | AD (L/S) | PD (L/S) | PH (L/S) |
|---|---|---|---|
| Existing Residential Population | 0.715 | 1.609 | 3.218 |
| Existing Non-Residential Population | 0.158 | 0.351 | 1.496 |
| Residential Growth | 0.070 | 0.158 | 0.316 |
| Proposed Non-Residential Growth | 0.124 | 0.280 | 0.624 |
| **TOTAL** | **1.068** | **2.398** | **5.655** |

**TABLE B6:** SUMMARY TOTAL DESIGN FLOW RATES

### Design sewage flow rates

Design sewage flow rates for proposed residential lots

The design flow rates adopted for the proposed residential lots are summarised in Table B7.

| LOCATION | NO. OF LOTS | ADWF (L/S) | PWWF (L/S) |
|---|---|---|---|
| 0.715 | | 0.000 | 0.000 |
| 0.158 | 2 | 0.026 | 0.128 |
| 0.070 | 2 | 0.026 | 0.128 |
| **TOTAL** | **4** | **0.051** | **0.256** |

**TABLE B7:** DESIGN SEWAGE FLOW RATES - RESIDENTIAL LOTS

Design sewage demands for proposed non-residential lots

The design flow rates adopted for the proposed non-residential lots are summarised in Table B8. These demands are based on the previously stated assumptions

| ITEM | DEVELOPMENT SIZE | ADWF (L/S) | PWWF (L/s) |
|---|---|---|---|
| C1 Town Centre | 1,000 m² new GFA for commercial uses | 0.035 | 0.174 |
| T1 Resort | 2 units and food preparation and restaurant area | 0.011 | 0.055 |
| I2 Williams Street Industrial Precinct | 3,700 m² industrial area | 0.026 | 0.128 |
| CF1 Art Centre | 50 m² art centre | 0.003 | 0.013 |
| CF2 Old Church | Refurbishment of 170 m² church building | 0.004 | 0.018 |
| CF4 Health Care Centre | Refurbishment of existing centre, with additional 2 new staff accommodation units | 0.006 | 0.031 |
| CF5 Community Garden | Small office with toilet and kitchenette | 0.001 | 0.003 |
| CF6 Landfill | Transfer station shed with toilet and kitchenette | 0.000 | 0.001 |
| OS1 Esplanade | Public toilet block | 0.005 | 0.023 |
| OS2 Oval | Public toilet block | 0.012 | 0.058 |
| OS5 Northern foreshore | Amenities block for 10 camping sites | 0.038 | 0.188 |
| OS7 Eastern foreshore | Amenities block for 5 camping sites | 0.019 | 0.094 |
| **TOTAL** | | **0.157** | **0.786** |

**TABLE B8:** DESIGN FLOW RATES- NON-RESIDENTIAL LOTS

Summary Total Design Flow Rates for Proposed Development

The total design flow rates are summarised in Table B9.

| ITEM | ADWF (L/S) | PWWF (L/S) |
|---|---|---|
| Existing Residential Population | 0.522 | 2.609 |
| Existing Non-Residential Population | 0.111 | 0.547 |
| Residential Growth | 0.051 | 0.256 |
| Proposed Non-Residential Growth | 0.157 | 0.786 |
| **TOTAL** | **0.842** | **4.199** |

**TABLE B9:** DESIGN FLOW RATES- NON-RESIDENTIAL LOTS

**No enabling infrastructure required**

The following elements of the master plan do not require enabling infrastructure as they are located in a serviced area or the nature of the item does not require enabling infrastructure:

- R1 – Housing Redevelopment – existing serviced lots
- C1 – Town Centre – existing serviced area and scale of future development is to be determined as part of further investigation
- T1- Resort – existing serviced area
- I1 – Fuel Station – site to be determined as part of further investigation
- I2 – Williams Street – existing serviced area
- CF1 – Art Centre – existing serviced area
- CF2 – Old Church – existing serviced area
- CF3 – Cemetery – existing serviced area and expansion footprint/ location to be determined as part of further assessment
- CF4 – Health Care Centre – existing serviced area
- CF7 – Seawalls and bunds – no enabling infrastructure
- CF8 – Harbour – existing serviced area and scale of future development is to be determined as part of further investigation
- CF9 – Electricity supply – item relates to further investigations
- CF10 – Water supply – item relates to further investigations
- CF11 – Airport – no enabling infrastructure required to implement intended buffers
- OS2 – Oval – existing serviced area
- OS6 – Access Paths – no enabling infrastructure required

## TRANSPORT

A review of the proposed developments identified that most of the proposed development sites are located adjacent to existing sealed roads. New roads are required for the western residential expansion area (R3 &R4). Minimum requirements of the FNQROC Regional Development Manual have been assumed for costing purposes.

| DESCRIPTION | INFRASTRUCTURE REQUIREMENT |
|---|---|
| R2 New housing - west | New Access Place (5.5 m wide sealed carriageway, 14.5 m wide road reserve), approximately 83 m length. It is assumed that the road will be a paved road with a 20cm wide concrete edge strip in keeping with the existing road pavements. |
| R3 New housing - east | New Access Place (5.5 m wide sealed carriageway, 14.5 m wide road reserve), approximately 98 m length. It is assumed that the road will be a paved road with a 20cm wide concrete edge strip in keeping with the existing road pavements. |

**TABLE B10:** TRANSPORT INFRASTRUCTURE REQUIREMENTS

## WATER

The water supply infrastructure requirements for the preferred option are summarised in Table B11.

| DESCRIPTION | INFRASTRUCTURE REQUIREMENT |
|---|---|
| R2 New housing - west | 100 mm diameter water main from the existing water mains along the front of the proposed lots. Approximate 75 m total length of main. |
| R3 New housing - east | 100 mm diameter water main from the connection to development R3, along the front of the proposed lots. Approximate 72 m total length of main. |
| OS1 Esplanade | 100 mm diameter water main from the existing system to the location of the public toilets. Approximate 64 m total length of main. |

**TABLE B11:** WATER SUPPLY INFRASTRUCTURE REQUIREMENTS

The developments not listed in the table above can be serviced by the existing water supply infrastructure or by site-based infrastructure where the site is located a significant distance from the existing water supply network.

