Torres Strait Island Regional Council

Queensland Government
Department of Aboriginal and Torres Strait Islander Partnerships

MASTER PLAN

MASIG 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

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QUALITY INFORMATION

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REVISION HISTORY

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1	26-May-2020	Working draft for information purposes	Brian Gibbs - Project Manager	Original signed
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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 Future Residential and Industrial Land Use Master Plan for Masig Island in line with their Town Planning Scheme.

REPORT PURPOSE

The document encompasses the aspirations and hopes for Masig 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.

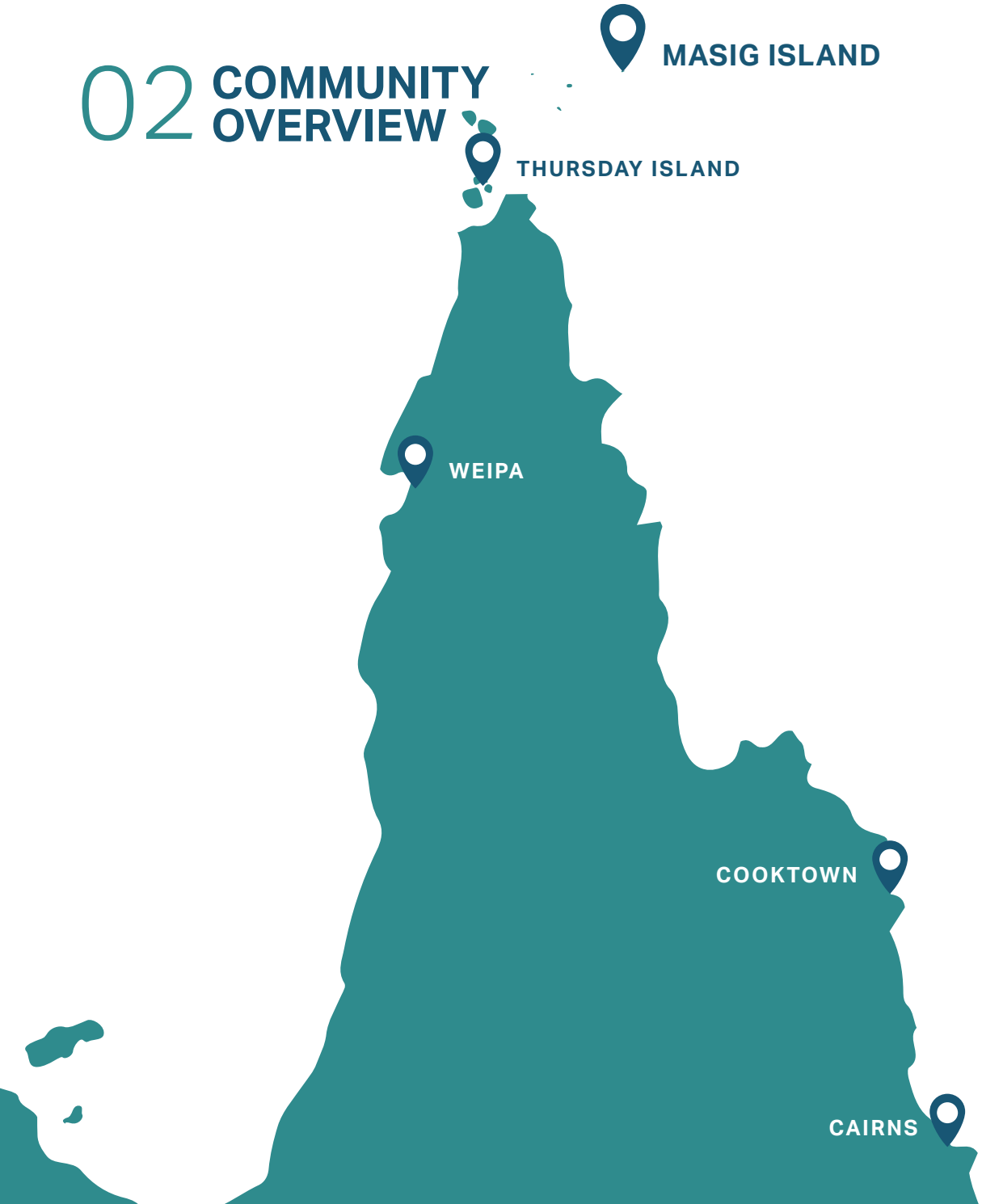
This report contains an overview of investigations and stakeholder consultation undertaken in the Masig Island community. It seeks to provide Council and DATSIP with a readily accessible and easily interpreted summary of the preferred master plan option, associated infrastructure requirements and action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

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

Masig Island is a remote Indigenous community located 100 km off the northern tip of Queensland, within the Torres Strait Island Regional Council area. The closest township to Masig Island is Erub Island, located 44 km north east. Masig Island is easily accessed by a regular scheduled air service from Horn Island.

Masig Island is approximately 1.6 km² in size and forms part of the Torres Strait Island Regional Council (TSIRC) Local Government Area (LGA).

COMMUNITY & GOVERNANCE

Masig Island (also known as Yorke Island) is a coral cay situated in the Eastern area of the central island group in the Torres Strait, 2.7 km in length and 800 m at its widest point.

The people of Masig Island are skilled navigators with a detailed knowledge of the reefs and have always occupied a central position in the Straits trading networks. Following the closure of the shell industry in the 1960s, the community shifted to commercial mackerel fishing, prawning and crayfishing. A highly profitable fish factory has operated on the island since the late 1970s.

Since the grounding of the local commercial air service by CASA in 2007, access to Masig is by charter plane only. All goods and mail are delivered by a weekly barge service.

The traditional language of Yorke Islands is a local dialect of Kalaw Lagaw Ya.

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. Key existing land uses throughout Masig are identified in Figure 1.

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.

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).

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 including manufacturing plants, processing plants, workshops and warehouses. Certain industrial uses may also have components of, or similarities to, commercial land uses.

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.

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.

FIGURE 1: MASIG ISLAND LAND USE

LAND USE, FACILITIES & SERVICES

The township area of Masig Island is approximately 30 hectares in size, located on the narrow eastern point of the island. Houses radiate out from town centre core centred the Dans Road and Barney Road.

The housing stock on the island is a mix of single and two-storey detached houses. Key land uses, facilities and services are available on Masig Island:

- Airport
- Regional council office, workshop and compound
- State school (years pre-prep to year 6)
- Health centre with permanent doctor and two nurses
- Three grocery stores (IBIS and two Mini-marts)
- Reef pilots station
- Post Office agency
- Centrelink agency
- Motel Lowatta Lodge
- SES shed
- Water plant reservoirs / filtration collection wells
- Power station
- Sewerage treatment plant
- Barge ramp and pier (small craft and passengers only)

Masig Island has a regular scheduled air service, with goods and mail delivered by a weekly barge service.

TENURE

Masig Island is held under Native Title by the Masigalgal people, granted in July 2000. Federal determinations: QUD6050/1998, QUD6068/1998.

Land used by the airstrip, church, Ergon and Telstra infrastructure are excluded from this claim.

The airstrip is designated leasehold land, held in reserve.

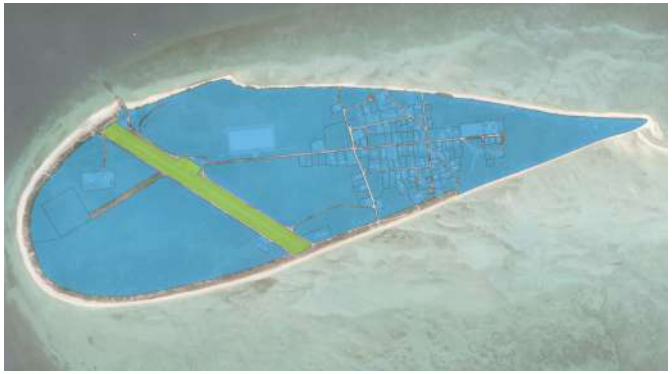


FIGURE 2: MASIG ISLAND LAND TENURE

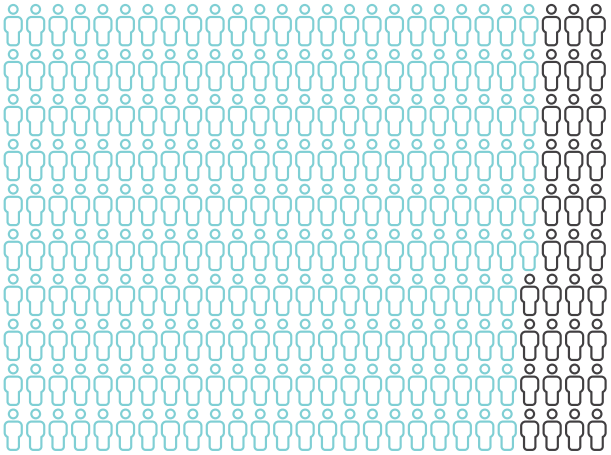
FIGURE 3: MASIG ISLAND TOWNSHIP LAND TENURE

DEMOGRAPHICS

An overview of key population and housing characteristics within the Masig Island LGA has been derived from the following published sources:

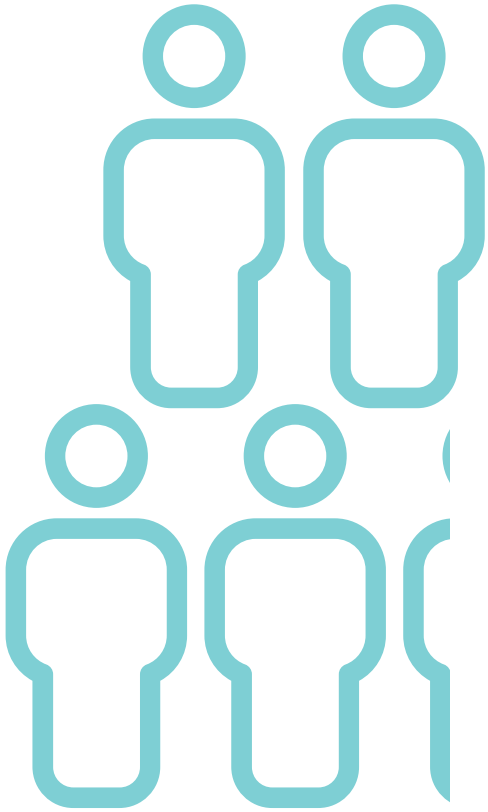
- Australian Bureau of Statistics – 2016 Census of Population and Housing data products (Masig (York) Island (SSC31799) 1.6km²):
  - General Community Profile (Catalogue number 2001.0) (ABS 2016a)
  - Quickstats web page (ABS 2016b)
- Australian Bureau of Statistics – 2016 Census of Population and Housing data products (Masig (Yorke) Island (SSC31799) 1.6km²):
  - Aboriginal and Torres Strait Islander Peoples Profile (Catalogue number 2002.0) (ABS 2016c)
- TSIRC Planning Scheme 2016 - Local Government Infrastructure Plan - Masig 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 Masig Island, have therefore been utilised to characterise long term population trends within the community.



236
PEOPLE
TSIRC PLANNING SCHEME

270
PEOPLE
ABS CENSUS



66
DWELLINGS

3.7
BEDROOMS
PER HOUSEHOLD

4.1
PEOPLE
PER HOUSEHOLD

QUEENSLAND

3.2
BEDROOMS
PER HOUSEHOLD

2.6
PEOPLE
PER HOUSEHOLD

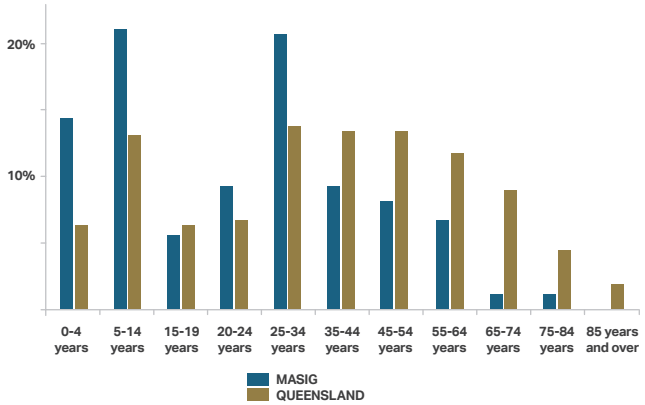
AUSTRALIA

3.1
BEDROOMS
PER HOUSEHOLD

2.6
PEOPLE
PER HOUSEHOLD

POPULATION

The 2016 Census recorded the population within Masig Island to be 270 persons. Graph 1 provides a summary of the total population and age structure for the 2016 census compared to the State of Queensland. 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 - MASIG & QUEENSLAND

SOURCE	2011	2016	2021	2026	2031	2036
ABS Census	238	270	-	-	-	-
TSIRC Planning Scheme*	254	236	221	211	204	200

**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 decrease between 2011-16 of 7%, while Census recorded a 13% growth. Based on Queensland Government population projections for the TSIRC local government area, the Masig population will increase by 6.77% to 289 people by 2041.

The 2036 - 2041 population forecasts drawn from Queensland Government population statistics shows the population aged over 45 years of age increases by 71%, 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 57 occupied and 9 unoccupied dwellings on Masig Island. Table 2 provides a summary of key housing statistics.

ITEM	DETAIL
DWELLING COUNT	
Occupied	57
Unoccupied	9
Total	**66**
NUMBER OF BEDROOMS	
1 bedroom	0
2 bedrooms	3
3 bedrooms	21
4 or more bedrooms	33
Number of bedrooms not stated	0
Average number of bedrooms per dwelling	3.7
TENURE	
Rented	53
Other	3
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 MASIG ISLAND

03 INFRASTRUCTURE REVIEW

The following section provides an overview of the nature and capacity of existing infrastructure servicing the township. Further detailed information regarding existing infrastructure is provided in Appendix B.

WATER SUPPLY

Water supply infrastructure at Masig comprises the following elements.

Raw water source

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

- Saline groundwater:
  - The water is extracted using two bores with a capacity of 3000 L/hour
  - 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
  - Water quality is extensively contaminated from bird activity.

Groundwater was previously used as a source however is no longer operational. Anecdotal evidence suggests that it became saline and/or contaminated from the old septic systems.

Water Treatment Systems

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

- Desalination Plant:
  - Capacity of 72 kL/day, operating 23-24 hours per day
  - Pressure pump and 3 reverse osmosis (RO) units and anti-scalant chemical dosing
- Water treatment plant (combined treatment)
  - Filtration using two pressure media filters
  - Disinfection (chlorine dosing).

Water Storage

- Brackish water storage: a 15 kL raw water settling tank
- Storage lagoon: a lined and covered 24 ML storage lagoon, consisting of two segments. The lagoon holds approximately 270 days storage when full
- Elevated reservoir: a 90 kL reservoir, 10 to 15 m high is located adjacent to the water treatment plant. The reservoir holds less than 1 days treated water storage at average consumption.

Pumps

A pump station is used to supply water to the elevated storage reservoir.

Reticulation system

The reticulation network is gravity fed from the elevated storage reservoir. Anecdotally, the reticulation system is predominately 80 mm PVC. Additionally, many houses have water storage tanks.

Demands

The TSIRC Sustainable Water & Wastewater Management Plan reported that the average water demand was reduced from 500 L/EP/day to 240 L/EP/day when water restrictions are in place. An average day water demand of 500 L/EP/day was adopted to ensure that the water supply network is sized adequately for periods when water restrictions are not in place. Existing water supply demands are outlined in Table 3.

DESCRIPTION	AD (L/S)	PD (L/S)	PH (L/S)
Residential Lots	1.563	3.516	7.031
Non-Residential Loads	0.233	0.524	2.358
TOTAL	**1.795**	**4.040**	**9.389**

TABLE 3: EXISTING WATER SUPPLY DEMANDS

STORMWATER

Masig is a coral cay island, which is reasonably flat and composed largely of medium to coarse grain sand. Stormwater infrastructure was not identified on site. The community is serviced by overland flow, with kerbing to some of the roads. 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

Masig receives power from 3 Ergon Energy diesel generators which operate in a duty/duty/standby arrangement and are located on Steven Jeff Road, on the western side of the community. 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 on the eastern side of the community. Communications is provided to the community by underground cabling. Extension of conduiting to the frontage of new properties will be required.

TRANSPORT

Masig Island is part of the Torres Strait central group of islands and is located approximately 158 km north east of Horn Island. Access to Masig is by air or by barge. The airstrip and helicopter landing pad is located to the west of the community and the barge ramp and finger pier is located on the northern side of the island towards the western end.

Masig 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.

SEWERAGE

The existing sewerage infrastructure at Masig includes the following elements.

Collection system

- A conventional gravity sewerage system with 150 mm diameter pvc pipework that flows into two pumping stations.
- Three wastewater concrete sewage pump stations, each with duty/standby submersible sewage pumps and a precast concrete manhole immediately upstream of the pump station as follows:
  - Pump Station No. 1 on Williams Road, across the road from the western end of the school. Pumps to the SPS 3 catchment.
  - Pump Station No. 2 on Lowatta Road. Pumps to the SPS 3 catchment.
  - Pump Station No. 3 at the intersection of JDL Road and Steven Jeff Road. Pumps to the WWTP.
- Rising Mains as follows:
  - Rising main 1: DN90 mm poly rising main located between Pump Station No.1 and Pump Station No. 3
  - Rising main 2: DN90 mm poly rising main located between Pump Station No. 2 and Pump Station No. 3
  - Rising main 3: DN110 PE rising main located between Pump Station No. 3 and the wastewater treatment plant

Wastewater treatment plant

Located on the southern side of the island close to the airstrip, built in 2008 with a capacity of 500 EP at 270 L/EP/day. The WWTP is an EPCO style packaged plant.

Effluent Disposal

Effluent is disposed of via the ocean effluent outfall, a 1250 m long 110 mm diameter polyethylene main.

Existing Flows

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

DESCRIPTION	ADWF (L/S)	PWWF (L/S)
Residential Lots	0.844	4.219
Non-Residential Loads	0.154	0.768
TOTAL	0.997	4.986

TABLE 4: EXISTING WASTEWATER FLOWS

FIGURE 4: WATER AND SEWER INFRASTRUCTURE - EXISTING

FIGURE 5: ROAD INFRASTRUCTURE - EXISTING

FIGURE 6: 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 Masig Island.

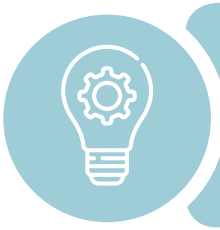
The adjacent infographic depicts the five stages of the master planning process undertaken for Masig Island.

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 in Masig in 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 in Masig.

05 PLANNING REVIEW

OVERVIEW

This chapter provides an overview of the following policies, plans and legislation which are relevant to the NPA 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

STATE PLANNING POLICY

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 SPP includes a range of mapping which highlight particular environmental and physical matters which may affect development (similar to local scheme overlays). On Masig Island these include: Environment and Heritage; Safety and Resilience to Hazards; and Infrastructure.

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 of the Environment element include:

- Matters of State Environmental Significance overlay most of Masig outside of the township's development footprint. MSES Regulated vegetation category B covers the vegetated western side and the eastern peninsula. Regulated category C vegetation is identified to the south west of Steven Jeffs Road and south east of Aous Road.

For the purposes of master planning, these environmental features can be considered a potential physical constraint to future development. Figure 7 overlays these elements to indicate areas of Masig Island which are constrained.

FIGURE 7: STATE PLANNING POLICY ENVIRONMENTAL OVERLAYS

Key characteristics of the safety and resilience to hazards element includes:

- High storm tide inundation area - located on the vegetated north west of the island
- Medium storm tide inundation area - affects the balance of the island not impacted by High storm tide inundation area
- Bushfire – Medium hazard landscape is located either side of the airstrip on the western side of the island, with an potential bushfire impact buffer west of Steven Jeff Road.

For the purposes of master planning, storm tide inundation, erosion prone areas and bushfire hazard represent a physical constraint to future development. Figure 8 overlays these elements to indicate areas of town which are constrained. The Medium storm tide inundation area is generally reflected by the local planning scheme, however the High storm tide inundation area is not adequately integrated in the planning scheme. The SPP bushfire hazard areas are integrated appropriately in the local planning scheme.

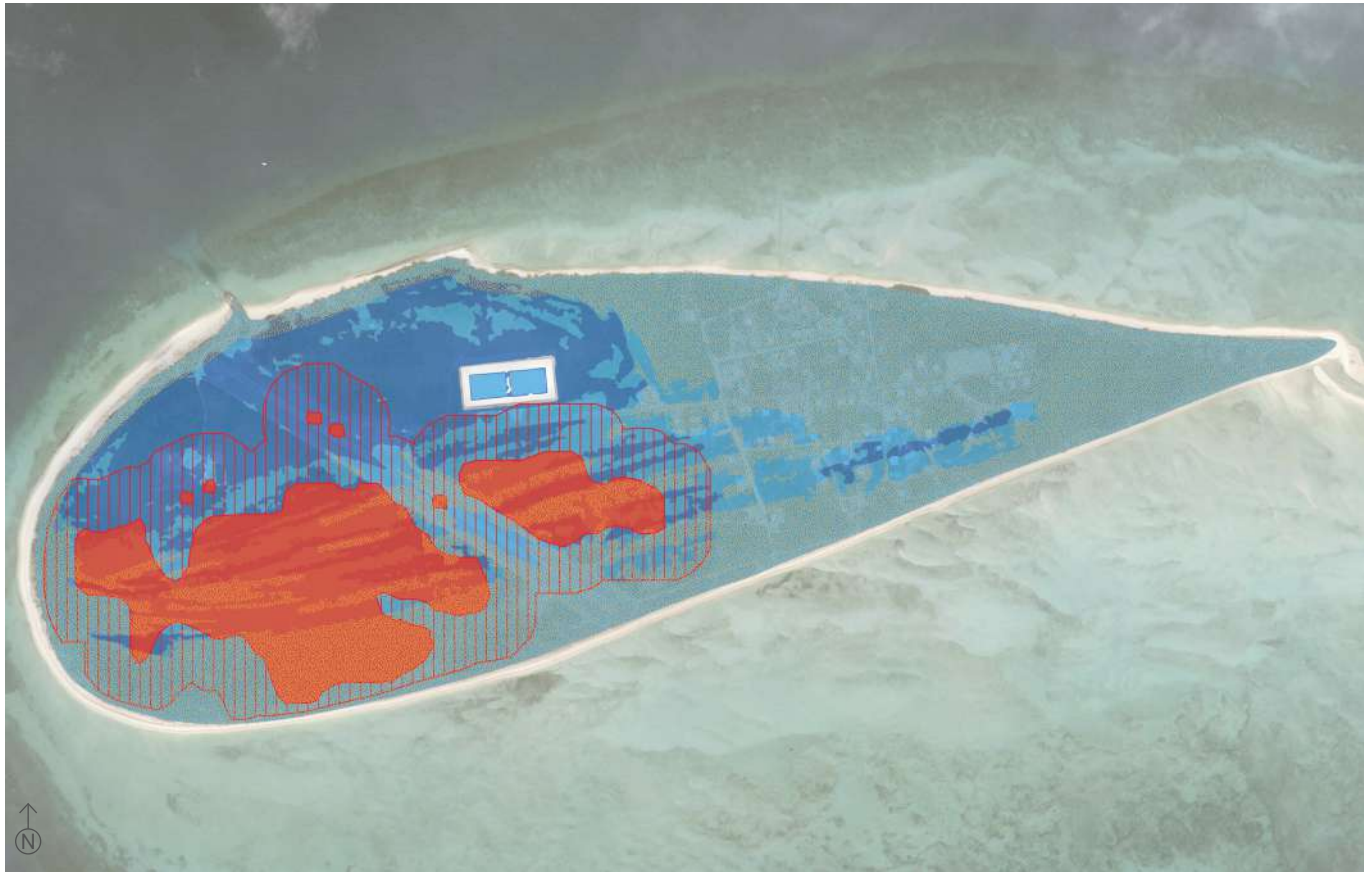


FIGURE 8: STATE PLANNING POLICY SAFETY AND RESILIENCE OVERLAY

- HIGH STORM TIDE INUNDATION AREA
- MEDIUM STORM TIDE INUNDATION AREA
- EROSION PRONE AREA
- MEDIUM BUSH FIRE HAZARD
- POTENTIAL BUSH FIRE IMPACT BUFFER

VEGETATION MANAGEMENT ACT 1999

The majority of land surrounding the township is mapped as Category B Regulated Vegetation which is regulated under the *Vegetation Management Act 1999*. The existing township, landfill, wharf precinct and part of the airport is within the Category X area. Clearing of vegetation within a Category X area does not require approval under the *Vegetation Management Act 1999*.

Vegetation surrounding the township area is predominately mapped as 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 existing township, airport, marine facilities and landfill are not located within a high risk area.

Land to the west of the township is mapped within a high risk area. Appendix C contains a copy of the flora survey trigger map for Masig.

TORRES STRAIT AND NORTHERN PENINSULA AREA REGIONAL PLAN 2009 - 2029

Masig is within the Torres Strait region, and is subject to the Torres Strait and Northern Peninsula Area 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 and maximise the opportunities and resources to secure the future of the region and provide adequate, appropriate and coordinated service delivery for the Council areas within the region and support the implementation of the local Planning Scheme.

The opportunities available to Masig Island include :

- Achieve sustainable industries owned and operated by local people (marine based, tourism, arts and craft, construction)
- Training a significant number of community members to undertake environmental and natural resource management
- Enhancing the liveability of the townships to increase attraction and retention of workers and 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 Masig within the regional plan include:

- High cost of living due to population size and reliance on imports
- Remoteness, limited infrastructure and access to markets
- Securing and maintaining basic infrastructure for the community
- Maintaining viable communities with employment opportunities
- Low health and education standards and outcomes
- Preparing and implementing a community plans and planning scheme
- Absence of secure individual title
- Climatic conditions and seasonal water availability

PLANNING SCHEME

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

- Masig island township is concentrated between Steven Jeff and Barneys Road.
- The township encompasses all commercial, government, industry and residential uses on Masig Island.
- Residential dwellings are clustered east of Steven Jeff Road.

A Township Expansion Precinct has been identified to the west of the existing township along Dan Street. This area may be suitable for future residential/urban development uses.

FIGURE 9: 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, bushfire 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 –The existing township is identified as low environmental value with areas of moderate value scrub to the east and west. The western end of the island is identified as high environmental value. Rare wading bird habitat to be preserved rings the eastern point and southern coastline of Masig.
- Bushfire – Medium hazard landscape is located either side of the airstrip on the western side of the island, with an potential bushfire impact buffer west of Steven Jeff Road.
- Landslide – Submerged ocean floor ridgelines off the western foreshore and eastern point are identified as a landslide hazard area.
- Potential Acid Sulfate Soils – the township is wholly located on land below 5m AHD.
- Coastal – the Storm Tide Inundation Area covers most of the township and the coastline of the island.

For the purposes of master planning, storm tide inundation, erosion prone areas and bushfire hazard represent a physical constraint to future development. Figure 10 overlays these elements to indicate areas of town which are constrained.

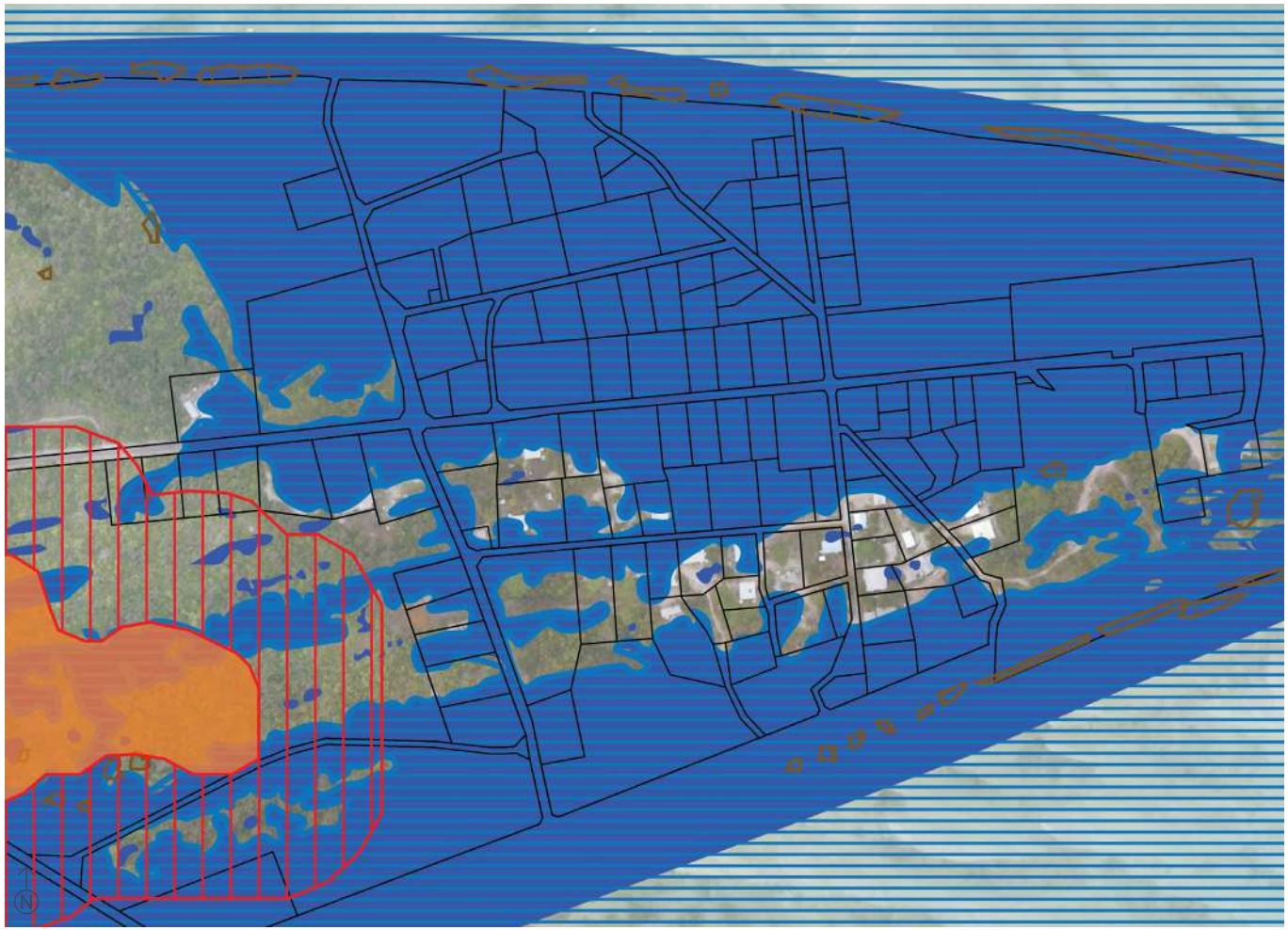


FIGURE 10: PLANNING SCHEME OVERLAYS

06 CLIMATE CHANGE & 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 12. Pathway 3 has bearing on the master planning process for Masig. Achieving the Strategy's goals at a regional community level hinges on empowering local governments to enact the actions outlined in Figure 13.

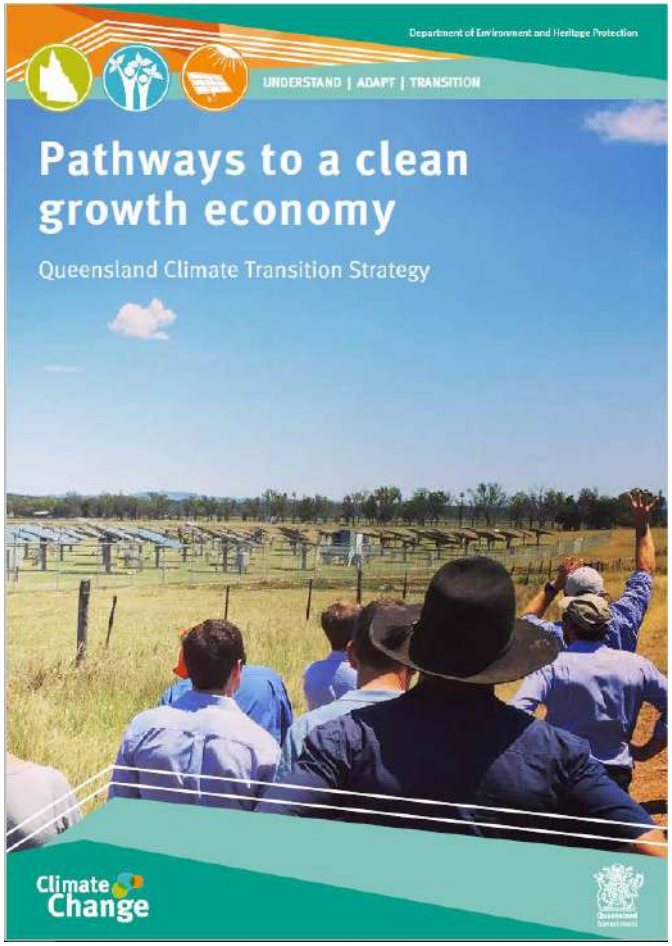


FIGURE 11: QUEENSLAND CLIMATE TRANSITION STRATEGY

FIGURE 12: QUEENSLAND CLIMATE TRANSITION STRATEGY - PATHWAYS

FIGURE 13: 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:

- Queenslanders understand their disaster risk
- Strengthened disaster risk management
- Queenslanders 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.

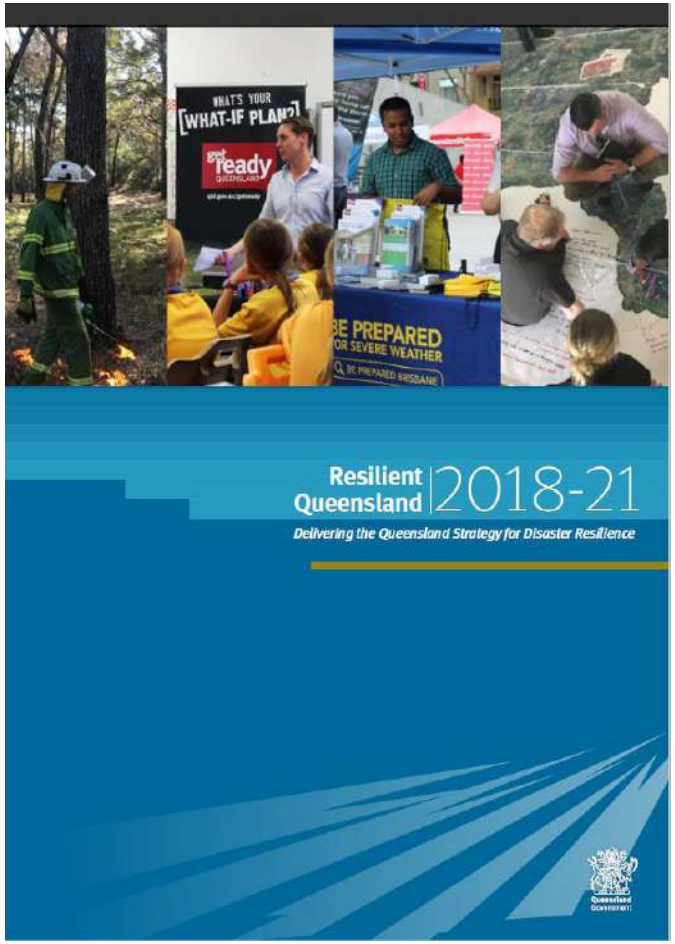


FIGURE 14: RESILIENT QUEENSLAND 2018-21 DRIVERS FOR DISASTER RESILIENCE

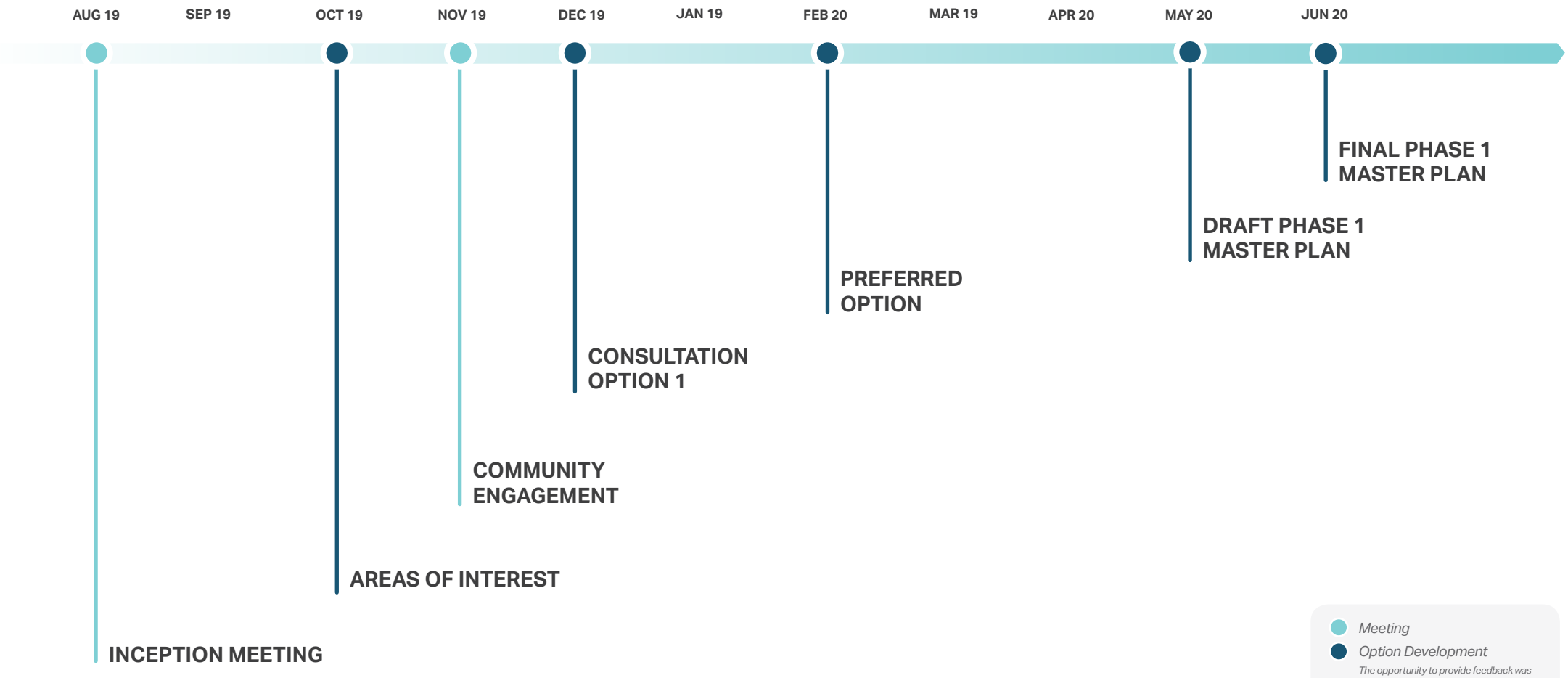
Source: Queensland Government, 2018. Resilient QUEENSLAND 2018-21 Delivering the Queensland Strategy for Disaster Resilience

FIGURE 15: 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 Masig Master Plan.