## SEWERAGE

An assessment of the sewerage infrastructure requirements to service the proposed future development was undertaken for the town. The assessment and the infrastructure requirements are summarised in the following sections. A summary of the elements of the existing sewerage system is provided in Table B12.

| ITEM | EXISTING CAPACITY | REQUIRED CAPACITY | DEFICIENCY |
|---|---|---|---|
| Sewage Treatment Plant Treatment lagoons | 371 EP | 269.3 EP | Nil |

**TABLE B12:** TRUNK WATER SUPPLY SYSTEM REQUIREMENTS FOR PROPOSED DEVELOPMENT

The sewerage infrastructure requirements for the preferred option are summarised in Table B13.

| DESC. | INFRASTRUCTURE REQUIREMENT |
|---|---|
| R3 New housing - east | 150 mm diameter gravity sewer mains along the proposed lots. Approximate 170 m total length of main.100 mm diameter sewer rising main, approximately 150 m length. Demolish existing DN150 mm diameter gravity sewer mains, approximately 100 m total length. Demolish existing DN100 mm sewer rising main, approximately 100 m total length. |
| CF5 Community Garden | 150 mm diameter gravity sewer mains from the community garden site to the sewage treatment plant. Approximate 75 m total length of main. |
| CF6 Landfill | 150 mm diameter gravity sewer mains from the community garden site to the gravity sewers in the vicinity of the sewage treatment plant. Approximate 50 m total length of main, assuming the CF5 Community Gardens is developed first. |
| OS5 Northern foreshore | 150 mm diameter gravity sewer mains from the community garden site to the gravity sewers in the vicinity of the sewage treatment plant. Approximate 190 m total length of main, assuming the CF5 Community Gardens is developed first. |
| OS7 Eastern foreshore | 150 mm diameter gravity sewer mains from the community garden site to the gravity sewers in the vicinity of the sewage treatment plant. Approximate 175 m total length of main, assuming the CF5 Community Gardens and CF6 Landfill are developed first. |

**TABLE B13:** SEWERAGEINFRASTRUCTURE REQUIREMENTS

The developments not listed in the table above can be serviced by the existing sewerage infrastructure.

## STORMWATER

There are no defined stormwater drainage systems on the island apart from minor culvert and above ground crossing of some roads. The majority of the proposed developments are infill developments and the existing roads will be able to service the lots. The residential developments R2 and R3 (new housing – west and new housing - east) are located on the southern side of the island, near the dunes. Kerb and channel may be required to direct flows towards the existing roads and away from the dunes.

## ELECTRICITY SUPPLY AND COMMUNICATIONS

The capacity of the electricity supply to Poruma will need to be confirmed to ensure that sufficient capacity is available for the community following the implementation of the proposed development.

The proposed development sites within the existing community footprint are located within the extent of the existing electrical and communication systems and new infrastructure will not be required for these sites.

The proposed development outside of the existing community footprint will require the installation of new electrical and communications infrastructure to service the development. Communications will require the installation of pits and conduits. The length of conduit for the communications has assumed to be generally the same as the length of new water main required. The electrical supply will require the installation of overhead supply and new poles. Poles will be required every 80 m and at changes in direction. The same alignment has been assumed for communications and electrical services. The electricity supply and communications services required are summarised in Table B14.

| DESC. | INFRASTRUCTURE REQUIREMENT |
|---|---|
| R2 New housing - west | Approximately 80 m length of electrical and communication mains to service the new lots. |
| R3 New housing - east | Approximately 70 m length of electrical and communication mains to service the new lots. |
| CF5 Community Garden | Approximately 35 m length of electrical and communication mains to service the site, assuming that electrical supply is available at the nearby sewage treatment plant. |
| CF6 Landfill | Approximately 100 m length of electrical and communication mains to service the, assuming that electrical supply is available at the adjacent sewage treatment plant. |
| OS1 Esplanade | Approximately 275 m length of electrical mains to service the length of the site. |
| OS5 Northern foreshore | Approximately 188 m length of electrical mains to service the, assuming that electrical supply is available at the nearby sewage treatment plant. |
| OS7 Eastern foreshore | Approximately 158 m length of electrical mains to service the, assuming that electrical supply is available at the nearby sewage treatment plant and that the CF6 Landfill site is developed first. |