OVERVIEW

Development of the master plan has been guided by ongoing consultation with community stakeholders. Table 5 provides an overview of consultation activities for the project. Further detail is provided in Section 8.

DATE	LOCATION	PARTICIPANTS	DETAILS
06.08.2019	TSIRC Masig Office	Cr Ted Nai, John Morris (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.
06.11.2019	Masig Community Hall	Sheena Billy (Divisional Manager), John Morris (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 10am-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, Rangers, School etc) to obtain targeted feedback on key issues for current and future community

TABLE 5: PROJECT MEETINGS

FIGURE 16: MARK-UPS FROM INITIAL ENGAGEMENT SESSION WITH COUNCILLOR AND DATSIP REPRESENTATIVES

08 CONCEPT DEVELOPMENT

OVERVIEW

As part of the master planning process, it is also important to understand how Masig 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" figure (Figure 8) was prepared based on the initial engagement with Cr. Nai and PBC representatives. Further detail regarding this initial concept is provided in Section 06.

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

- What kind of recreation facilities would youth and families use?
- Is the barge ram 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?

AREAS OF INTEREST

Based on an understanding of the regional context of Masig Island, an initial concept for the township was developed to facilitate initial discussions with Council (Figure 19).

Items for consideration included:

- Innovative, climate responsive design for future residential housing
- Marine Facility - upgrade of infrastructure including dredging for larger vessels and provision of a marine training hub
- Aviation Facility - can aviation training facilities be provided at the airport
- Residential Expansion - preservation of land for future residential development on the western side of town.
- Coastal Zone - are cost-effective strategies and solutions available to address potential risks posed by coastal processes?

'HAVE YOUR SAY'

Following the initial discussions with Council representatives, a formal Areas of Interest map was developed for broader engagement with the Masig Island Community. A Community "Have Your Say" day was held on 6 November 2019. A drop-in area was established in the community hall where any 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, Rangers and Health Clinic to discuss the master plan. Appendix F contains a copy of the information pack distributed on the day.

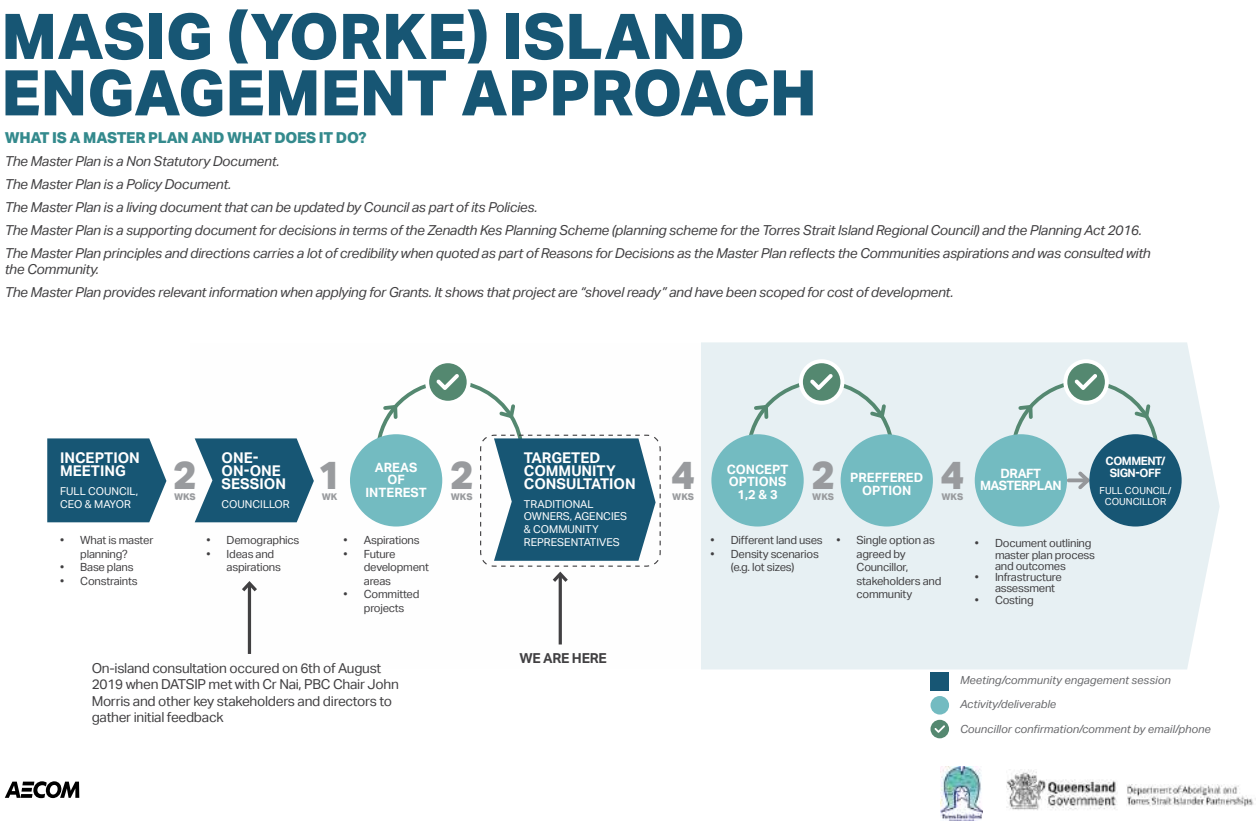


FIGURE 17: ENGAGEMENT APPROACH

MASIG | MASTER PLAN AREAS OF INTEREST

General Items

- Marine infrastructure - dredging for larger vessels, marine training hub, upgrade infrastructure
- Aviation training facilities at the airport
- Energy - alternative generation and supply
- Communication and coverage - is it sufficient? WiFi blackspots?
- Sewer network - capacity and condition
- Water - pressure, supply, storage, wells
- Waste management and recycling opportunities
- High-set design for future dwellings
- Botanical gardens concept design / Ceremonies place / Memorial park
- Eco-tourism strategy for ecovillage, walkway, entrance statement on Dan Street
- Waterfront cafe

HAVE YOUR SAY

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

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?

FIGURE 18: AREAS OF INTEREST

- LOW DENSITY RESIDENTIAL
- INDUSTRIAL
- CAMPING SITE
- CULTURAL SITE
- CULTURAL AREA
- ENVIRONMENTAL
- HEALTHCARE
- CHURCH
- GRAVES
- CEMETERY
- EROSION IMPACTS
- FUTURE ROAD
- FUTURE SEA WALL
- FUTURE FLOOD MITIGATION BUND

200m

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 west of town and additional industrial and marine provisions. Features included:

- Residential
  - Steven Jeff Road North: 21 x 1,500m² lots
  - Steven Jeff Road Central: 1 x 6,000m² lot for units
  - Steven Jeff Road South: 32 x 1,500m² lots
  - Dan Street South: 5 x 1,500m² lots
  - Western expansion: Land for long term residential expansion
- Commercial
  - Dan Street North 1 x 13,500m² site for a commercial complex with mix of tenancy sizes
  - Lawrences Road redevelop old cold-storage site as commercial / tourism area (cafe, market stalls, public toilets)
  - Expansion of IBIS store, creation of market square with public toilets
- Education and care
  - Develop a child care centre at the school
  - Upgrade existing sports complex with lighting, kiosk and shaded seating
  - Upgrade works for healthcare centre
  - Seniors accommodation/assisted living facility on Aous Road
- Airport Precinct
  - Airport North: 7 x 3,500m² industrial lots
  - Preserve 50m wide buffer area for operation of airport
  - Seal roads around airport boundary
- Port Precinct
  - Maintenance dredging
  - Hardstand for storage (e.g. crayfish pots)
  - Lighting on jetty
  - Lighting and public facilities
- Conservation / Environmental
  - Eastern peninsula and West coast to remain undeveloped and used as camping area for locals
  - Prepare conservation strategy for peninsula area
  - Seawall and bund walls to reduce inundation and erosion
- Identification of sites for a new multi-purpose centre and a market garden for local food production
- General matters for consideration (no specific site identified)
  - Creation of pedestrian paths / network
  - Street lighting for residential streets and public areas
  - Investigate renewable power generation (solar/wind)
  - Review recycling opportunities and prepare strategy
  - Resilience investigations for public utilities
  - Consider alternative housing types when replacing homes at end of life
  - Residential dwelling improvements - solar power, food gardens, louvres.
  - Determine future capacity and identify site for future expansion of cemetery

FIGURE 19: OPTION DEVELOPMENT

- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- INDUSTRIAL
- COMMERCIAL
- COMMUNITY FACILITY
- CAMPING SITE
- CONSERVATION
- AIRPORT BUFFER
- CULTURAL AREA
- CULTURAL LOCATION
- GRAVES
- ACCOMMODATION
- CHURCH
- COUNCIL
- HEALTHCARE
- FUTURE ROAD
- FUTURE SEAWALL
- FUTURE FLOOD MITIGATION BUND

09 PREFERRED MASTER PLAN OPTION

Based on the feedback provided by Council and community members on the three options, a preferred option was developed for further infrastructure assessment and costing. The preferred option, shown in Figure 20, is summarised in the adjoining table.

Further assessment and siting is required for:

- Location for new multi-purpose centre
- Routes for pedestrian paths / network
- Location for market garden for local food production
- Feasibility assessment for butterfly breeding program - training, education and economic opportunities

General matters for consideration:

- Provide lighting along all roads to housing / public areas
- Investigate renewable energy generation options
- Review recycling opportunities
- Resilience investigations for public utilities
- Residential dwelling improvements - solar power, food garden, louvres
- Consider alternative housing types (e.g. units and townhouses) when replacing existing houses where at end-of-life
- Prepare recycling strategy

The following sections provide a summary of each component of the Master Plan, outlining cost, related projects and priority within the following timeframes:

- Short term (0-5 years)
- Medium term (5-15 years)
- Long term (>15 years).

RESIDENTIAL	R1	Western Residential Expansion
	R2	Steven Jeff Road North
	R3	Dan Street South
	R4	Steven Jeff Road Central
	R5	Steven Jeff Road South
	R6	General Items
COMMERCIAL	C1	Dan Street North
	C2	Store
	C3	Individual enterprise
TOURISM	T1	Lawrence Road
INDUSTRY	I1	Airport North
OPEN SPACE	OS1	West Coast
	OS2	East coast
	OS3	Access paths

COMMUNITY FACILITIES	CF1	Cemetery
	CF2	Town Centre
	CF3	Health Centre
	CF4	Aous Road
	CF5	School
	CF6	Airport
	CF7	Port
	CF8	Sports Complex
	CF9	Seawalls and Bunds
	CF10	General Items

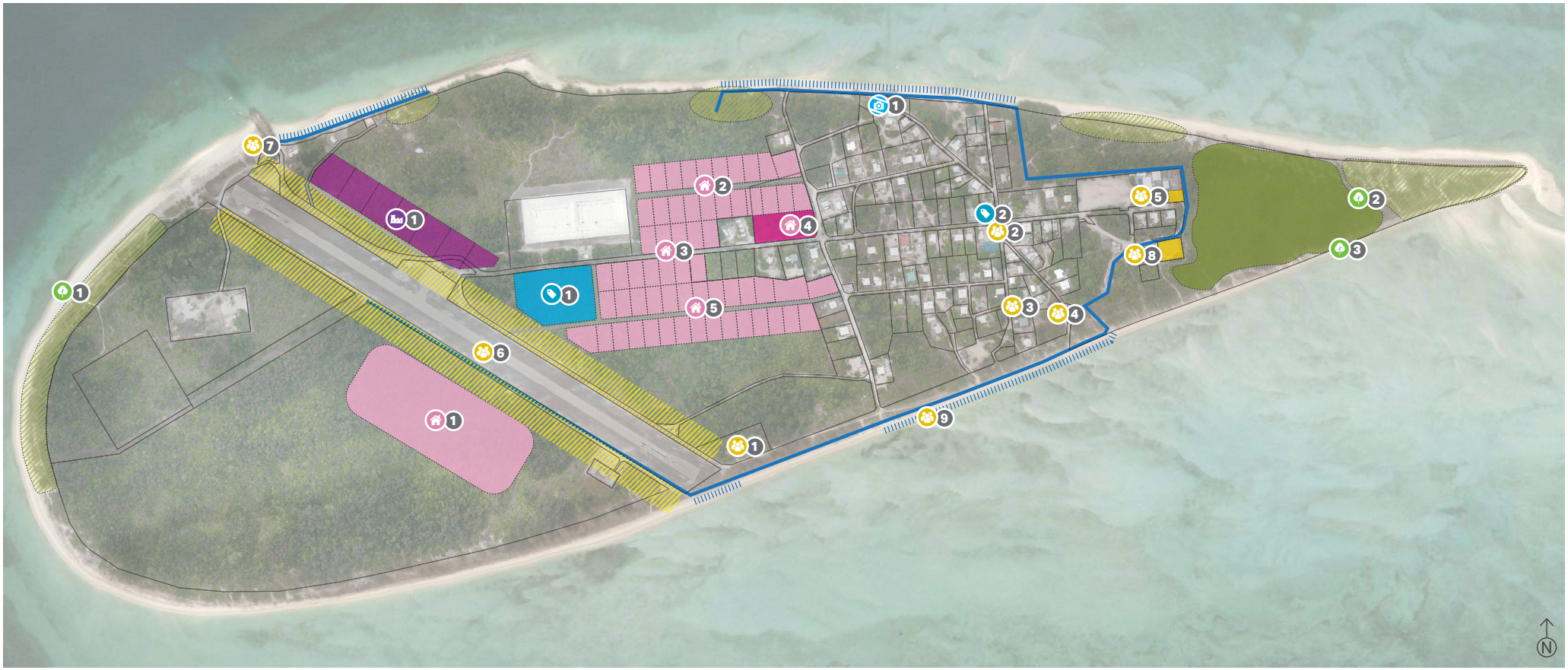


FIGURE 20: PREFERRED MASTER PLAN OPTION - TOWN

R1 - WESTERN RESIDENTIAL EXPANSION

Summary

Land for long term residential expansion.

New Lots	TBC
Lot Size	-
Associated Projects	-
Priority	Long term
Infrastructure Cost	N/A*

Recommendations

R1.1: Undertake planning scheme amendment to incorporate site in township zone.

R1.2: Address *Native Title Act 1993* requirements and amend Indigenous Land Use Agreement (ILUA).

*No enabling infrastructure identified at this stage. Cost to be determined based on future subdivision design.

R2 - STEVEN JEFF RD NORTH

Summary

21 x 1,500 m² residential lots.

New Lots	21
Lot Size	1,500 m²
Associated Projects	R3
Priority	Medium term
Infrastructure Cost	$2,316,975.57

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).

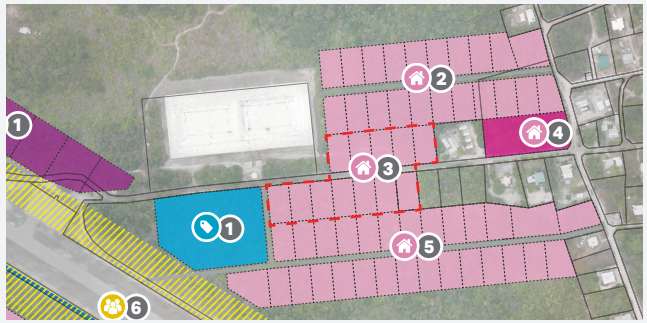
R2.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

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

R3 - DAN ST SOUTH

Summary

12 x 1,500 m² residential lots.



New Lots	12
Lot Size	1,500 m²
Associated Projects	R2, R4, R5
Priority	Short term
Infrastructure Cost	$330,993.00

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).

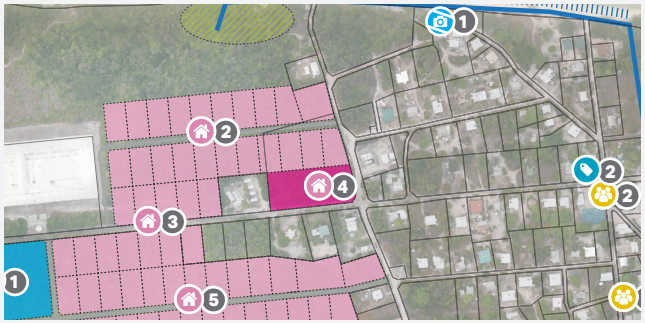
R3.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

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

R4 - STEVEN JEFF RD CENTRE RESIDENTIAL

Summary

1 x 6,000 m² site for units / townhouses.



New Lots	1
Lot Size	6,000 m²
Associated Projects	R2, R3
Priority	Short term
Infrastructure Cost	$117,497.25*

Recommendations

R4.1: Undertake planning scheme amendment to incorporate site in township zone.

R4.2: Address *Native Title Act 1993* requirements and amend Indigenous Land Use Agreement (ILUA).

R4.3: Address duty of care requirements under the *Torres Strait Islander Cultural Heritage Act 2003* (e.g. cultural heritage survey and cultural heritage management plan).

R4.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

R4.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.

*Cost assumes the site is developed before R2 and R3.

R5 - STEVEN JEFF RD SOUTH

Summary

28 x 1,500m² residential lots.

New Lots	28
Lot Size	1,500 m²
Associated Projects	R3
Priority	Medium term
Infrastructure Cost	$3,477,730.82

Recommendations

R5.1: Undertake planning scheme amendment to incorporate site in township zone.

R5.2: Address *Native Title Act 1993* requirements and amend Indigenous Land Use Agreement (ILUA).

R5.3: Address duty of care requirements under the *Torres Strait Islander Cultural Heritage Act 2003* (e.g. cultural heritage survey and cultural heritage management plan).

R5.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

R5.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.

R6 - GENERAL ITEMS

Summary

Upgrade existing residential dwellings (e.g. solar power, food gardens, louvres). Consider alternate housing types (e.g. units and townhouses) when replacing existing housing.