**TABLE B13:** ELECTRICITY SUPPLY AND COMMUNICATIONS INFRASTRUCTURE REQUIREMENTS

# C. APPENDIX C. VEGETATION MAPPING

## Matters of State Environmental Significance Mapping


## DA Mapping System – Print Screen

Department of State Development, Manufacturing, Infrastructure and Planning



0 140 280 420 560

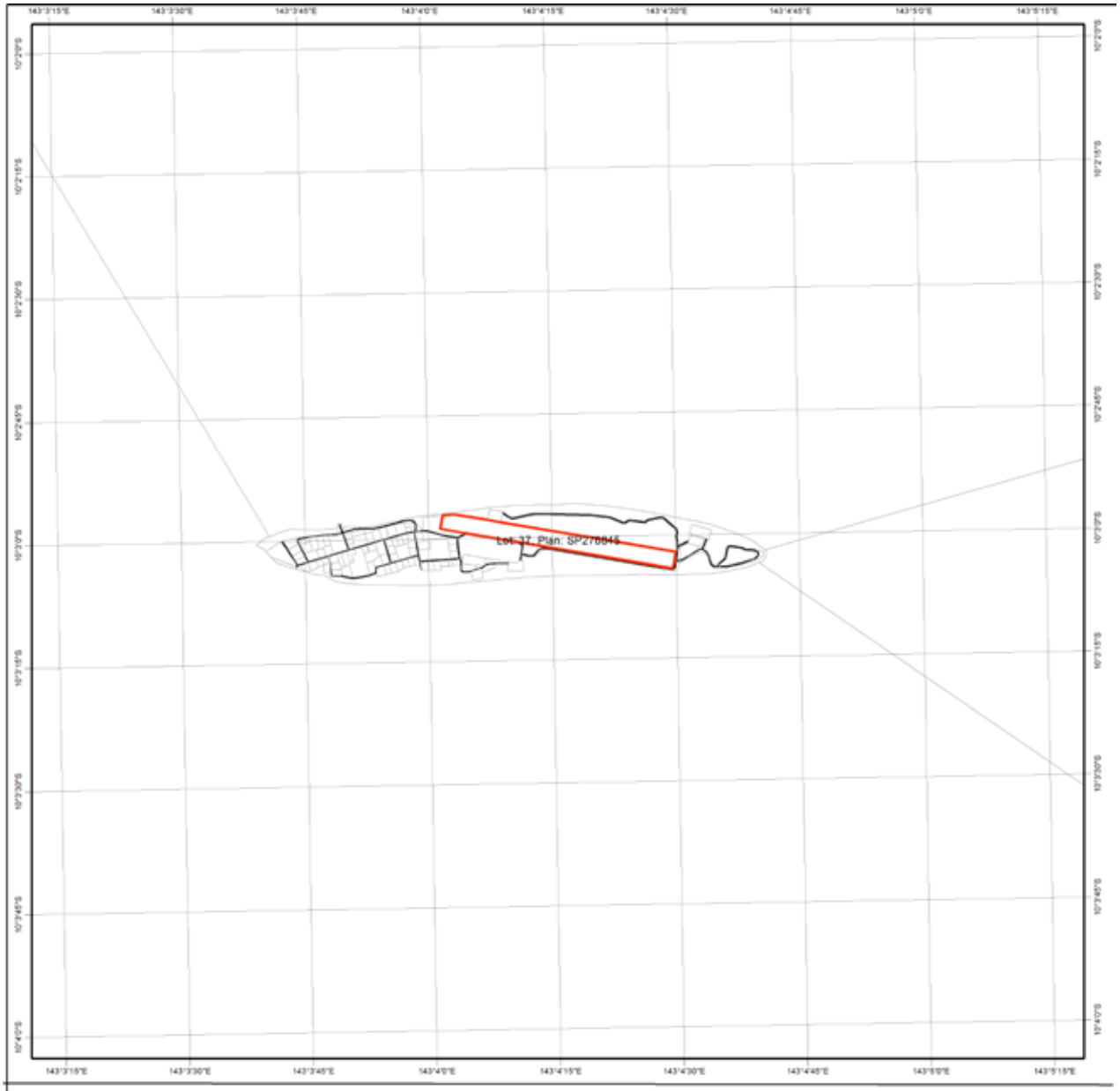
Metres

Date: 07/02/2020

N

Disclaimer:
This map has been generated from the information supplied to the Department of State Development, Manufacturing, Infrastructure and Planning for the purposes of the Development Assessment Mapping System. Note that this is a print screen only. The map generated has been prepared with due care based on the best available information at the time of publication. The State of Queensland holds no responsibility for any errors, inconsistencies or omissions within this document. Any decisions made by other parties based on this document are solely the responsibility of those parties. This information is supplied subject to the full terms and conditions available on the department's website.

ɔt: 37 Plan: SP276845




## Protected Plants Flora Survey Trigger Map

**Legend**

- Selected Lot and Plan
- High risk area
- Other land parcel boundaries
- Freeways / motorways / highways
- Secondary roads / streets

LOCALITY DIAGRAM

N

0 140 280 420 560 700 m

This product is projected into:
GDA 1994 Queensland Albers

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

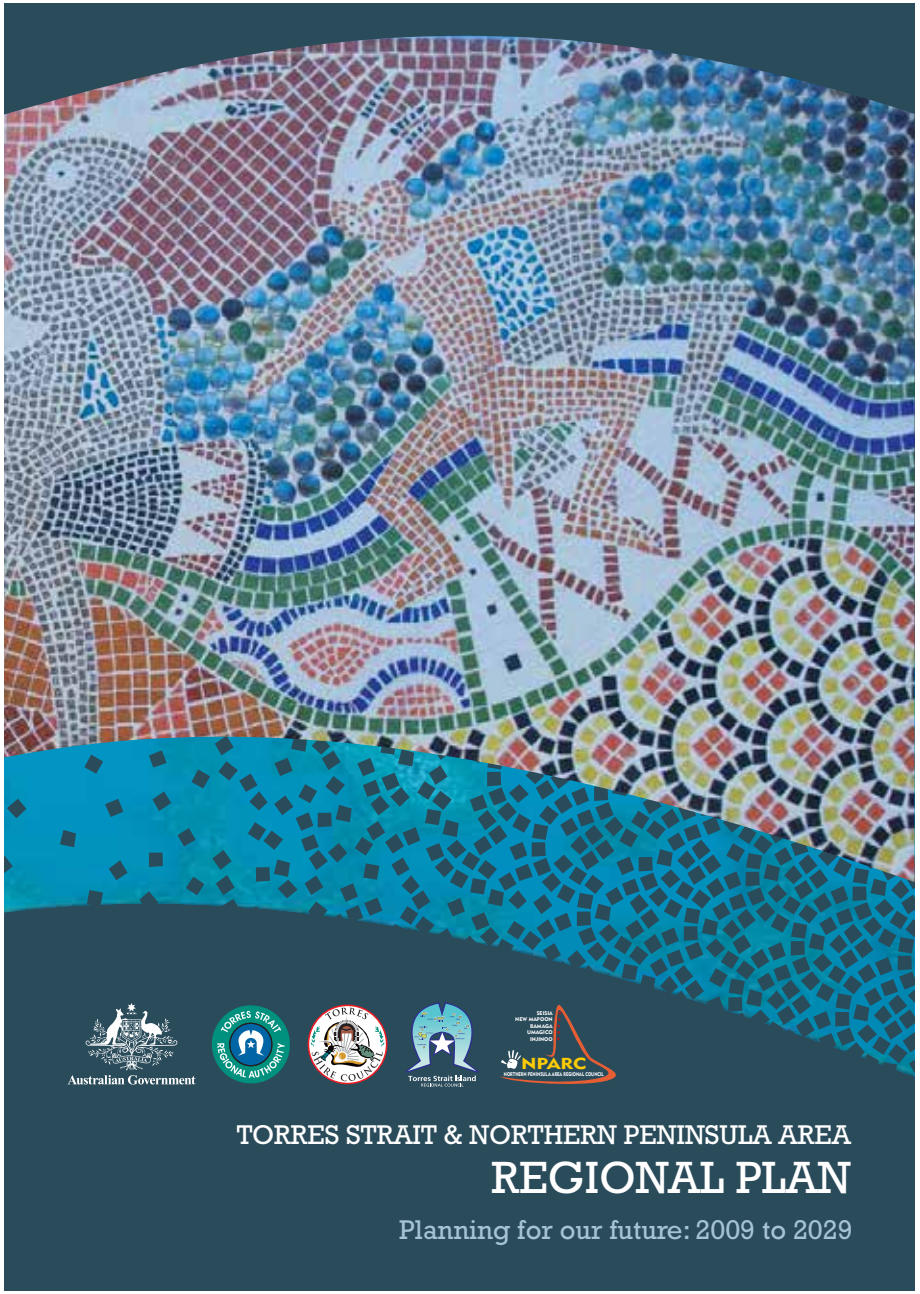
For further information or assistance with interpretation of this product, please contact the Department of Environment and Science at palm@ehp.qld.gov.au