New Lots	-
Lot Size	-
Associated Projects	-
Priority	Short term
Infrastructure Cost	N/A*

Recommendations

R6.1: Council to liaise with Department of Housing and Public Works to seek commitments regarding climate responsive retrofit of existing housing stock as part of scheduled maintenance.

R6.2: Department of Housing and Public Works to undertake review of existing housing stock to identify houses likely to require replacement in 5-10 year horizon.

R6.3: Council to liaise with occupants of housing scheduled for replacement to identify functional requirements and opportunities for alternate typologies.

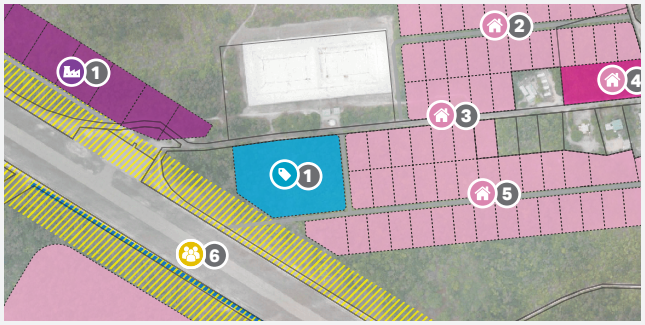
R6.4: Subject to outcomes of R6.3, Council to provide summary of preferred redevelopment typologies to Department of Housing and Public Works.

*Relates to existing serviced residential dwellings.

C1 - DAN ST NORTH PRECINCT

Summary

1 x 13,500 m² site for offices, shops and commercial uses.



New Lots	1
Lot Size	13,500 m²
Associated Projects	R3, R5
Priority	Medium term
Infrastructure Cost	$123,069.38*

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 precinct plan which accommodates commercial and retail floorspace.

*Cost assumes that site is developed after R5 or I1.

C2 - STORE

Summary

Expand existing IBIS Store.

New Lots	-
Lot Size	-
Associated Projects	CF2
Priority	Short term
Infrastructure Cost	N/A*

Recommendations

C2.1: Islander Board of Industry and Service to prepare business case for refurbishment and expansion of existing store.

*Located in existing serviced area.

C3 - INDIVIDUAL ENTERPRISE

Summary

Support local initiatives for economic enterprise (e.g. Potential for butterfly breeding program to provide training, education and economic opportunities).

New Lots	-
Lot Size	-
Associated Projects	-
Priority	Short term
Infrastructure Cost	TBC*

Recommendations

C3.1: Liaise with Masigalal (Torres Strait Islanders) Corporation RNTBC regarding opportunity identify and lease land which may be suitable urban and non-urban enterprise activities.

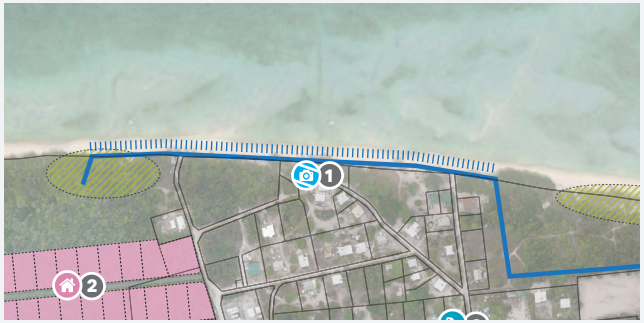
C3.2: Pending outcomes of C3.1, request expressions of interest and business cases from individuals and organisations seeking to establish small scale enterprise on identified urban and non-urban sites.

*Infrastructure requirements and costs to be determined subject to confirmation of sites and proposed development.

T1 - LAWRENCE ROAD

Summary

Redevelop old cold-storage site as commercial / tourist area (cafe, market stalls, public toilets).



New Lots	-
Lot Size	-
Associated Projects	CF9
Priority	Short term
Infrastructure Cost	TBC*

Recommendations

T1.2: Prepare Tourism Strategy for Masig which links the resort to other opportunities on Masig and nearby island communities.

T1.2: Prepare waterfront landscape precinct plan.

*Necessary infrastructure and associated costs subject to further design development.

I1 - AIRPORT NORTH

Summary

7 x 3,500 m² industrial lots.

New Lots	7
Lot Size	3,500 m²
Associated Projects	R4, C1
Priority	Medium term
Infrastructure Cost	$3,100,240.11*

Recommendations

I1.1: Undertake planning scheme amendment to incorporate site in township zone.

I1.2: Address *Native Title Act 1993* requirements and amend Indigenous Land Use Agreement (ILUA).

I1.3: Address duty of care requirements under the *Torres Strait Islander Cultural Heritage Act 2003* (e.g. cultural heritage survey and cultural heritage management plan).

I1.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc).

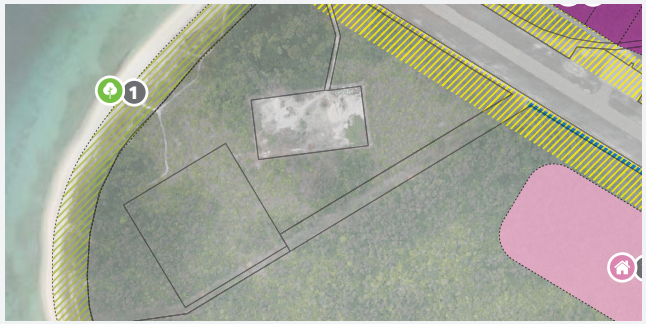
I1.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.

*Cost assumes that the site is developed after R5 for sewerage, and after C1 for communications.

OS1 - WEST COAST

Summary

Preserve undeveloped for use as local camping area.



New Lots	-
Lot Size / Area	-
Associated Projects	OS2, CF9
Priority	Short term
Infrastructure Cost	Nil

Recommendations

OS1.1: Prepare land management plan, in consultation with Land and Sea Rangers, for conservation and regeneration of dune environments, alongside ongoing use of area for camping.

OS2 - EAST COAST

Summary

Prepare conservation strategy to preserve and enhance natural services provided by vegetated peninsula area, including retention of far eastern peninsula as local camping area.

New Lots	-
Lot Size / Area	-
Associated Projects	OS1
Priority	Short term
Infrastructure Cost	Nil

Recommendations

Refer OS1.1.

OS3 - ACCESS PATHS

Summary

Create a network of pedestrian trails and paths for exercise and recreation use around the island.

New Lots	-
Lot Size / Area	-
Associated Projects	CF9
Priority	Short term
Infrastructure Cost	TBC*

Recommendations

OS3.1: Liaise with Land and Sea Rangers, in conjunction with preparation of land management plan (OS1.1) to prepare a network map of pedestrian trails and paths.

OS3.2: Prepare civil design and cost estimate.

*Cost for path network to be confirmed subject to design development.

CF1 - CEMETERY

Summary

Undertake capacity assessment and identify area for future expansion or new site.

New Lots	-
Lot Size / Area	-
Associated Projects	-
Priority	Medium term
Infrastructure Cost	Nil

Recommendations

CF1.1: Undertake assessment to determine remaining capacity of cemetery.

CF1.2: Undertake assessment to confirm opportunities for cemetery expansion (existing and new site) and alternatives.

CF2 - TOWN CENTRE

Summary

Provide public toilets, create market square.

New Lots	-
Lot Size / Area	-
Associated Projects	C2
Priority	Short term
Infrastructure Cost	TBC*

Recommendations

CF2.1: Prepare precinct plan for revitalisation of town centre, including provision for market square and key amenities (public toilets, paths, shelter, lighting).

*Necessary infrastructure and associated costs subject to further design development.

CF3 - HEALTH CENTRE

Summary

Committed development for upgrade works.

New Lots	-
Lot Size / Area	-
Associated Projects	-
Priority	Short term
Infrastructure Cost	N/A*

Recommendations

CF3.1: Department of Health to implement planned and committed development for upgrade of health centre.

*Located in existing serviced area.

CF4 - AOUS ROAD

Summary

Establish Seniors accommodation / assisted living facility providing accommodation medical care, nursing services and meals.

New Lots	-
Lot Size / Area	-
Associated Projects	-
Priority	Short term
Infrastructure Cost	N/A*

Recommendations

CF4.1: Liaise with service providers and organisations to identify potential interest in development and operation of supported accommodation facility.

*Located in existing serviced area.

CF5 - SCHOOL

Summary

Develop a childcare facility adjacent to the school.

New Lots	-
Lot Size / Area	-
Associated Projects	-
Priority	Short term
Infrastructure Cost	N/A*

Recommendations

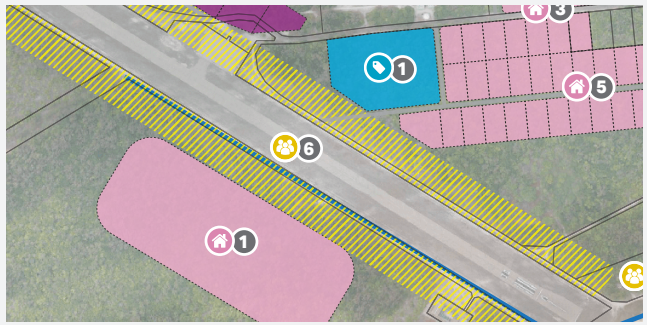
CF5.1: Liaise with Department of Education regarding site utilisation and strategy for broadened scope of facilities on site, including childcare centre.

*Located in existing serviced area.

CF6 - AIRPORT

Summary

Seal roads around airport boundary. Establish protected 50 m wide lateral transitional slope area from airstrip boundary for air safety.



New Lots	-
Lot Size / Area	-
Associated Projects	-
Priority	Long term
Infrastructure Cost	$4,178,066.26

Recommendations

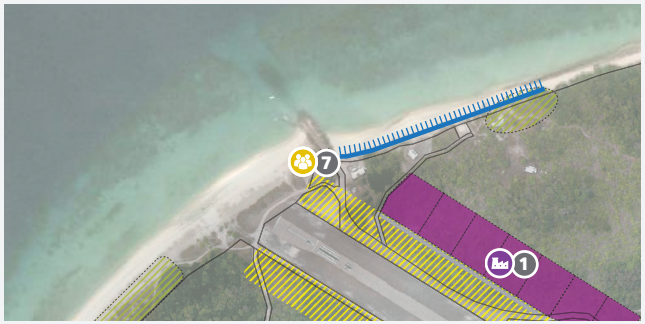
CF6.1: Undertake planning scheme amendment to incorporate airport overlay which protects 50m lateral transitional slope area from airstrip boundary for air safety.

CF6.2: Undertake civil engineering design and further detailed cost estimate for paved road surrounding airport boundary.

CF7 - PORT

Summary

Maintenance dredging and landside improvements to port including hardstand for storage (e.g. crayfish pots), lighting on jetty, lighting and public facilities.



New Lots	-
Lot Size / Area	-
Associated Projects	-
Priority	Medium term
Infrastructure Cost	TBC*

Recommendations

CF7.1: Liaise with Department of Transport and Main Roads to prepare port master plan which includes identification of marine facilities, maintenance dredging and landside facilities.

*Enabling infrastructure cost subject to further design development.

CF8 - SPORTS COMPLEX

Summary

Upgrade existing complex with lighting, kiosk and shaded seating.

New Lots	-
Lot Size / Area	-
Associated Projects	-
Priority	Short term
Infrastructure Cost	$258,072.75

Recommendations

CF8.1: Review asset surveys to confirm whether site has existing connection to water and communications.

CF8.2: Undertake asset condition assessment to identify necessary repair and remedial works.

CF8.3: Prepare sport facility master plan.

CF8.4: Pending CF8.1-8.3, undertake design of enabling infrastructure services.

CF9 - SEAWALLS AND BUNDS

Summary

Existing investigation / assessment for seawalls and bunds to protect town and infrastructure from coastal hazards.

New Lots	-
Lot Size	-
Associated Projects	OS1, OS2, OS3, TI
Priority	Short term
Infrastructure Cost	$10.1 million*

Recommendations

CF9.1: Review mitigation options and progress implementation as outlined in existing Coastal Hazard Assessment and Mitigation Report.

*Capital works estimate based on Masig Island Coastal Hazard Assessment and Mitigation Report.

CF10 - GENERAL ITEMS

Summary

- Identify location for new multi-purpose centre
- Identify location for market garden for local food production
- Provide lighting along all roads to housing and public areas
- Resilience investigations for public utilities
- Prepare recycling strategy
- Upgrade sewage treatment plant
- Upgrade sewage pump stations (SPS 2 & 3)

New Lots	-
Lot Size	-
Associated Projects	-
Priority	Short term
Infrastructure Cost	STP Upgrade - $8,730,000.00 SPS Upgrades - $1,197,341.73 Remainder - TBC*

Recommendations

CF10.1: Undertake site selection exercise for new multi-purpose centre.

CF10.2: In consultation with Land and Sea Rangers, undertake site selection exercise for community market garden. Develop strategy for formation of community gardening organisation.

CF10.3: Prepare lighting design for staged provision of public street lighting along all paved roadways.

CF10.4: Expand upon assessment contained within Coastal Hazard and Assessment and Mitigation Report to assess resilience of public utilities to all natural hazards and extreme weather events.

CF10.5: Pending outcomes of regional waste management strategy, prepare waste and recycling strategy for Masig.

CF10.6: Undertake water capacity assessment of sources (rainwater and bores for treatment in the desalination plant), water treatment – desalination plant, water treatment – water from lagoon, water storage, booster pump station which feeds the high level storage.

CF10.7: Upgrade STP to facilitate ultimate growth and assess capacity of pump stations 1, 2 and 3 and their associated rising mains.

*Cost estimates subject to further investigation and design development of each action item.

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:

- R6 – General Items (residential) – existing serviced lots
- C2 – Store– existing serviced lot
- T1- Lawrence Road – existing serviced area
- I1 – Fuel Station – site to be determined as part of further investigation
- OS1 – West coast – no enabling infrastructure
- OS2 – East coast – no enabling infrastructure
- OS2 – Access paths – no enabling infrastructure
- CF1 – Cemetery –expansion footprint/location to be determined as part of further assessment
- CF2 – Town Centre – existing serviced area
- CF3 – Health Centre – existing serviced area
- CF4 – Aous– existing serviced area
- CF5 – School – existing serviced site
- CF9 – Seawall and Bunds – no enabling infrastructure

The following elements of the master plan have not been identified for enabling infrastructure as further investigation is required to confirm details of the development such as the location or the nature of the development:

- R1 – Western Residential Expansion – long term expansion site, scale and layout of future development is to be determined as part of further investigation
- C3 – Individual enterprise – Infrastructure requirements to be determined subject to confirmation of sites and proposed development
- CF7- Port – requirements subject to further design
- CF10 – General items – item relates to further investigations

WATER

Extension of water mains will be required to service new housing areas R2 & R5, the industrial area I1 and the community facility CF8. Further investigation on the capacity of the trunk water supply elements are required to ensure that adequate capacity is available for the proposed development.

SEWERAGE

The sewage treatment plant will require upgrade to service the full development proposed in the master plan. An upgrade with a capacity of 704 EP will be required once the population exceeds 500 EP. Further investigation on the capacity of the sewer pump stations will be required. It is likely that pump stations 2 and 3 will require pump upgrades to service the proposed development.

New gravity sewers will be required for residential developments R2, R3, R4 and $5 and commercial development C1. The industrial development I1 will required gravity sewers and a lift station due to the long distance of the site from the existing sewer infrastructure over flat terrain.

ROADS

Extensions of paved roads will be required to provide access to the new housing areas R2 and R5. New sealed roads (potentially bitumen roads) will be required for developments I1 and CF6. It has been assumed that the proposed developments located at sites with existing unsealed roads can continue to operate with these roads.

ELECTRICITY

Extensions will be required to provide power to proposed developments R2, R5, C1 and I1. The electrical plans do not show any electricity supply to development site CF8, however, the presence of lights at this site indicate that power is available. This will need to be confirmed to ensure power can be supplied to site CF8.

It is recommended that a review of the total electricity supply is undertaken to determine whether additional generators are required due to the significant increase in population with the proposed development.

COMMUNICATIONS

Communications will require the installation of pits and conduits for the precincts located outside the existing community footprint. Extensions will be required to provide communications to proposed developments R2, R5, C1, I1 and CF8.

STORMWATER

Stormwater infrastructure will be required for the proposed development. The infrastructure is likely to include kerb and channel and open drainage channels in keeping with the current overland flow system. Kerb and channel is expected for developments R2, R3, R5 and I1.

The following figures and tables provide an overview of proposed infrastructure and costs for the key components of the master plan.

FIGURE 21: INFRASTRUCTURE REQUIREMENTS - WATER

FIGURE 22: INFRASTRUCTURE REQUIREMENTS - SEWERAGE

FIGURE 23: INFRASTRUCTURE REQUIREMENTS - ROADS

FIGURE 24: INFRASTRUCTURE REQUIREMENTS - ELECTRICITY

FIGURE 25: INFRASTRUCTURE REQUIREMENTS - COMMUNICATIONS

ITEM	UNIT	RATE	R2 - STEVEN JEFF ROAD NORTH		R3 - DAN STREET SOUTH		R4 - STEVEN JEFF ROAD CENTRAL		R5 - STEVEN JEFF ROAD SOUTH		C1 - DAN STREET NORTH		I1 - AIRPORT NORTH	
Yield			21		12		1		28		1		7	
Preliminaries														
Establishment / disestablishment and miscellaneous site preparation		20%		$264,042.80		$37,720.00		$13,390.00		$396,322.60		$14,025.00		$395,851.08
Project Management														
Survey, design and construction administration		15%	15%	$198,032.10	15%	$28,290.00	15%	$10,042.50	15%	$297,241.95	15%	$10,518.75	15%	$296,888.31
Water Supply														
Water Mains - DN100	m	$280	415	$116,200.00					555	$155,400.00			250	$70,000.00
Connection to existing mains	each	$5,000	1	$5,000.00	1	$5,000.00	1	$5,000.00	1	$5,000.00			1	$5,000.00
Roads														
Bitumen sealed / concrete paved road, 5.5m wide	m	$1,170	535	$626,164.00					720	$842,688.00				
Bitumen sealed Road, 6.5 m wide	m	$1,383												
Bitumen sealed Road, 12.0 m wide	m	$2,554											364	$929,510.40
Sewerage														
Gravity Sewer - DN150	m	$465	310	$144,150.00	330	$153,450.00	90	$41,850.00	925	$430,125.00	25	$11,625.00	575	$267,375.00
Rising main - DN50	m	$234												
Rising main - DN80	m	$280												
Manhole	no.	$10,050	3	$30,150.00	3	$30,150.00	2	$20,100.00	6	$60,300.00			5	$50,250.00
Upgrade Sewage Pump Station	item	$341,123												
Sewage Pump Station	item	$697,500												
Sewage Lift Station	item	$315,000											1	$315,000.00
Sewage Treamtent Plant - mechanical plant	item	$6,000,000												
Drainage														
Stormwater Pipe	m	$600												
Layback Kerb & Channel	m	$165	1070	$176,550.00					1440	$237,600.00			728	$120,120.00
Reinforced concrete invert to open drain	linear m	$210												
Earthworks														
Import fill	m^3	$196												
Communications														
Communications	m	$450	410	$184,500.00					440	$198,000.00	130	$58,500.00	410	$184,500.00
Electrical														
Electrical	pole	$7,500	5	$37,500.00					7	$52,500.00			5	$37,500.00
Contingency														
Contingency		30%		$534,686.67		$76,383.00		$27,114.75		$802,553.27		$28,400.63		$428,245.32
Total				$2,316,975.57		$330,993.00		$117,497.25		$3,477,730.82		$123,069.38		$3,100,240.11

TABLE 6: OPINION OF PROBABLE CONSTRUCTION COSTS (PART 1 OF 2)

ITEM	UNIT	HI RATE	CF6 - AIRPORT		CF8 - SPORTS COMPLEX		GENERAL - STP UPGRADE		GENERAL - SPS 2 AND 3 UPGRADE	
Yield			1		1		1		1	
Preliminaries										
Establishment / disestablishment and miscellaneous site preparation		20%		$574,304.64		$29,410.00		$1,200,000.00		$136,449.20
Project Management										
Survey, design and construction administration		15%	15%	$430,728.48	15%	$22,057.50	15%	$900,000.00	15%	$102,336.90
Water Supply										
Water Mains - DN100	m	$280			210	$58,800.00				
Connection to existing mains	each	$5,000			1	$5,000.00				
Roads										
Bitumen sealed / concrete paved road, 5.5m wide	m	$1,170								
Bitumen sealed Road, 6.5 m wide	m	$1,383	2076	$2,871,523.20						
Bitumen sealed Road, 12.0 m wide	m	$2,554								
Sewerage										
Gravity Sewer - DN150	m	$465								
Rising main - DN50	m	$234								
Rising main - DN80	m	$280								
Manhole	no.	$10,050								
Upgrade Sewage Pump Station	item	$341,123							2	$682,246.00
Sewage Pump Station	item	$697,500								
Sewage Lift Station	item	$315,000								
Sewage Treamtent Plant - mechanical plant	item	$6,000,000					1	6,000,000.00		
Drainage										
Stormwater Pipe	m	$600								
Layback Kerb & Channel	m	$165								
Reinforced concrete invert to open drain	linear m	$210								
Earthworks										
Import fill	m^3	$196								
Communications										
Communications	m	$450			185	$83,250.00				
Electrical										
Electrical	pole	$7,500								
Contingency										
Contingency		30%		$301,509.94		$59,555.25		$630,000.00		$276,309.63
Total				$4,178,066.26		$258,072.75		$8,730,000.00		$1,197,341.73

TABLE 7: OPINION OF PROBABLE CONSTRUCTION COSTS (PART 2 OF 2)

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

DECARBONISATION OF THE GREAT BARRIER REEF ISLANDS PROGRAM

The Queensland Government's Decarbonisation of the Great Barrier Reef Islands program supports businesses and communities of the Great Barrier Reef islands to transition to a low carbon future. The program has been extended to include whole-of-community pilot projects on Great Keppel Island, Magnetic Island, Palm Island and Masig Island in the Torres Strait.

The whole-of-community pilot for Masig Island seeks to work with the community to develop resiliency and inscrease the sustainability of island activities. This project will empower the community to be better equipped to face the challenges of climate change as well as reduce the expenses associated to energy usage, water and waste management

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 Masig, 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 Masig community. Figure 20 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 8 outlines the estimated costs.

ITEM			YIELD	COST
	R1	Western Residential Expansion	-	*TBC
	R2	Steven Jeff Road North	21	$2,316,975.57 ($110,332.17 per lot)
	R3	Dan Street South	12	$330,993.00 ($27,582.75 per lot)
	R4	Steven Jeff Road Central	1	$117,497.25
	R5	Steven Jeff Road South	28	$3,477,730.82 ($124,204.67 per lot)
	R6	General Items	-	*N/A
	C1	Dan Street North	1	$123,069.38
	C2	Store	-	*N/A
	C3	Individual enterprise	-	
	T1	Lawrence Road	-	*N/A
	I1	Airport North	7	$3,100,240.11 ($442,891.44 per lot)
	OS1	West Coast	-	*N/A
	OS2	East coast	-	*N/A
	OS3	Access paths	-	*N/A
	CF1	Cemetery	-	*N/A
	CF2	Town Centre	-	*N/A
	CF3	Health Centre	-	*N/A
	CF4	Aous Road	-	*N/A
	CF5	School	-	*N/A
	CF6	Airport	-	$4,178,066.26
	CF7	Port	-	*TBC
	CF8	Sports Complex	-	$258,072.75
	CF9	Seawalls and Bunds	-	*N/A
	CF10	General Items	-	STP Upgrade - $8,730,000.00 SPS Upgrades - $1,197,341.73 Remainder - TBC*

TABLE 8: 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	Western Residential Expansion	R1.1: Undertake planning scheme amendment to incorporate site in township zone. R1.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA).
	R2	Steven Jeff Road North	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). R2.5: Undertake civil engineering design for necessary infrastructure upgrades and extension.
	R3	Dan Street South	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). R3.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.
	R4	Steven Jeff Road Central	R4.1: Undertake planning scheme amendment to incorporate site in township zone. R4.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA). R4.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan). R4.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc). R4.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.
	R5	Steven Jeff Road South	R5.1: Undertake planning scheme amendment to incorporate site in township zone. R5.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA). R5.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan). R5.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc). R5.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.
	R6	General Items	R6.1: Council to liaise with Department of Housing and Public Works to seek commitments regarding climate responsive retrofit of existing housing stock as part of scheduled maintenance. R6.2: Department of Housing and Public Works to undertake review of existing housing stock to identify houses likely to require replacement in 5-10 year horizon. R6.3: Council to liaise with occupants of housing scheduled for replacement to identify functional requirements and opportunities for alternate typologies. R6.4: Subject to outcomes of R6.3, Council to provide summary of preferred redevelopment typologies to Department of Housing and Public Works.

TABLE 9: ACTION PLAN (PART 1 OF 3)

CATEGORY	ITEM		ACTIONS
COMMERCIAL	C1	Dan Street North	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 precinct plan which accommodates commercial and retail floorspace.
	C2	Store	C2.1: Islander Board of Industry and Service to prepare business case for refurbishment and expansion of existing store.
	C3	Individual enterprise	C3.1: Liaise with Masigalal (Torres Strait Islanders) Corporation RNTBC regarding opportunity identify and lease land which may be suitable urban and non-urban enterprise activities. C3.2: Pending outcomes of C3.1, request expressions of interest and business cases from individuals and organisations seeking to establish small scale enterprise on identified urban and non-urban sites.
TOURISM	T1	Lawrence Road	T1.2: Prepare Tourism Strategy for Masig which links the resort to other opportunities on Masig and nearby island communities. T1.2: Prepare waterfront landscape precinct plan.
INDUSTRY	I1	Airport North	I1.1: Undertake planning scheme amendment to incorporate site in township zone. I1.2: Address Native Title Act 1993 requirements and amend Indigenous Land Use Agreement (ILUA). I1.3: Address duty of care requirements under the Torres Strait Islander Cultural Heritage Act 2003 (e.g. cultural heritage survey and cultural heritage management plan). I1.4: Obtain approvals under the planning scheme and State legislation (e.g. reconfiguring a lot, operational works etc). I1.5: Undertake civil engineering design for relocation of existing sewer lines and necessary enabling infrastructure.
OPEN SPACE	OS1	West Coast	OS1.1: Prepare land management plan, in consultation with Land and Sea Rangers, for conservation and regeneration of dune environments, alongside ongoing use of area for camping.
	OS2	East coast	Refer OS1.1
	OS3	Access paths	OS3.1: Liaise with Land and Sea Rangers, in conjunction with preparation of land management plan (OS1.1) to prepare a network map of pedestrian trails and paths. OS3.2: Prepare civil design and cost estimate.

TABLE 10: ACTION PLAN (PART 2 OF 3)

CATEGORY	ITEM		ACTIONS
COMMUNITY FACILITIES	CF1	Cemetery	CF1.1: Undertake assessment to determine remaining capacity of cemetery. CF1.2: Undertake assessment to confirm opportunities for cemetery expansion (existing and new site) and alternatives.
	CF2	Town Centre	CF2.1: Prepare precinct plan for revitalisation of town centre, including provision for market square and key amenities (public toilets, paths, shelter, lighting).
	CF3	Health Centre	CF3.1: Department of Health to implement planned and committed development for upgrade of health centre.
	CF4	Aous Road	CF4.1: Liaise with service providers and organisations to identify potential interest in development and operation of supported accommodation facility.
	CF5	School	CF5.1: Liaise with Department of Education regarding site utilisation and strategy for broadened scope of facilities on site, including childcare centre.
	CF6	Airport	CF6.1: Undertake planning scheme amendment to incorporate airport overlay which protects 50m lateral transitional slope area from airstrip boundary for air safety. CF6.2: Undertake civil engineering design and further detailed cost estimate for paved road surrounding airport boundary.
	CF7	Port	CF7.1: Liaise with Department of Transport and Main Roads to prepare port master plan which includes identification of marine facilities, maintenance dredging and landside facilities.
	CF8	Sports Complex	CF8.1: Review asset surveys to confirm whether site has existing connection to water and communications. CF8.2: Undertake asset condition assessment to identify necessary repair and remedial works. CF8.3: Prepare sport facility master plan. CF8.4: Pending CF8.1-8.3, undertake design of enabling infrastructure services.
	CF9	Seawalls and Bunds	CF9.1: Review mitigation options and progress implementation as outlined in existing Coastal Hazard Assessment and Mitigation Report.
	CF10	General Items	CF10.1: Undertake site selection exercise for new multi-purpose centre. CF10.2: In consultation with Land and Sea Rangers, undertake site selection exercise for community market garden. Develop strategy for formation of community gardening organisation. CF10.3: Prepare lighting design for staged provision of public street lighting along all paved roadways. CF10.4: Expand upon assessment contained within Coastal Hazard and Assessment and Mitigation Report to assess resilience of public utilities to all natural hazards and extreme weather events. CF10.5: Pending outcomes of regional waste management strategy, prepare waste and recycling strategy for Masig. CF10.6: Undertake water capacity assessment of sources (rainwater and bores for treatment in the desalination plant), water treatment – desalination plant, water treatment – water from lagoon, water storage, booster pump station which feeds the high level storage. CF10.7: Upgrade STP to facilitate ultimate growth and assess capacity of pump stations 1, 2 and 3 and their associated rising mains.

TABLE 11: ACTION PLAN (PART 3 OF 3)

13 REFERENCES

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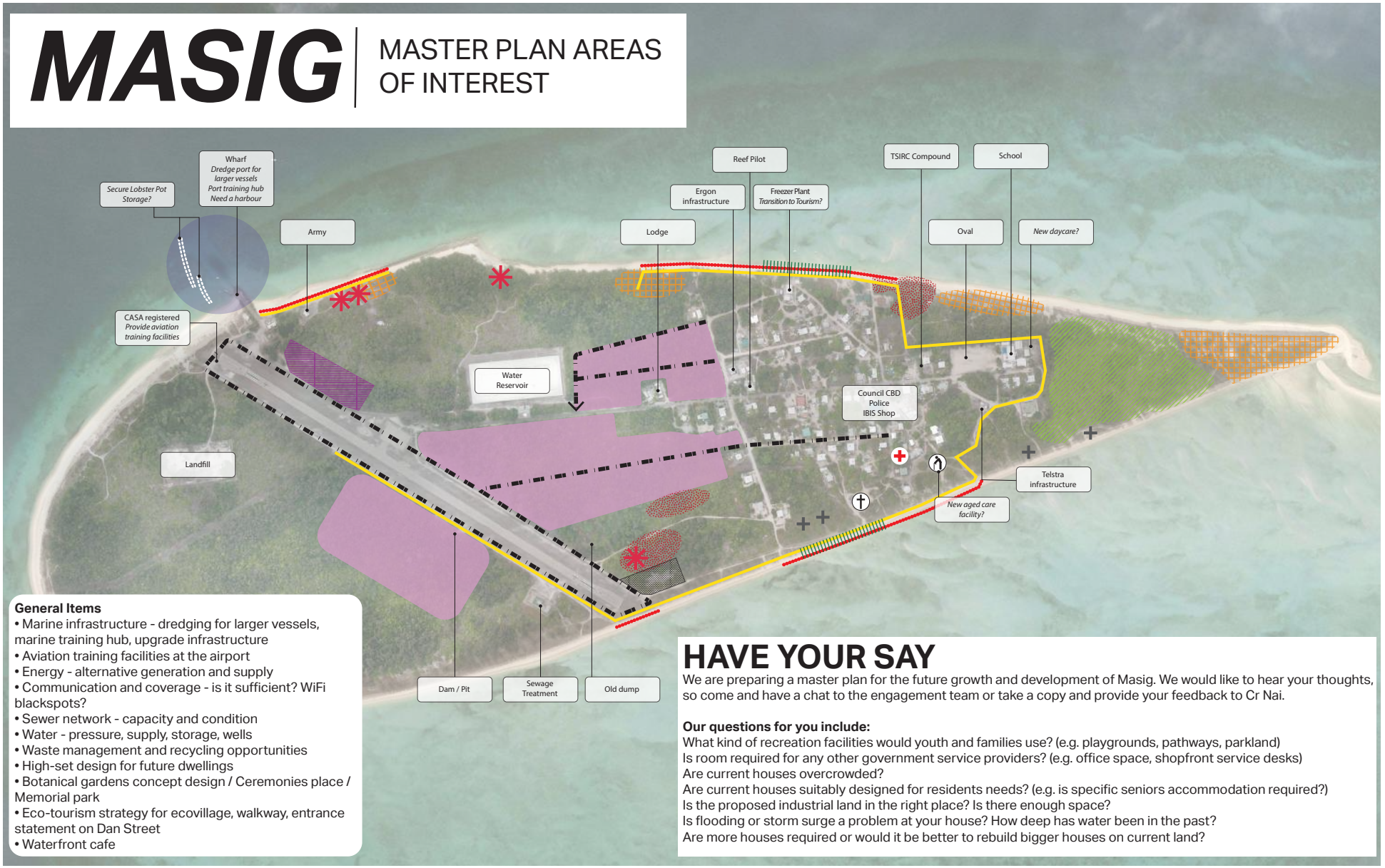
A. APPENDIX A. PLANS

MASIG | MASTER PLAN AREAS OF INTEREST



General Items

- Marine infrastructure - dredging for larger vessels, marine training hub, upgrade infrastructure
- Aviation training facilities at the airport
- Energy - alternative generation and supply
- Communication and coverage - is it sufficient? WiFi blackspots?
- Sewer network - capacity and condition
- Water - pressure, supply, storage, wells
- Waste management and recycling opportunities
- High-set design for future dwellings
- Botanical gardens concept design / Ceremonies place / Memorial park
- Eco-tourism strategy for ecovillage, walkway, entrance statement on Dan Street
- Waterfront cafe

HAVE YOUR SAY

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

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

MASIG (YORKE) ISLAND
AREAS OF INTEREST

FOR DISCUSSION PURPOSES ONLY

200 m

LEGEND

- Residential
- Industrial
- Camping site
- Cultural site
- Cultural area
- Environmental
- Graves
- Cemetery
- Erosion impacts
- Future road
- Healthcare
- Church
- Future seawall
- Future flood mitigation bund

Queensland Government
Department of Aboriginal and Torres Strait Islander Partnerships

AECOM

MASIG | MASTER PLAN CONCEPT OPTION

MASIG (YORKE) ISLAND
CONCEPT OPTION 4 DECEMBER 2019

FOR DISCUSSION PURPOSES ONLY

200 m

LEGEND

- Low density residential
- Medium density residential
- Industrial
- Commerical
- Community facility
- Camping site
- Conservation
- Airport buffer
- Cultural area
- Cultural location
- Graves
- Accommodation
- Church
- Council
- Healthcare
- Future road
- Future seawall
- Future flood mitigation bund

Queensland Government | Department of Aboriginal and Torres Strait Islander Partnerships | AECOM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B. APPENDIX B. INFRASTRUCTURE ASSESSMENT

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 Masig comprises the following elements:

Raw water source

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

- Saline groundwater:
  - Brackish water is extracted from coral as the water has lower salinity than seawater.
  - The water is extracted using two bores with a capacity of 3000 L/hour.
  - The water quality is variable for both salinity and conductivity.
  - 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
- Groundwater:
  - Groundwater was previously used as a source but is no longer operational. Anecdotal evidence suggests that it became saline and/or contaminated from the old septic systems.

Water Treatment Systems

The water treatment systems on Masig 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
  - Capacity: 72 kL/day, operating 23-24 hours per day
  - Filtration – pressure media filter with cartridge 5 micron and 1 micron pre-filters
  - Pressure pump and 3 reverse osmosis (RO) units and anti-scalant chemical dosing
- Water treatment plant (combined treatment)
  - Filtration using two pressure media filters
  - Disinfection (chlorine dosing);

Water Storage

- Brackish water storage: a 15 kL raw water settling tank
- Storage lagoon: a lined and covered 24 ML storage lagoon, consisting of two segments. The lagoon holds approximately 270 days storage when full.
- Elevated reservoir: A 90 kL reservoir, 10 to 15 m high is located adjacent to the water treatment plant. The reservoir holds less than 1 days treated water storage at average consumption.

Pumps

- A pump station is used to supply water to the elevated storage reservoir.

Reticulation system

- The reticulation network is gravity fed from the elevated storage reservoir.
- Anecdotally, the reticulation system is predominately 80 mm PVC.
- Many houses have water storage tanks.

Design criteria

The adopted design criteria as summarised in Table 3 1 are generally in accordance with:

- Planning Guidelines for Water Supply and Sewerage (DEWS 2010)
- Water Supply Code of Australia (WSAA)
- FNQROC Regional Development Manual Design Guidelines

ITEM	DETAIL	REFERENCE
Pressures under normal flow conditions		
Minimum Pressure	22 m	FNQROC Regional Development Manual
Maximum Pressure	60 m	
Fire Flow Conditions		
Residential buildings	7.5 L/s for 2-hour duration[1]	Planning Guidelines for Water Supply and Sewerage, section 6.6.2 (small community category)
Non-residential buildings	15 L/s for 2-hour duration[1]	
Residual Pressure at the hydrant	12 m head	Planning Guidelines for Water Supply and Sewerage, section 6.6.3
Residual Pressure for all other areas of the water supply zone	6 m head	
Background Demand	2/3 Peak Hour demand	Planning Guidelines for Water Supply and Sewerage, section 6.6.4
Reservoirs		
Ground Level Reservoir	3 (PD-MDMM) + greater of emergency storage / firefighting storage)	FNQROC Regional Development Manual
Pumping Parameters		
Treated water pumps feeding a ground level reservoir	MDMM over 20 hours	FNQROC Regional Development Manual
Reticulation booster pump station	PH + fireflow	
Pumped System	Peak instantaneous flow + fireflow	
Trunk and Reticulation Mains		
Flow	PH + fireflow	FNQROC Regional Development Manual6
Maximum Velocity	2.5 m/s 4.0 m/s may be acceptable during fire flows	
Water Treatment Plant	MDMM-Delivery flow rate from source (over 20 hrs)	Planning Guidelines for Water Supply and Sewerage, section 5.4.4

TABLE B1: EXISTING WASTEWATER FLOWS

Design water demand

Average Day (AD) demands

The TSIRC Sustainable Water & Wastewater Management Plan reported that the average water demand was reduced from 500 L/EP/day to 240 L/EP/day when water restrictions are in place. An Average Day (AD) water demand of 500 L/EP/day was adopted to ensure that the water supply network is sized adequately for periods when water restrictions are not in place.