Disclaimer:
While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

# D. APPENDIX D. STATE POLICY DOCUMENTS

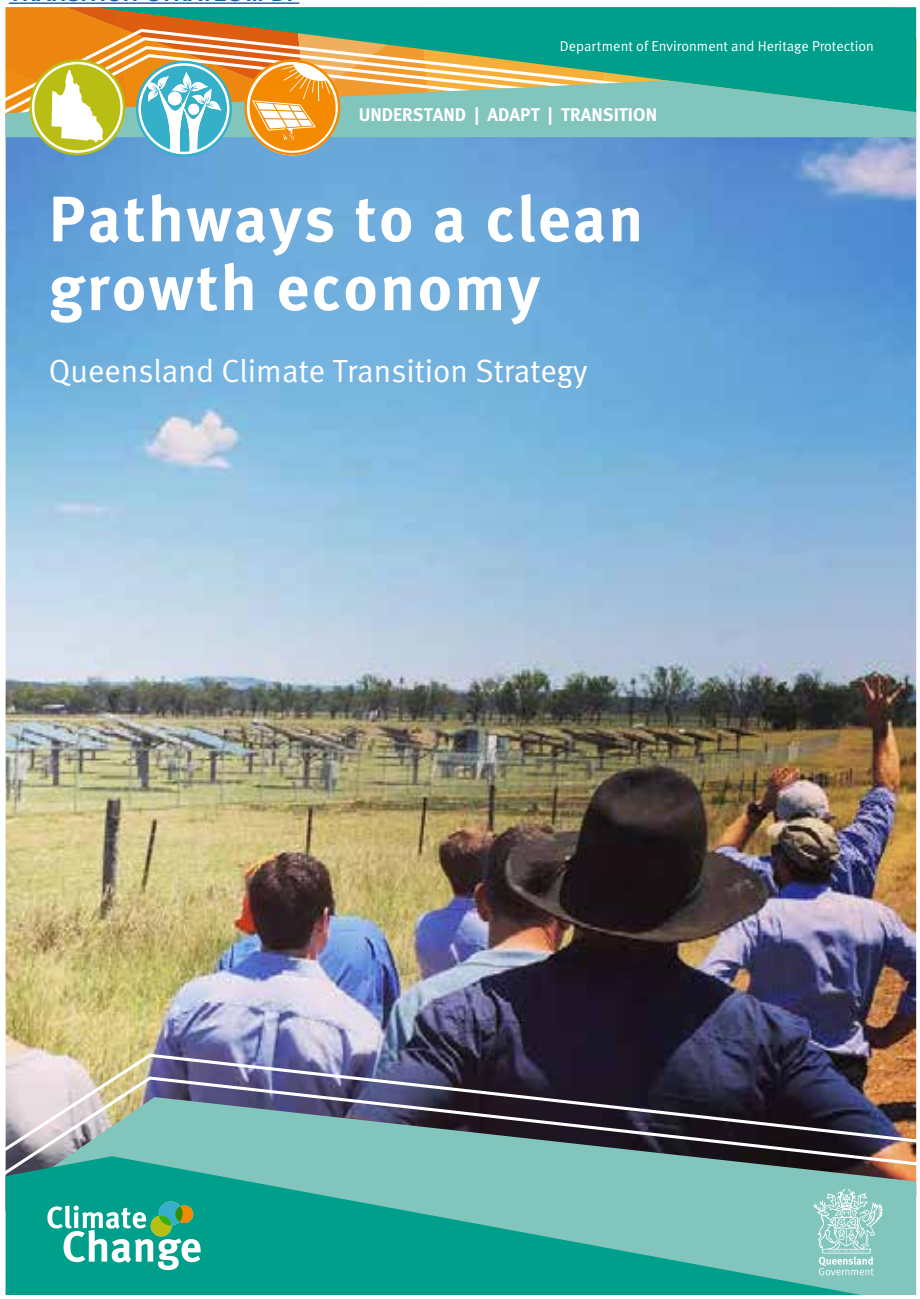
**ACCESSIBLE VIA:**
HTTPS://DILGPPRD.BLOB.CORE.WINDOWS.NET/GENERAL/SPP-JULY-2017.PDF