Peaking factors

The following peaking factors were adopted for this assessment, consistent with the FNQROC Regional Development Manual:

- Mean Day Maximum Month (MDMM): 1.5 x AD
- Peak Day (PD): 2.25 x AD
- Peak Hour (PH): 1/12 x PD

Existing water supply demands

The existing water supply demands are outlined in Table B2.

DESCRIPTION	AD (L/S)	PD (L/S)	PH (L/S)
Residential Lots	1.563	3.516	7.031
Non-Residential Loads	0.233	0.524	2.358
TOTAL	**1.795**	**4.040**	**9.389**

TABLE B2: DESIGN FLOW RATES - EXISTING DEMANDS

STORMWATER

Masig is a coral cay island, which is reasonably flat and composed largely of medium to coarse grain sand. Stormwater infrastructure was not identified on site. The community is serviced by overland flow, with kerbing to some of the roads. 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

Masig receives power from 3 Ergon Energy diesel generators which operate in a duty/duty/standby arrangement and are located on Steven eff Road, on the western side of the community. 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 on the eastern side of the community. Communications is provided to the community by underground cabling. Extension of conduiting to the frontage of new properties will be required.

TRANSPORT

Masig Island is part of the Torres Strait central group of islands and is located approximately 158 km north east of Horn Island. Access to Masig is by air or by barge. The airstrip and helicopter landing pad is located to the west of the community and the barge ramp and finger pier is located on the northern side of the island towards the western end.

Masig 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.

SEWERAGE

The existing sewerage infrastructure at Masig includes the following elements.

Collection system

A conventional gravity sewerage system that flows into two pumping stations. The sewerage reticulation network was installed circa 2008 with DN150 PVC pipework. The system consists of approximately 3,066.5 m of gravity mains and 67 manholes.

Pump stations

Three wastewater concrete sewage pump stations, each with duty/standby submersible sewage pumps and a precast concrete manhole immediately upstream of the pump station as follows:

- Pump Station No. 1 on Williams Road, across the road from the western end of the school. Pumps to the SPS 3 catchment.
- Pump Station No. 2 on Lowatta Road. Pumps to the SPS 3 catchment.
- Pump Station No. 3 at the intersection of JDL Road and Steven Jeff Road. Pumps to the WWTP.

Rising mains

A total of approximately 1,432 m length split between three rising mains as follows:

- Rising main 1: DN90 mm poly rising main located between Pump Station No.1 and Pump Station No. 3
- Rising main 2: DN90 mm poly rising main located between Pump Station No. 2 and Pump Station No. 3
- Rising main 3: DN110 PE rising main located between Pump Station No. 3 and the wastewater treatment plant

Wastewater treatment plant

Located on the southern side of the island close to the airstrip, built in 2008 with a capacity of 500 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
- De-Ox Return
- Return activated Sludge (RAS) Pumps
- Secondary Clarifier
- Sodium aluminate dosing
- Ultraviolet Disinfection
- Sludge Drying Beds with filtrate return
- Ocean Effluent Outfall (DN110).

Effluent Disposal

Effluent is disposed of via the ocean effluent outfall, a 1250 m long DN110 polyethylene main.

Design Criteria

The design criteria required within the FNQROC Regional Development Manual Design Guidelines were adopted for this project.

Design Flow Rates

Design flow rates and peaking factors have been adopted in Accordance with the FNQROC Development Manual as follows:

- Average Dry Weather Flow (ADWF): 270 L/EP/day
- Peak Wet Weather Flow (PWWF): 5 x ADWF, 1350 L/EP/day

An Average Dry Weather Flow (ADWF) of 270 L/EP/day was adopted for Masig based on value used in the design of the plant. The existing wastewater flows for Masig are shown in Table B3.

DESCRIPTION	ADWF (L/S)	PWWF (L/S)
Residential Lots	0.844	4.219
Non-Residential Loads	0.154	0.768
TOTAL	**0.997**	**4.986**

TABLE B3: EXISTING WASTEWATER FLOWS

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 assumptions were adopted in determining the infrastructure requirements for the proposed residential lots:

R1 Western Residential Expansion

- The proposed development includes land for long term development. A total yield of 20 residential lots has been assumed for the purposes of water and sewage demand estimates.

Standard residential developments

- The proposed developments includes the development of residential lots with an area of 1,500 m² for the following areas:
  - R2 Steven Jeff Road North:
  - R3 Dan Street South
  - R5 Steven Jeff Road South

R4 Steven Jeff Road Central

- The proposed development includes a 6,000 m² site for the development of units or townhouses. A development including 12 one to two bedroom units on a common property has been assumed.

R6 General Items

- This development item covers the upgrade of existing residential dwellings. For example, provision of solar power, food gardens, louvres, etc. The redevelopment of approximately 15% of the existing house stock may be included as part of this development, with the opportunity to consider replacing houses with alternative housing types such as units and townhouses. For the purpose of identifying water and sewage demands, it has been assumed that 10 houses will be redeveloped with 7 of these sites being replaced with units or duplexes, resulting in 10 additional dwellings.

The following occupancy rates were adopted for the proposed residential lots:

- Single family dwelling (detached house): 4.1 EP/house
- 2 bedroom units/duplexes: 1.6 EP/unit

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

LOCATION	NO. OF DWELLINGS	EP/ LOT	POPULATION
R1 Western Residential Expansion	20	4.1	82
R2 Steven Jeff Road North	21	4.1	86.1
R3 Dan Street South	12	4.1	49.2
R4 Steven Jeff Road Central	12	1.6	19.2
R5 Steven Jeff Road South	28	4.1	114.8
R6 General Items New houses New units/duplexes Demolished houses	 3 17 -10	 4.1 1.6 4.1	 12.3 27.2 -41
TOTAL	**103**		**349.8**

TABLE B4: 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 Dan Street North

- The commercial site was assumed to consist of a 13,500 m² site for offices, shops and commercial uses. The complex was assumed to include a mix of tenancy sizes that are suitable for a variety of stores, such as a hairdresser, takeaway and an internet café.
- 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 area of 400 m² . The remaining area of the lot was assumed to be utilised for building setbacks, awnings, off-street car parking and landscaping.

C2 Store

- This development includes an expansion of the existing IBIS Store. An additional 100 m² GFA was assumed.
- A typical equivalent population for shops and offices of 1.0 EP per 90 m² of GFA was adopted to calculate water demands and sewage flows (reference: FNQROC Regional Development Manual – Design Guidelines).

C3 Individual enterprise

- This development includes support of local initiatives for economic enterprise (e.g. Potential for butterfly breeding program to provide training, education and economic opportunities).
- The infrastructure requirements for these local initiatives will depend on confirmation of sites and the individual proposed developments. Therefore, infrastructure requirements could not be identified at this stage.
- Demands on the water and sewerage infrastructure were not assessed at this stage.

T1 Lawrence Road

- This development includes the redevelopment of the old cold storage site as a commercial/tourist area which includes a café, market stalls and public toilets.
- Water and sewage flows for the café were assumed based on the low end of the typical usage for food services provided in the DEWS guidelines as follows, assuming a GFA of 50 m² :
  - A typical water usage for food services of 1,200 L/day/100m² GFA was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Food Services).
  - A typical sewage flow for food services of 900 L/d/100 m² GFA was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Food Services).
- The water and sewage flows from the café were assumed to include the usage of the public toilets.

I1 Airport North

- This development includes the development of 7 industrial lots with an area of 3,500 m² each.
- The industrial area will be used for light industrial applications such as sheds/workshops and lay-down areas. It was assumed that a maximum of 10% of each 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).

OS1 West Coast

- This development includes the preservation of an area for use as a camping area for locals.
- No enabling infrastructure is required for this development.

OS2 East Coast

- This development includes the preparation of a conservation strategy to preserve and enhance natural services provided by the vegetated peninsula area, including retention of far eastern peninsula as local camping area.
- No enabling infrastructure is required for this development.

OS3 Access Paths

- This development includes the creation of a network of pedestrian trails and paths for exercise and recreation use around the island.
- No enabling infrastructure is required for this development.

CF1 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.

CF2 Town Centre

- The Town Centre was assumed to include revitalisation of the town centre, including provision for a market square and key amenities such as public toilets, paths, shelter and lighting.
- Additional water and sewage demands were assumed from the 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.
- Existing infrastructure is available to service this site.

CF3 Health Centre

- An upgrade of the existing health centre has been committed. This development is assumed to include refurbishment of the existing facilities with no increase in loads to the site.
- Existing infrastructure is available to service this site.

CF4 Aous Road

- The seniors accommodation/assisted living facility was assumed to be a residential care facility that provides medical care, nursing services and meals. A 12 bed facility was assumed for this site. Water and sewage flows for the hospice were assumed based on the high end of the typical usage for a Convalescent Home provided in the DEWS guidelines, as follows:
  - A water usage of 1100 L/day per bed was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Convalescent Home).
  - A sewage usage of 450 L/day per bed was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Convalescent Home).

CF5 School

- This development was assumed to include a child care centre with 15 children and 3 staff.
- Water and sewage flows were assumed based on the high end of the typical usage for a Child Care Centre provided in the DEWS guidelines, as follows:
  - A water usage of 70 L/day per staff and pupils was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Child Care Centre).
  - A sewage usage of 45 L/day per staff and pupils was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Child Care Centre).

CF6 Airport

- This development includes sealing roads around airport boundary and establishing a protected 50 m wide lateral transitional slope area from airstrip boundary for air safety.
- Aside from the roads, no other enabling infrastructure is required for this development.

CF7 Port

- This development includes maintenance dredging and landside improvements to the port. Works include hardstand for storage (e.g. crayfish pots), lighting on jetty, lighting and public facilities.
- The infrastructure requirements for this site will depend on confirmation of the public facilities to be provided at the site and confirmation on whether there is already water and power to the site.
- No enabling infrastructure was assessed for this development at this time.

CF8 Sports Complex

- This development includes an upgrade of the existing complex with lighting, a kiosk and shaded seating.
- Water and sewerage flows for the kiosk were assumed based on the low end of the typical usage for food services provided in the DEWS guidelines as follows, assuming a GFA of 20 m² :
  - A typical water usage for food services of 1,200 L/day/100m² GFA was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Food Services).
  - A typical sewage flow for food services of 900 L/d/100 m² GFA was adopted (reference: Planning Guidelines for Water Supply and Sewerage (DEWS 2010), Table A, Food Services).

CF9 Seawalls and Bunds

- This development includes an assessment / investigation which is currently underway to provide seawalls and bunds to protect the

town and infrastructure from coastal hazards.

- No enabling infrastructure is required for this development.

CF10 General Items

- This development includes a number of projects for the community which require further investigation to identify sufficient information for assessment of infrastructure requirements. The developments include:
  - Identify a location for a new multi-purpose centre
  - Identify a location for a market garden for local food production
  - Provide lighting along all roads to housing and public areas
  - Resilience investigations for public utilities
  - Prepare a recycling strategy
  - Detailed assessment of trunk water supply and trunk sewerage infrastructure
- No enabling infrastructure will be assessed for this development at this stage.

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 B5.

LOCATION	NO. OF DWELLINGS	AD (L/s)	PD (L/S)	PH (L/S)
R1 Western Residential Expansion	20	0.475	1.068	2.135
R2 Steven Jeff Road North	21	0.498	1.121	2.242
R3 Dan Street South	12	0.285	0.641	1.281
R4 Steven Jeff Road Central	12	0.111	0.250	0.500
R5 Steven Jeff Road South	28	0.664	1.495	2.990
R6 General Items New houses New units/duplexes Demolished houses	 3 17 -10	 0.071 0.157 -0.237	 0.160 0.354 -0.534	 0.320 0.708 -1.068
TOTAL	**103**	**2.024**	**4.555**	**9.109**

TABLE B5: 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 B6. These demands are based on the previously stated assumptions.

ITEM	DEVELOPMENT SIZE	AD (L/s)	PD (L/S)	PH (L/S)
C1 Dan Street North	1 x 13,500 m² site, 400 m² GFA commercial development	0.026	0.058	0.260
C2 Store	100 m² GFA commercial site expansion	0.006	0.014	0.065
C3 Individual enterprise	Details to be confirmed			
T1 Lawrence Road	Café – 50 m² site	0.007	0.016	0.031
I1 Airport North	7 x 3,500 m² industrial lots	0.028	0.064	0.128
OS1 West Coast	No water demands			
OS2 East Coast	No water demands			
OS3 Access Paths	No water demands			
CF1 Cemetery	No water demands			
CF2 Town Centre	Public toilets – 20 uses/day	0.005	0.010	0.021
CF3 Health Centre	Refurbishment of existing site – no additional water demands			
CF4 Aous Road	12 bed assisted living facility	0.153	0.344	0.688
CF5 School	Child care facility for 15 children	0.021	0.047	0.094
CF6 Airport	No water demands			
CF7 Port	No water demands			
CF8 Sports Complex	Café – 20 m² site	0.003	0.006	0.013
CF9 Seawalls and Bunds	No water demands			
CF10 General Items	Details to be confirmed			
TOTAL		**0.248**	**0.559**	**1.299**

TABLE B6: DESIGN FLOW RATES- NON-RESIDENTIAL LOTS

Summary Total Design Flow Rates for Proposed Development

The total design flow rates are summarised in Table B7.

DESCRIPTION	AD (L/S)	PD (L/s)	PH (L/S)	PH (L/S)
Existing Residential Population	1.563	3.516	7.031	2.135
Existing Non-Residential Population	0.233	0.524	2.358	2.242
Proposed Residential Growth	2.024	4.555	9.109	1.281
Proposed Non-Residential Growth	0.248	0.559	1.299	0.500
TOTAL	**4.068**	**9.153**	**19.798**	**9.109**

TABLE B7: 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 B8.

LOCATION	NO. OF DWELLINGS	ADWF (L/S)	PWWF (L/S)
R1 Western Residential Expansion	20	0.256	1.281
R2 Steven Jeff Road North	21	0.269	1.345
R3 Dan Street South	12	0.154	0.769
R4 Steven Jeff Road Central	12	0.060	0.300
R5 Steven Jeff Road South	28	0.359	1.794
R6 General Items New houses New units/duplexes Demolished houses	 3 17 -10	 0.038 0.085 -0.128	 0.192 0.425 -0.642
TOTAL	**103**	**1.093**	**5.466**

TABLE B8: DESIGN FLOW RATES - RESIDENTIAL LOTS

Design sewage flow rates for proposed non-residential lots

The design flow rates adopted for the proposed non-residential lots are summarised in Table B9. These demands are based on the previously stated assumptions.

ITEM	DEVELOPMENT SIZE	ADWF (L/S)	PWWF (L/S)
C1 Dan Street North	1 x 13,500 m² site, 400 m² GFA commercial development	0.014	0.069
C2 Store	100 m² GFA commercial site expansion	0.003	0.017
C3 Individual enterprise	Details to be confirmed		
T1 Lawrence Road	Café – 50 m² site	0.005	0.026
I1 Airport North	7 x 3,500 m² industrial lots	0.028	0.142
OS1 West Coast	No sewage loads		
OS2 East Coast	No sewage loads		
OS3 Access Paths	No sewage loads		
CF1 Cemetery	No sewage loads		
CF2 Town Centre	Public toilets – 20 uses/day	0.005	0.023
CF3 Health Centre	Refurbishment of existing site – no additional water demands		
CF4 Aous Road	12 bed assisted living facility	0.063	0.313
CF5 School	Child care facility for 15 children	0.052	0.260
CF6 Airport	No sewage loads		
CF7 Port	No sewage loads		
CF8 Sports Complex	Café – 20 m² site	0.002	0.010
CF9 Seawalls and Bunds	No sewage loads		
CF10 General Items	Details to be confirmed		
TOTAL		**0.172**	**0.861**

TABLE B9: DESIGN FLOW RATES- NON-RESIDENTIAL LOTS

Summary Total Design Flow Rates for Proposed Development

The total design flow rates are summarised in Table B10.

DESCRIPTION	ADWF (L/S)	PWWF (L/S)
Existing Residential Population	0.844	4.219
Existing Non-Residential Population	0.154	0.768
Proposed Residential Growth	1.093	5.466
Proposed Non-Residential Growth	0.172	0.861
TOTAL	**2.263**	**11.313**

TABLE B10: SUMMARY TOTAL DESIGN FLOW RATES

TRANSPORT

A review of the proposed developments identified that many of the proposed development sites are located adjacent to existing sealed roads. The developments that will required new sealed roads are listed in Table B11.

DESCRIPTION	INFRASTRUCTURE REQUIREMENT
R2 Steven Jeff Road North	New Access Place (5.5 m wide sealed carriageway, 14.5 m wide road reserve), approximately 535 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.
R5 Steven Jeff Road South	New Access Place (5.5 m wide sealed carriageway, 14.5 m wide road reserve), approximately 720 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.
I1 Airport North	New Industrial Access Street (12.0 m wide sealed carriageway, 21.0 m wide road reserve), approximately 365 m length
CF6 Airport	New Access Street (6.5 m wide sealed carriageway, 15.5 m wide road reserve), approximately 2,076 m length

TABLE B11: TRANSPORT INFRASTRUCTURE REQUIREMENTS

WATER

The water supply infrastructure requirements for the preferred option are summarised in Table B12.

DESCRIPTION	INFRASTRUCTURE REQUIREMENT
R2 Steven Jeff Road North	100 mm diameter water main from the existing water mains, around the front of the proposed lots. Approximate 415 m total length of main.
R5 Steven Jeff Road South	100 mm diameter water main from the existing water mains, around the front of the proposed lots. Approximate 555 m total length of main.
I1 Airport North	100 mm diameter water main from the existing water mains, along the front of the proposed lots. Approximate 250 m total length of main.
CF8 Sports Complex	Confirmation whether there is water to the existing sports complex is required. If no existing water main, 100 mm diameter water main from the existing water mains to the development site is required. Approximate 210 m total length of main.

TABLE B12: WATER SUPPLY INFRASTRUCTURE REQUIREMENTS

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 B13.

ITEM	EXISTING CAPACITY	REQUIRED CAPACITY	DEFICIENCY
Sewage Treatment Plant EPCO plant	500 EP	704 EP	204 EP

TABLE B13: TRUNK WATER SUPPLY SYSTEM REQUIREMENTS FOR PROPOSED DEVELOPMENT

Further assessment of the pump stations are required. Pumps stations 2 and 3 are likely to require upgrade to their pump capacity to service the additional developments.

The sewerage infrastructure requirements for the preferred option are summarised in Table B14.