**ACCESSIBLE VIA:**
HTTP://WWW.TSRA.GOV.AU/__DATA/ASSETS/PDF_FILE/0018/1773/TS-NPA-RP-09-29.PDF

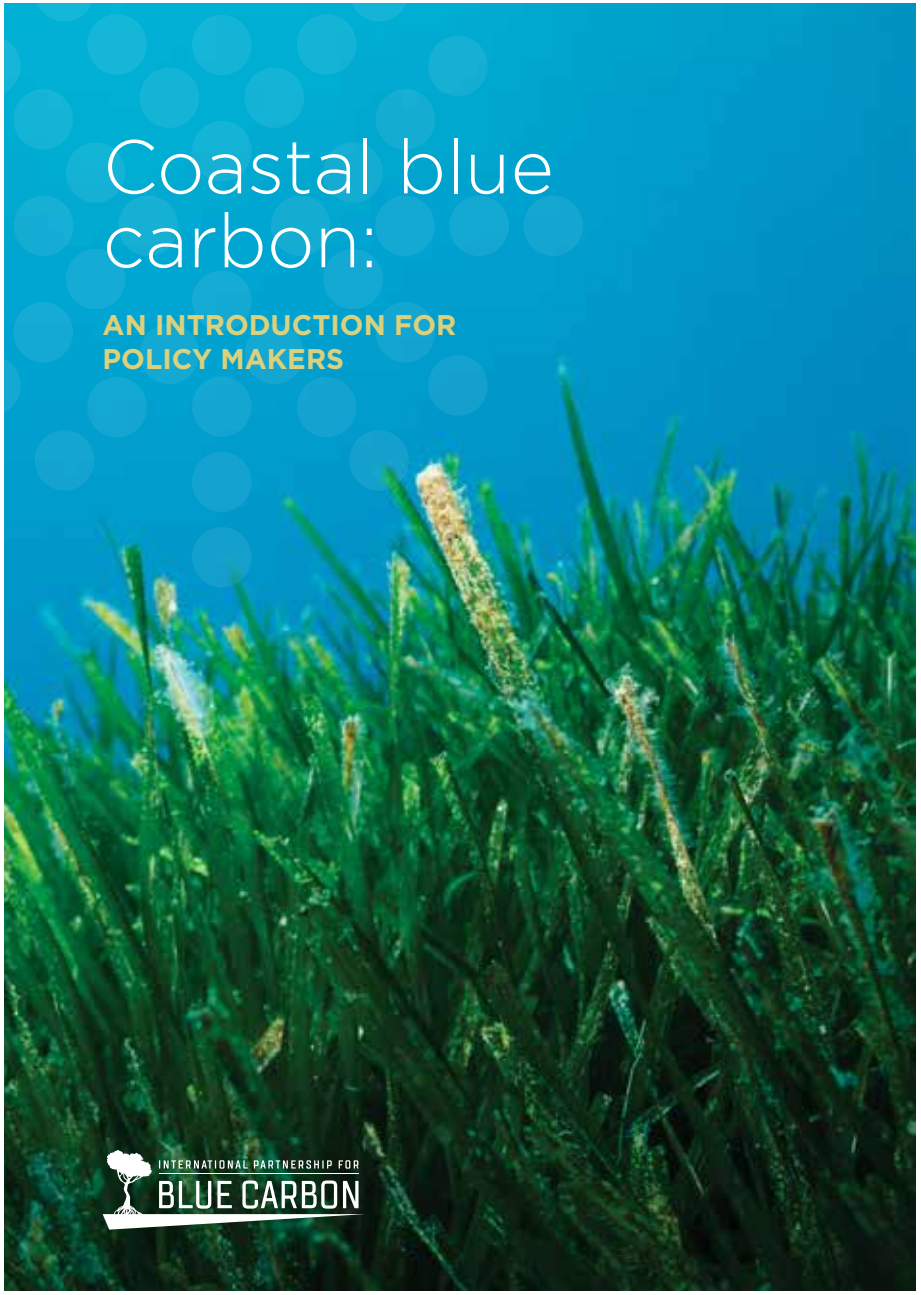


**ACCESSIBLE VIA:**
HTTPS://WWW.QRA.QLD.GOV.AU/RESILIENT-QUEENSLAND


**ACCESSIBLE VIA:**
HTTPS://WWW.QLD.GOV.AU/__DATA/ASSETS/PDF_FILE/0026/67283/QLD-CLIMATE-TRANSITION-STRATEGY.PDF



**ACCESSIBLE VIA:**
HTTPS://BLUECARBONPARTNERSHIP.ORG/RESOURCES/INTRODUCTION-POLICY-MAKERS/



# E. APPENDIX E. LOCAL POLICY DOCUMENTS

ACCESSIBLE VIA: HTTP://WWW.TSIRC.QLD.GOV.AU/SITES/DEFAULT/FILES/CORPORATE%20PLAN%202020-2025.PDF


ACCESSIBLE VIA: HTTP://TSIRC.QLD.GOV.AU/SITES/DEFAULT/FILES/OPERATIONAL%20PLAN%20FY20.PDF

# F. APPENDIX F. COMMUNITY ENGAGEMENT INFORMATION PACK

Queensland Government
Department of Aboriginal and Torres Strait Islander Partnerships