DESCRIPTION	INFRASTRUCTURE REQUIREMENT
R2 Steven Jeff Road North	150 mm diameter gravity sewer mains from the proposed development site to the nearest pump station. Approximate 310 m total length of main, assuming the R3 is developed after this development.
R3 Dan Street South	150 mm diameter gravity sewer mains from the proposed development site to the nearest pump station. Approximate 330 m total length of main, assuming the R2 is developed first.
R4 Steven Jeff Road Central	Nil if R3 is developed first. Otherwise, 90 m of 150 mm diameter gravity sewer mains from the proposed development site to the nearest pump station.
R5 Steven Jeff Road South	150 mm diameter gravity sewer mains from the proposed development site to the nearest pump station. Approximate 925 m total length of main.
C1 Dan Street North	150 mm diameter gravity sewer mains from the proposed development site to the nearest pump station. Approximate 25 m total length of main if I1 or R5 is developed first.
I1 Airport North	150 mm diameter gravity sewer mains from the proposed development site to the R5 sewerage infrastructure. Approximate 575 m total length of main. Small lift station with grinder pumps, capacity 0.2 L/s

TABLE B14: SEWERAGE INFRASTRUCTURE 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, R3, R4 and R5 and industrial development I1 are likely to require overland flow paths to direct stormwater flows. Kerb and channel may be required to each of these developments.

ELECTRICITY SUPPLY AND COMMUNICATIONS

The capacity of the electricity supply to Masig 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 B15.

DESCRIPTION	INFRASTRUCTURE REQUIREMENT
R2 Steven Jeff Road North	Approximately 300 m length of electrical mains and 410 m of communications mains required to service the new lots.
R5 Steven Jeff Road South	Approximately 460 m length of electrical mains and 440 m of communications mains required to service the new lots.
C1 Dan Street North	Approximately 130 m length of communications mains is required to service the new lot if developed prior to I1. No new mains if developed after I1.
I1 Airport North	Approximately 290 m length of electrical mains to service the new lots. Approximately 540 m length of communications mains is required to service the new lot if developed prior to C1, or approximately 410 m of communications mains if developed after C1.
CF8 Sports Complex	Lighting appears to be present at this site, so it has been assumed that the site is serviced by electricity.Approximately 185 m length of communications mains is required to service the lot.
I1 Airport North	150 mm diameter gravity sewer mains from the proposed development site to the R5 sewerage infrastructure. Approximate 575 m total length of main. Small lift station with grinder pumps, capacity 0.2 L/s

TABLE B15: ELECTRICITY SUPPLY AND COMMUNICATIONS INFRASTRUCTURE REQUIREMENTS

C. APPENDIX C. NATIVE TITLE VISION MAPPING

Masig - Native Title Determinations

5/28/2020, 11:32:22 AM

Determined Outcomes

Native title exists (exclusive)

Native title exists (non-exclusive)

1:14,458

0 0.1 0.2 0.4 mi

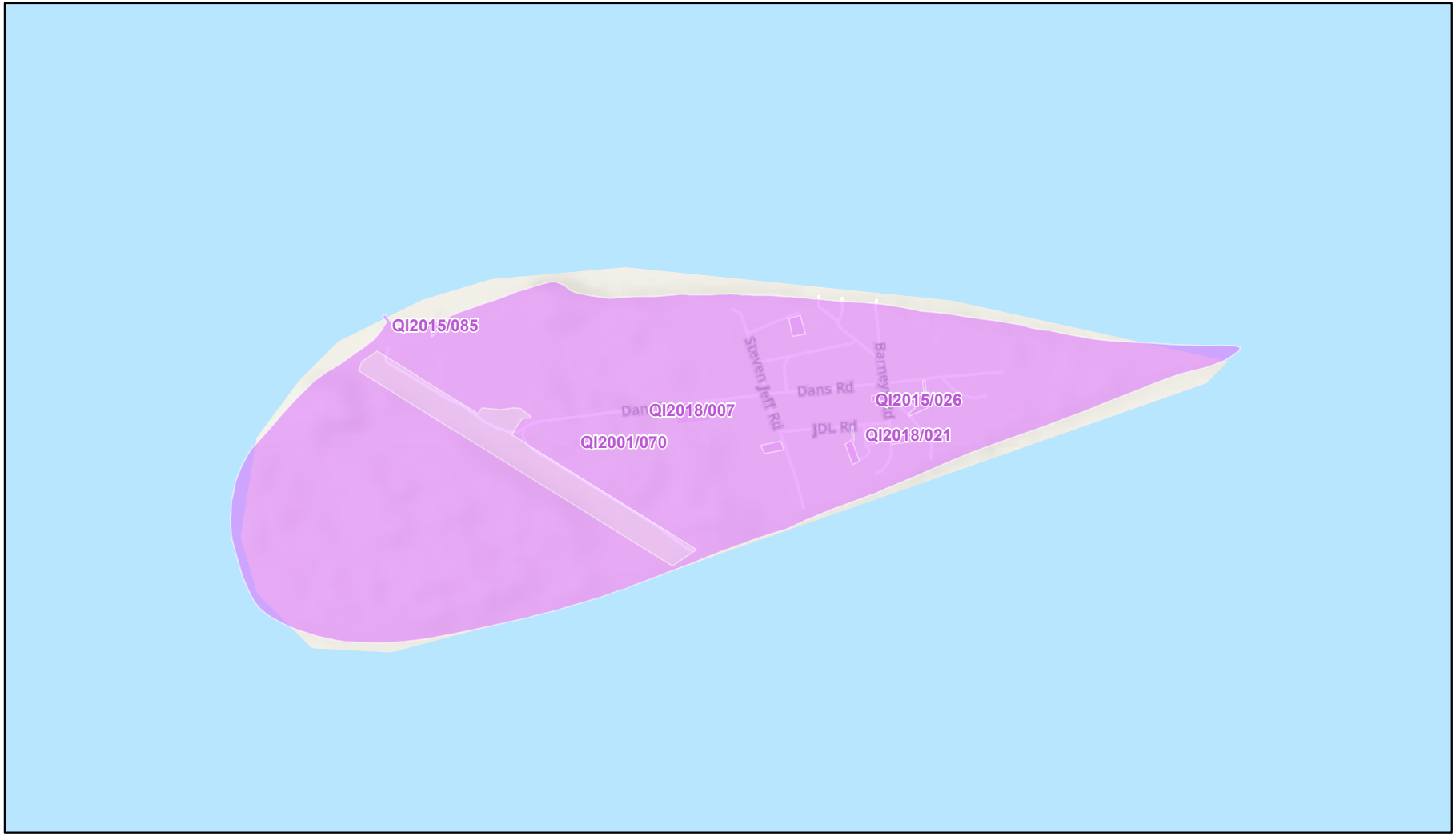
0 0.17 0.35 0.7 km

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Native TitleVision

Esri, NASA, NGA, USGS | Esri, HERE, Garmin, METI/NASA, USGS |

Masig - ILUA



5/28/2020, 11:31:54 AM

Indigenous Land Use Agreements

ILUA registered

1:14,458

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

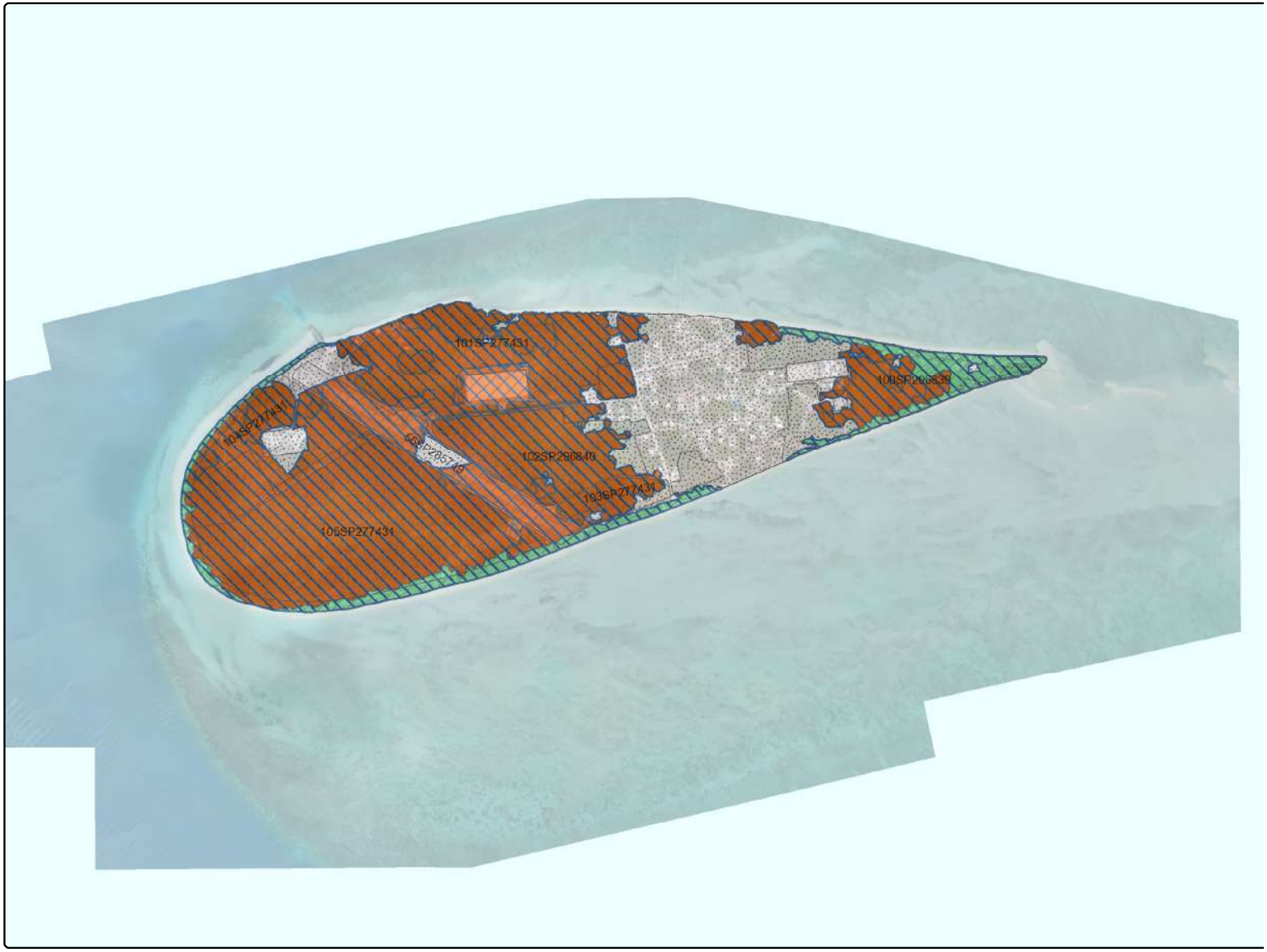
Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Native TitleVision

Esri, NASA, NGA, USGS | Esri, HERE, Garmin, METI/NASA, USGS |

D. APPENDIX D. VEGETATION MAPPING

Matters of State Environmental Significance Mapping



Legend

Cadastre (100k)

- Cadastre (100k)

Regulated vegetation management map (Category A and B extract)

- Category A on the regulated vegetation management map
- Category B on the regulated vegetation management map

Essential habitat

- Essential habitat

Regulated vegetation management map (other vegetation categories)

- Category C on the regulated vegetation managment map
- Category R on the regulated vegetation management map
- Category X on the regulated vegetation management map

Vegetation management regional ecosystem map

- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Non remnant
- Water

DA Mapping System – Print Screen

Department of State Development, Manufacturing, Infrastructure and Planning

0 290 580 870 1,160

Metres

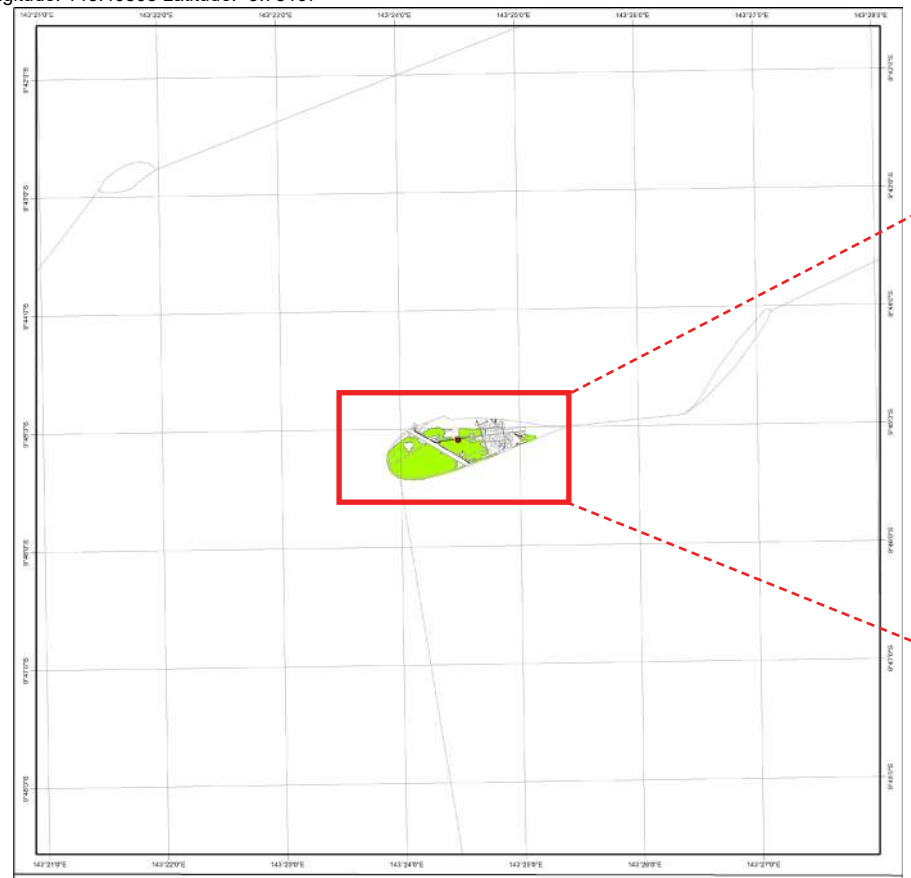
Date: 07/02/2020

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.

Protected Plants Flora Survey Trigger Map

Longitude: 143.40805 Latitude: -9.75167



Protected Plants Flora Survey Trigger Map

Legend

- Coordinates
- High risk area
- Cadastral line
  Property boundaries shown are provided as a locational aid only
- Freeways / motorways / highways
- Secondary roads / streets

LOCALITY DIAGRAM

N

0 480 960 1,440 1,920 2,400 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.

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.

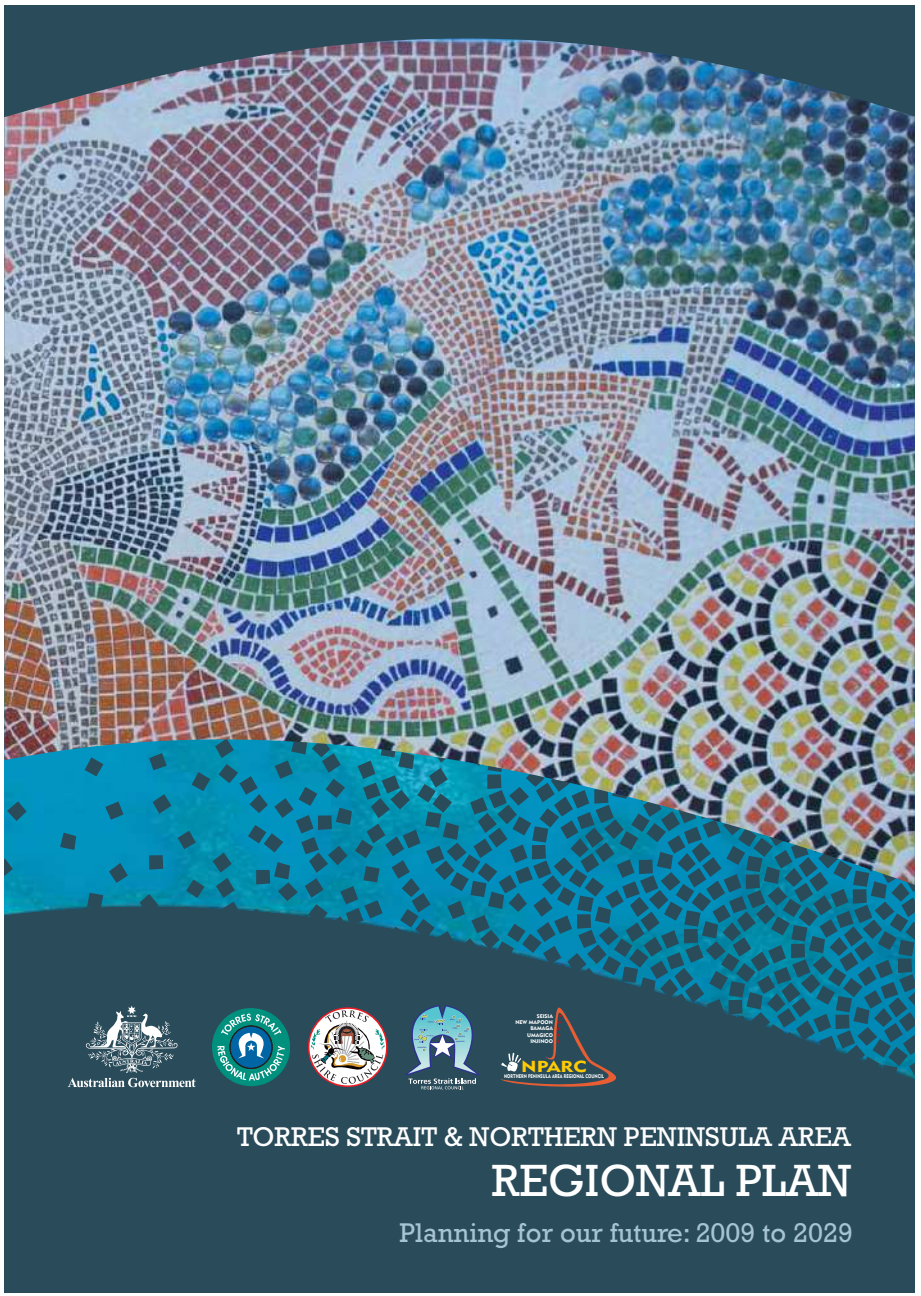
For further information or assistance with interpretation of this product, please contact the Department of Environment and Science at palm@ehp.qld.gov.au

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.