MASTER PLAN

COMMUNITY ENGAGEMENT PACK

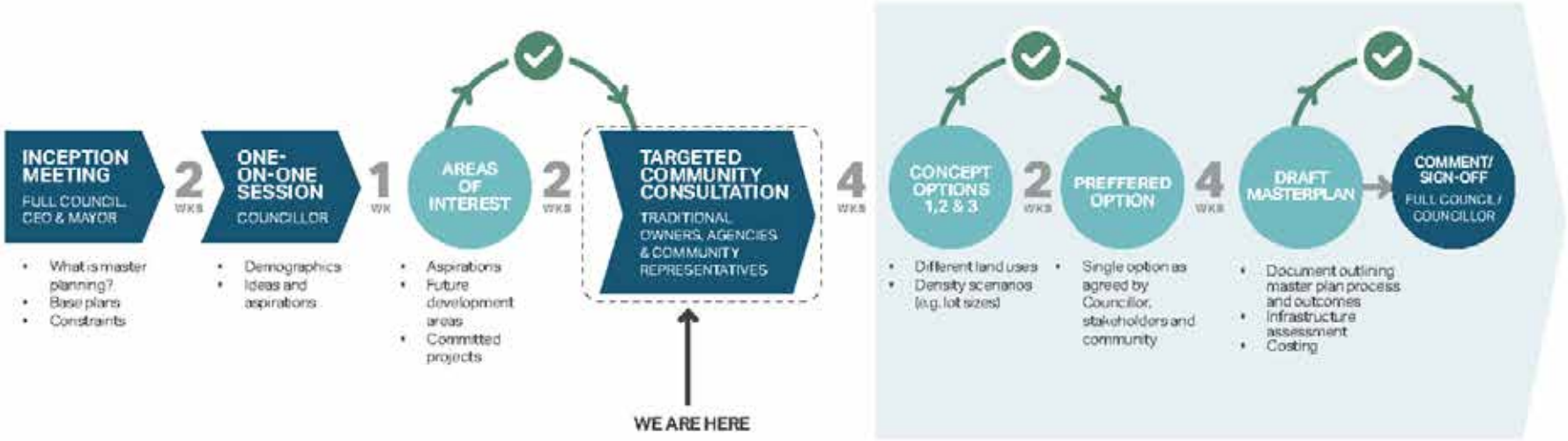
# PORUMA (COCONUT) ISLAND

DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER PARTNERSHIPS

AECOM

# PORUMA (COCONUT) ISLAND ENGAGEMENT APPROACH

**DURATION:** 4 MONTHS




*Meeting/community engagement session*

*Activity/deliverable*

*Councillor confirmation/comment by email/phone*

AECOM

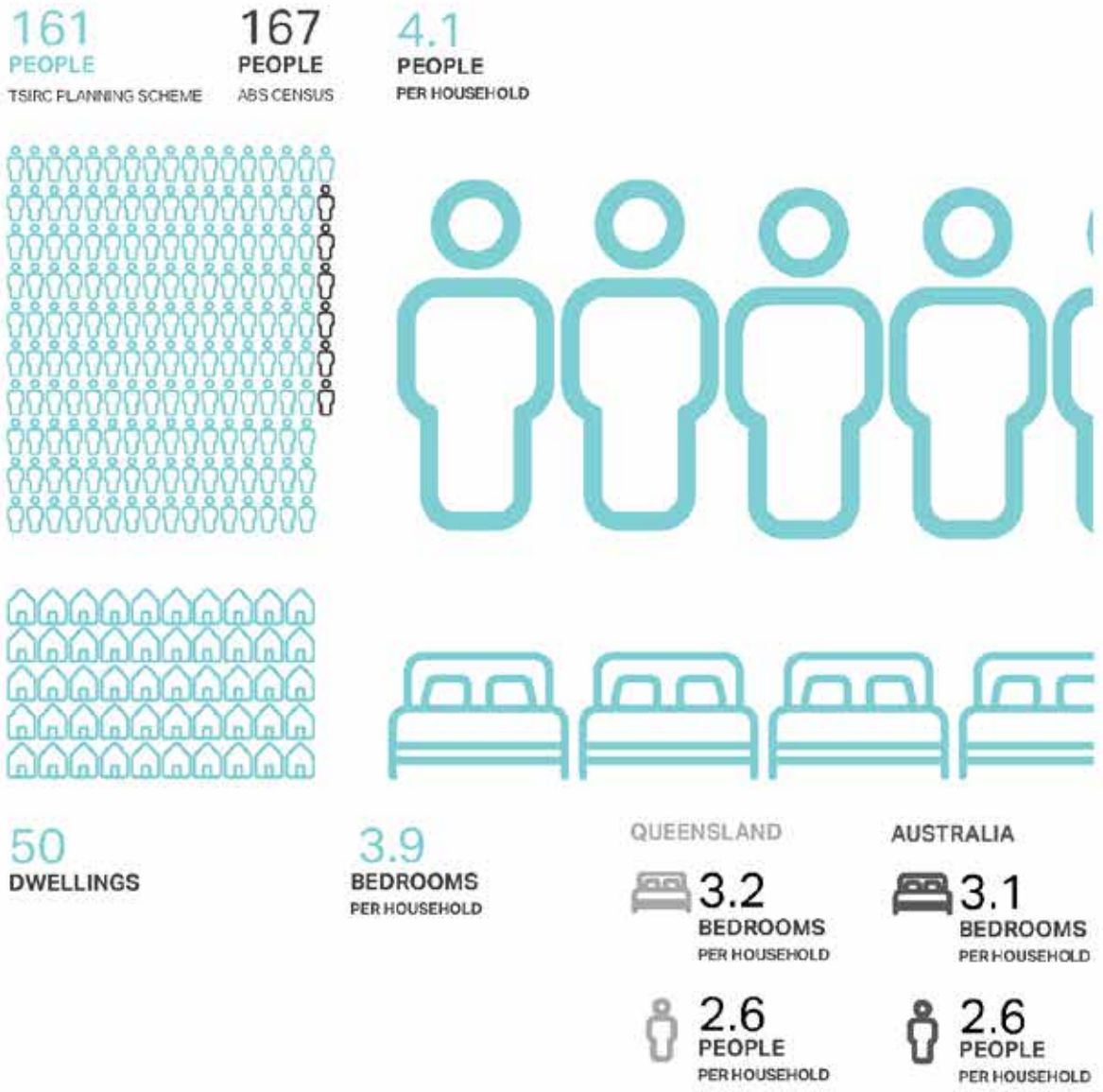
Queensland Government Department of Aboriginal and Torres Strait Islander Partnerships

## DEMOGRAPHICS

An overview of key population and housing characteristics for Poruma Island has been derived from the following published sources:

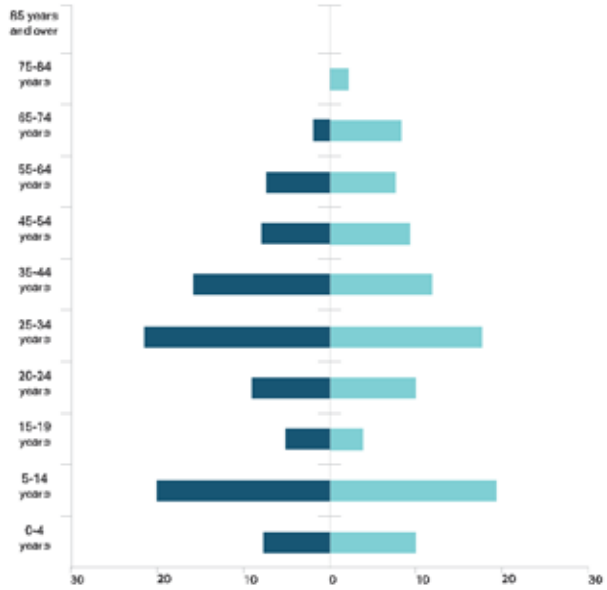
- Australian Bureau of Statistics – 2016 Census of Population and Housing data products products (Poruma (Coconut) Island (L) (SCC32379) 0.3km2):
  - / General Community Profile (Catalogue number 2001.0) (ABS 2016a)
  - / Quickstats webpage (ABS 2016b)
- Australian Bureau of Statistics – 2016 Census of Population and Housing data productsproducts (Poruma (Coconut) Island (L) (SCC32379) 0.3km2):
  - / Aboriginal and Torres Strait Islander Peoples Profile (Catalogue number 2002.0) (ABS 2016c)
- TSIRC Planning Scheme 2016 - Local Government Infrastructure Plan – Poruma Island.