E. APPENDIX E. STATE POLICY DOCUMENTS

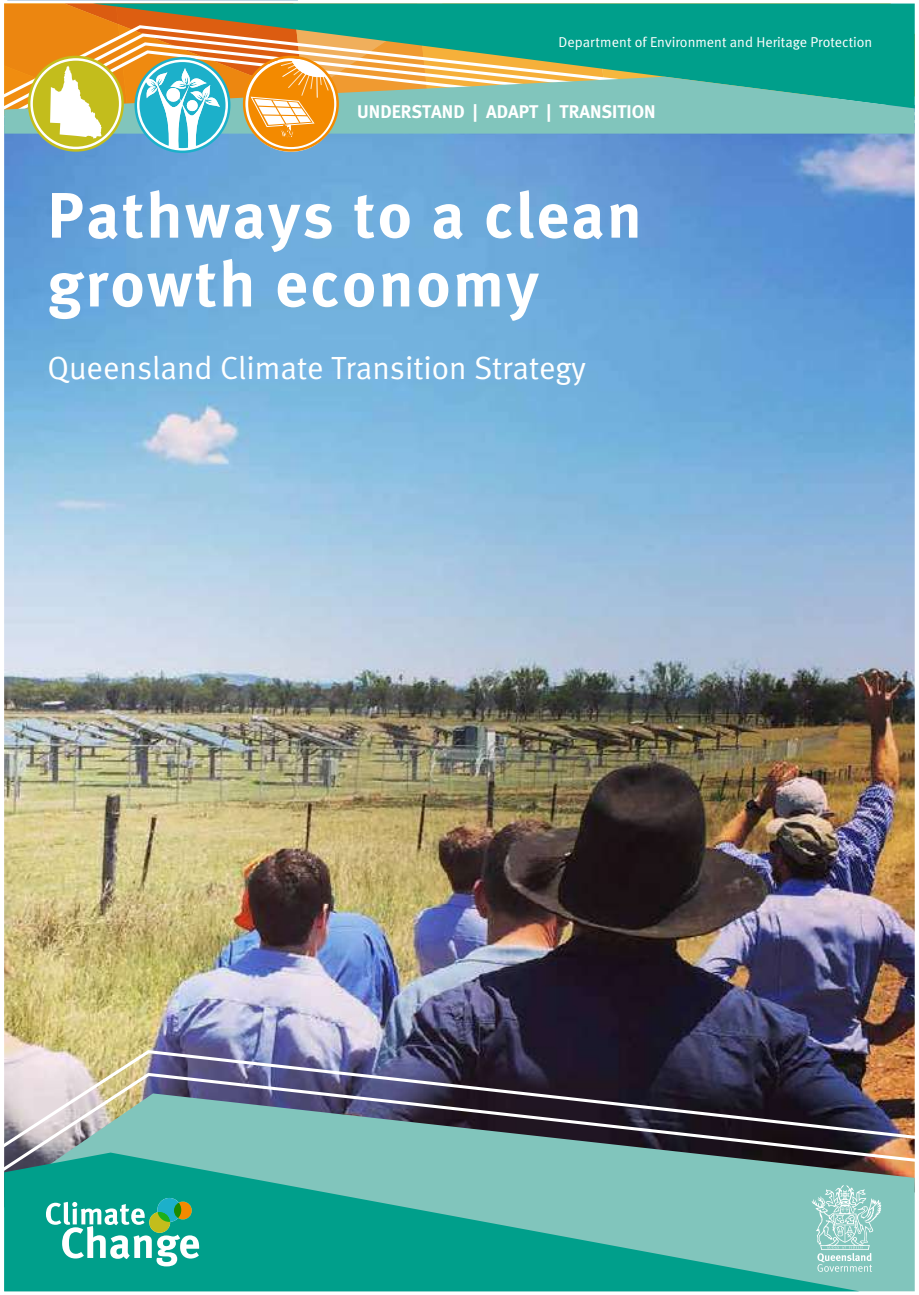
ACCESSIBLE VIA:
HTTPS://DILGPPRD.BLOB.CORE.WINDOWS.NET/GENERAL/SPP-JULY-2017.PDF

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

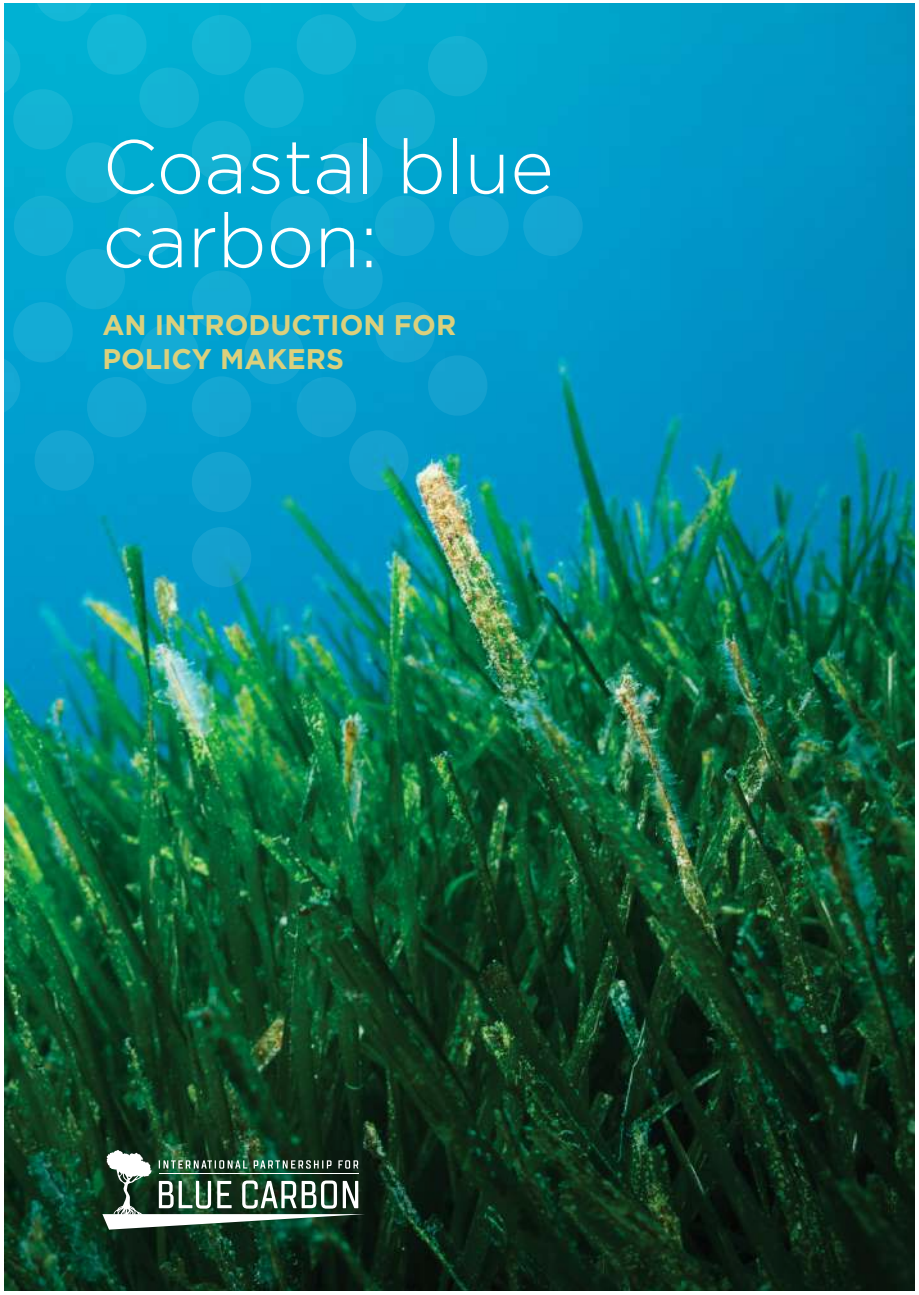


ACCESSIBLE VIA:
HTTPS://WWW.QRA.QLD.GOV.AU/RESILIENT-QUEENSLAND

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/



F. APPENDIX F. 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

G. APPENDIX G. COMMUNITY ENGAGEMENT INFORMATION PACK

Queensland Government
Department of Aboriginal and Torres Strait Islander Partnerships

HAVE YOUR SAY!

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

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)
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- 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?

MASTER PLAN

COMMUNITY ENGAGEMENT - WEDNESDAY 6TH NOVEMBER 2019

MASIG (YORKE) ISLAND

DEPARTMENT OF ABORIGINAL AND TORRES STRAIT ISLANDER PARTNERSHIPS

AECOM

MASIG (YORKE) ISLAND ENGAGEMENT APPROACH

WHAT IS A MASTER PLAN AND WHAT DOES IT DO?

The Master Plan is a Non Statutory Document.

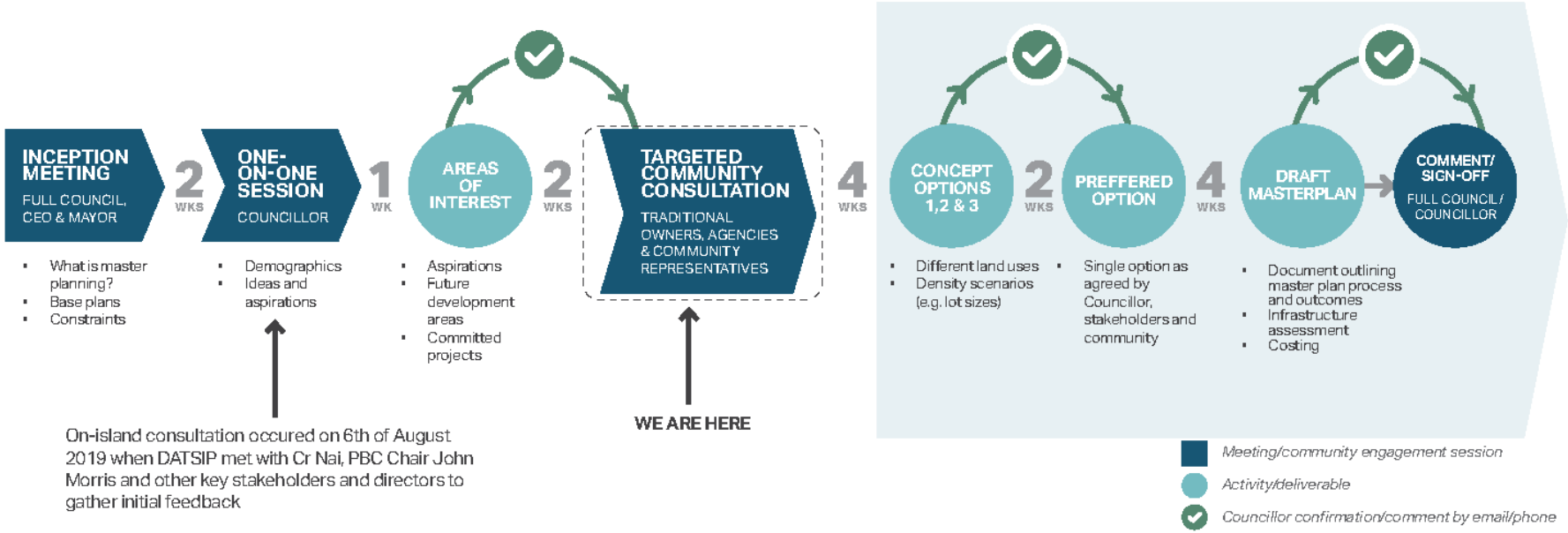
The Master Plan is a Policy Document.

The Master Plan is a living document that can be updated by Council as part of its Policies.

The Master Plan is a supporting document for decisions in terms of the Zenadth Kes Planning Scheme (planning scheme for the Torres Strait Island Regional Council) and the Planning Act 2016.

The Master Plan principles and directions carries a lot of credibility when quoted as part of Reasons for Decisions as the Master Plan reflects the Communities aspirations and was consulted with the Community.

The Master Plan provides relevant information when applying for Grants. It shows that project are "shovel ready" and have been scoped for cost of development.



AECOM

Queensland Government Department of Aboriginal and Torres Strait Islander Partnerships

DEMOGRAPHICS

An overview of key population and housing characteristics within the Masig Island LGA has been derived from the following published sources:

- Australian Bureau of Statistics – 2016 Census of Population and Housing data products (Masig (Yorke) Island (SSC31799) 1.6km²):
  - / 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 (Masig (Yorke) Island (SSC31799) 1.6km²):
  - / Aboriginal and Torres Strait Islander Peoples Profile (Catalogue number 2002.0) (ABS 2016c)
- TSIRC Planning Scheme 2016 - Local Government Infrastructure Plan - Masig 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 Masig Island, have therefore been utilised to characterise long term population trends within the community.

QUEENSLAND

3.2 **BEDROOMS** PER HOUSEHOLD

2.6 **PEOPLE** PER HOUSEHOLD

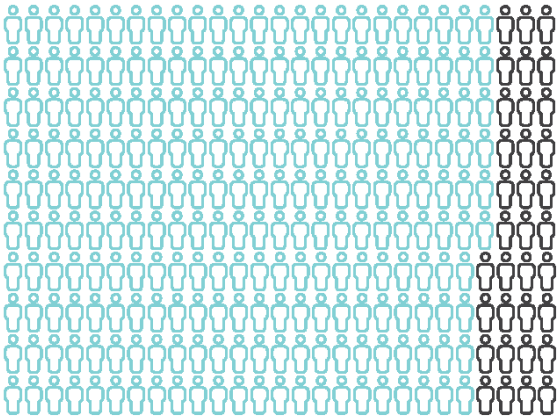
AUSTRALIA

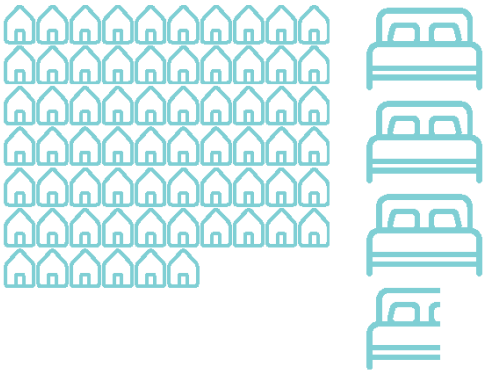
3.1 **BEDROOMS** PER HOUSEHOLD

2.6 **PEOPLE** PER HOUSEHOLD

236 **PEOPLE**
TSIRC PLANNING SCHEME

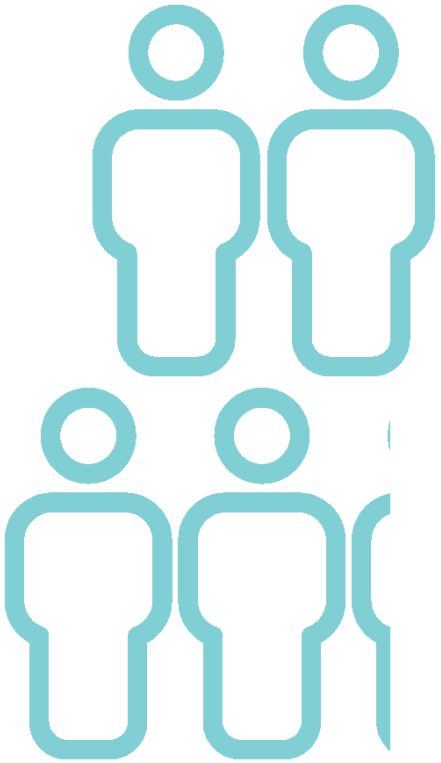
270 **PEOPLE**
ABS CENSUS





66 **DWELLINGS**

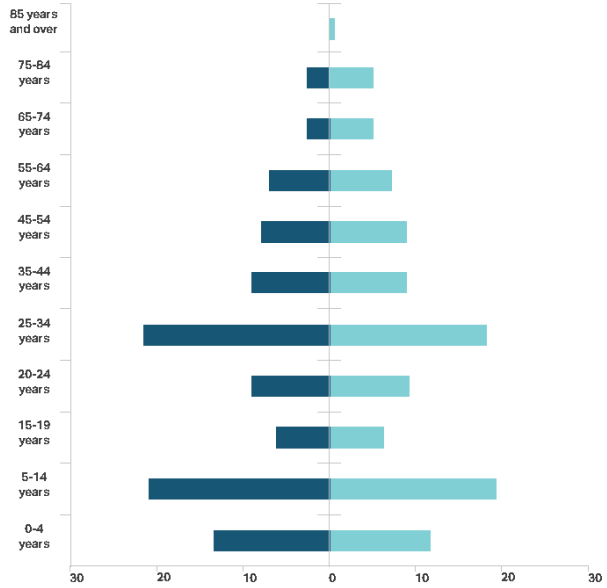
3.7 **BEDROOMS** PER HOUSEHOLD



4.1 **PEOPLE** PER HOUSEHOLD

POPULATION

The 2016 Census recorded the population within Masig Island to be 270 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 MASIG ISLAND

SOURCE	2011	2016	2021	2026	2031	2036
ABS Census	238	270	-	-	-	-
TSIRC Planning Scheme*	254	236	221	211	204	200

**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 decrease between 2011-16 of 7%, while Census recorded a 13% growth. Based on Queensland Government population projections for the TSIRC local goverenment area, the Masig population will increase by 6.77% to 289 people by 2041.

The 2036 - 2041 population forecasts drawn from Queensland Government population statistics shows the population aged over 45 years of age increases by 71%, 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 57 occupied and 9 unoccupied dwellings on Masig Island. Table 3 provides a summary of key housing statistics.

ITEM	DETAIL
DWELLING COUNT	
Occupied	57
Unoccupied	9
Total	**66**
NUMBER OF BEDROOMS	
1 bedroom	0
2 bedrooms	3
3 bedrooms	21
4 or more bedrooms	33
Number of bedrooms not stated	0
Average number of bedrooms per dwelling	3.7
TENURE	
Rented	53
Other	3
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 MASIG ISLAND

MASIG | MASTER PLAN AREAS OF INTEREST

General Items

- Marine infrastructure - dredging for larger vessels, marine training hub, upgrade infrastructure
- Aviation training facilities at the airport
- Energy - alternative generation and supply
- Communication and coverage - is it sufficient? WiFi blackspots?
- Sewer network - capacity and condition
- Water - pressure, supply, storage, wells
- Waste management and recycling opportunities
- High-set design for future dwellings
- Botanical gardens concept design / Ceremonies place / Memorial park
- Eco-tourism strategy for ecovillage, walkway, entrance statement on Dan Street
- Waterfront cafe

HAVE YOUR SAY

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

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

MASIG (YORKE) ISLAND
AREAS OF INTEREST

FOR DISCUSSION PURPOSES ONLY

LEGEND

- Residential
- Industrial
- Camping site
- Cultural site
- Cultural area
- Environmental
- Graves
- Cemetery
- Erosion impacts
- Future road
- Healthcare
- Church
- Future seawall
- Future flood mitigation bund

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

MASIG (YORKE) ISLAND MASTER PLAN

Land use examples

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

MASTER PLAN QUESTIONS

What kind of recreation facilities would youth and families use? (e.g. playgrounds, pathways, parkland)

Are current houses overcrowded?

Is room required for any other government service providers? (e.g. office space, shopfront service desks)

Are current houses suitably designed for residents needs? (e.g. is specific seniors accommodation required?)

Is the barge ramp and jetty adequate?

Are more houses required or would it be better to rebuild bigger houses on current land?

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?

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

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Our questions for you include:

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- 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 Nai or email to:

Cr.Ted.Nai@tsirc.qld.gov.au or sheena.billy@tsirc.qld.gov.au

AECOM

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