The 2016 Census data products provide the most recent overview of existing population and housing statistics. Earlier custom projections, published within the TSIRC Planning Scheme, specific to Poruma Island, have therefore been utilised to characterise long term population trends within the community.



## POPULATION

The 2016 Census recorded the population within Poruma Island to be 167 persons. Graph 1 provides a summary of the total population and age structure for the 2016 census compared to 2041 population forecasts. It is evident that a large proportion of the population is aged below 14 years. The population profile indicates a lower representation of the 15–19 age group compared to the proportion of the population aged under 14 years. This is likely attributed to high school age students travelling outside the community to attend boarding school.




**GRAPH 1:** 2016 - 2041 COMPARISION POPULATION COUNT AND AGE STRUCTURE (PERCENTAGE) 2016 CENSUS PORUMA ISLAND

| SOURCE | 2011 | 2016 | 2021 | 2026 | 2031 | 2036 |
|---|---|---|---|---|---|---|
| **ABS Census** | 149 | 167 | - | - | - | - |
| **TSIRC Planning Scheme*** | 160 | 161 | 161 | 162 | 163 | 163 |

**QGSO provided TSIRC customised population projections, derived from the Queensland Government population projections, 2013 edition.*

*Source: (ABS 2016a) (ABS 2016d) (Torres Strait Island Regional Council 2016)*

**TABLE 2:** COMPARISON OF PROJECTION/RECORDS OVER TIME

Table 2 benchmarks the 2016 ABS Census data against previous population projections prepared by the Queensland Government Statistician's Office for the Torres Strait Island Regional Council. It is evident that projections for 2016 were not consistent with the recorded census total.

The TSIRC projections forecast a population increase between 2011-16 of 0.6%, while Census recorded a 12% growth. Based on Queensland Government population projections for the TSIRC local goverenment area, the Poruma population will increase by 6.77% to 179 people by 2036.

The 2036 - 2041 population forecasts drawn from Queensland Government population statistics shows the population aged over 45 years of age increases by 75%, impacting future development requirements.

Aging populations drive demand for increased health care services to address more complex healthcare issues. Increases in community services and aged care facilities are also required to support an aging community. In particular, Graph 1 shows the increase the over 65 year age group which will require mobility accessible single storey or low set residential housing.

## HOUSING

Based on the 2016 Census, there were a total of 63 occupied and 7 unoccupied dwellings on Poruma Island. Table 3 provides a summary of key housing statistics.

| ITEM | DETAIL |
|---|---|
| **DWELLING COUNT** | |
| Occupied | 49 |
| Unoccupied | 3 |
| **Total** | **50** |
| **NUMBER OF BEDROOMS** | |
| 1 bedroom | 0 |
| 2 bedrooms | 4 |
| 3 bedrooms | 26 |
| 4 or more bedrooms | 21 |
| Number of bedrooms not stated | 0 |
| Average number of bedrooms per dwelling | 3.9 |
| **TENURE** | |
| Rented | 48 |
| Other | 0 |
| Not stated | 0 |

**QGSO provided TSIRC customised population projections, derived from the Queensland Government population projections, 2013 edition.*

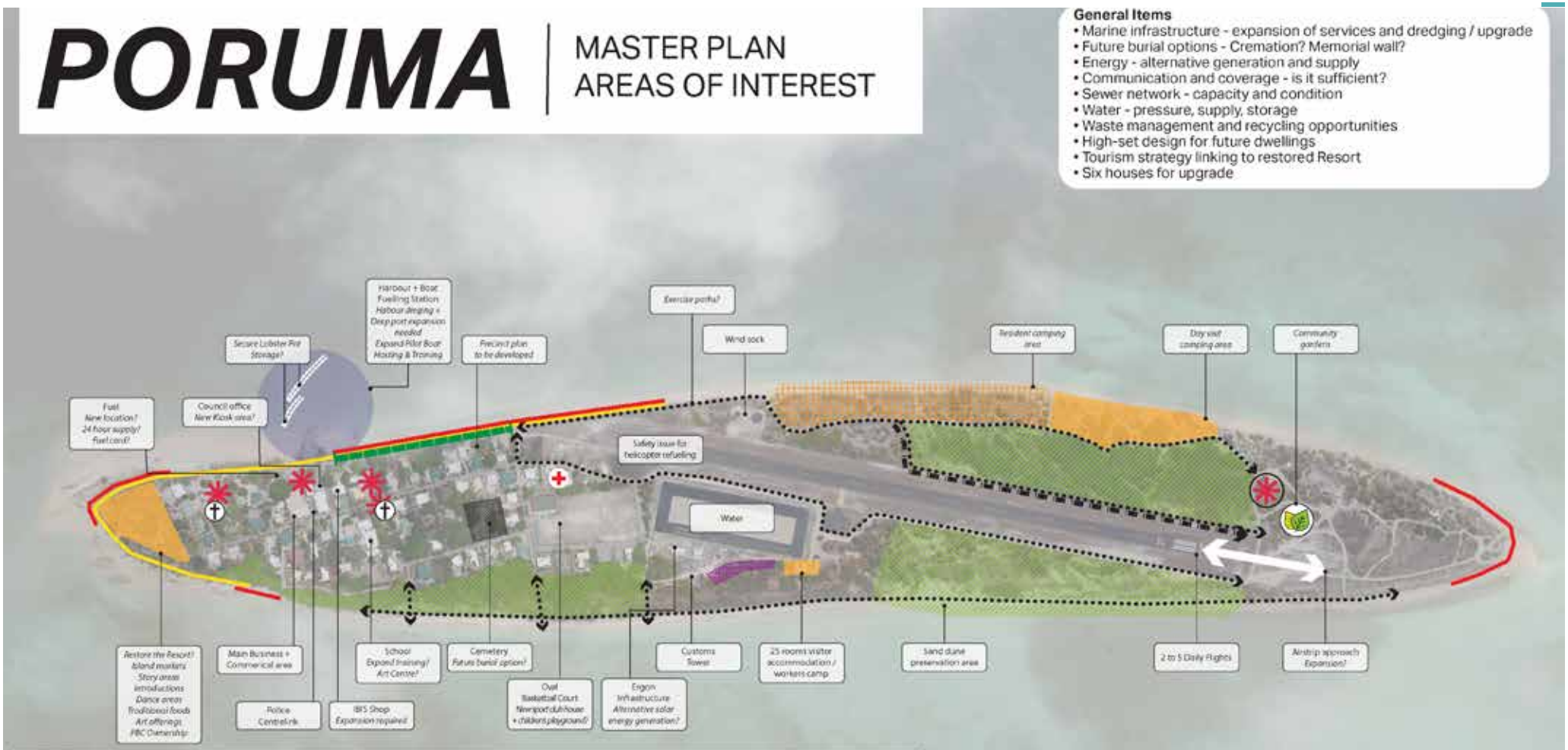
**Please note that there are small random adjustments made to ABS data values to protect the confidentiality of data. These adjustments may cause the sum of rows or columns to differ by small amounts from table totals.*

*Source: (ABS 2016a) (ABS 2016b) (Torres Strait Island Regional Council 2016)*

**TABLE 3:** HOUSING CHARACTERISTICS PORUMA ISLAND

# PORUMA | MASTER PLAN AREAS OF INTEREST

**General Items**
- Marine infrastructure - expansion of services and dredging / upgrade
- Future burial options - Cremation? Memorial wall?
- Energy - alternative generation and supply
- Communication and coverage - is it sufficient?
- Sewer network - capacity and condition
- Water - pressure, supply, storage
- Waste management and recycling opportunities
- High-set design for future dwellings
- Tourism strategy linking to restored Resort
- Six houses for upgrade




## HAVE YOUR SAY

We are preparing a master plan for the future growth and development of Poruma.

We would like to hear your thoughts, so come and have a chat to the engagement team or take a copy and provide your feedback to Cr Pearson.

**Our questions for you include:**
What kind of recreation facilities would youth and families use? (e.g. playgrounds, pathways, parkland)
Is room required for any other government service providers? (e.g. office space, shopfront service desks)
Are current houses overcrowded?
Are current houses suitably designed for residents needs? (e.g. is specific seniors accommodation required?)
Is the proposed industrial land in the right place? Is there enough space?

**LEGEND**
Environmental · Industrial · Tourism · Cultural area · Church · Healthcare · Cemetery · Esplanade · Future road · Future pedestrian paths · Future seawall · Future flood mitigation bund · Community garden

N

**PORUMA ISLAND**
AREAS OF INTEREST
FOR DISCUSSION PURPOSES ONLY
200 m

Queensland Government | Department of Aboriginal and Torres Strait Islander Partnerships | AECOM

RESIDENTIAL LOW DENSITY - DETACHED HOUSE

TOURISM - CAMPGROUND

COMMERCIAL - SHOP AND OFFICE BUILDING

RESIDENTIAL LOW DENSITY - DETACHED HOUSE

RECREATION / OPEN SPACE - EXERCISE EQUIPMENT

INDUSTRIAL - SHEDS / WORKSHOP

RESIDENTIAL MEDIUM DENSITY - UNITS

RECREATION / OPEN SPACE - SPORTING FACILITIES

COMMUNITY INFRASTRUCTURE - MARINE FACILITIES

**PORUMA (COCONUT) ISLAND MASTER PLAN**

**Land use examples**

Queensland Government Department of Aboriginal and Torres Strait Islander Partnerships | AECOM

# FOOD SECURITY QUESTIONS

*How well do community plans, policies and programs support the food needs of the community? For example, land for farming or gardening, healthy food policies at the store, school and aged care, breakfast programs at schools.*

*How much control do people have other their traditional lands and waterways?*

*How does the price of healthy food compare to the price of unhealthy food?*

*How good is the range of healthy food, kitchen hardware, personal hygiene and cleaning products in the store? Are the products always there?*

*How easy is it to get toe the shop for everyone in the community such as the elderly, people with a disability?*

*How good is the transport and delivery of food into the community?*

*How well do the community support each other to eat healthy food?*

*How much food is produced in the community? How well is it shared?*

*How well do homes support healthy eating? For example, is there somewhere you can prepare, cook and store food?*

*How good is the water and power supply in community? For example, blackouts or brownouts or water is unsafe to drink.*

*How good is the relationship between the community and the store?*

Queensland Government
Department of Aboriginal and Torres Strait Islander Partnerships

# FEEDBACK FORM

We are preparing a master plan for the future growth and development of Iama. We would like to hear your thoughts, so come and have a chat to the engagement team or take a copy and provide your feedback to Cr Lui.

Our questions for you include:

- What kind of recreation facilities would youth and families use? (e.g. playgrounds, pathways, parkland)
- Is room required for any other government service providers? (e.g. office space, shopfront service desks)
- Are current houses overcrowded?
- Are current houses suitably designed for residents needs? (e.g. is specific seniors accommodation required?)
- Is the proposed industrial land in the right place? Is there enough space?
- Is flooding or storm surge a problem at your house? How deep has water been in the past?
- Are more houses required or would it be better to rebuild bigger houses on current land?

Either provide your questions to Cr Lui or email to:

Cr.Getano.Lui@tsirc.qld.gov.au or Maggie.Kelly@tsirc.qld.gov.au

AECOM

NAME:

CONTACT DETAILS:

COMMENTS:

**AECOM**
AECOM AUSTRALIA PTY LTD
LEVEL 8, 540 WICKHAM STREET
PO BOX 1307
FORTITUDE VALLEY QLD 4006
T +61 7 3553 2000
F +61 7 3553 2050
WWW.AECOM.COM
ABN 20 093 846 925