GREAT KEPPEL ISLAND RESORT REVITALISATION PLAN

MARINA AND VESSEL MANAGEMENT ASPECTS

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1.0 INTRODUCTION

The Great Keppel Island Revitalisation Plan primarily comprises a 250 room Hotel, 750 eco-tourism villas, 300 eco-tourism apartments and harbour facilities.

The proposed harbour will contain waterfront retail, barge landing and goods transfer/handling, resort water sports vessel storage, 250 marina berths including refuelling and vessel sewage pump-out facilities.

The proposed harbour is on the southern side of Putney Point (refer Figure 1).

Consultation has been undertaken with Department of Transport and Main Roads, Maritime Safety Queensland (MSQ) and the Office of the Co-ordinator General during the Community Consultation Period of 6 June to 10 June 2011.

MSQ noted that detailed discussions with the Harbour Master should occur and that the proposal needed to demonstrate how safety will be facilitated.

Issues with respect to the proposed harbour entrance navigation and navigation aids, vessel movements and management both during construction and operations and their effects on existing facilities such as Rosslyn Bay need to be considered.

Bulk haulage of goods and construction materials also needs to be addressed.

A further meeting was held on 23 June 2011 to brief the above Departments on proposed harbour concept details and to clarify information requirements for MSQ review.

This report also addresses requirements under Section 3.10 of the ToR with respect to existing and expected vessel traffic, management and impacts, recognising that final management plans and navigational aid requirements would be determined in consultation with the Harbour Master and/or designated MSQ representatives.

2.0 HARBOUR AND MARINA

As depicted on Figure 2, the harbour provides for 250 marina berths with a mix of berth sizes to suit expected demand with maximum berth size at 30 metres.

The preliminary marina berths layout is in accordance with AS3962-2001 "Guidelines for Design of Marinas" as will be the final detailed design. Fairway widths are based on the recommended international standard of 1.75 times the berth size.

The harbour is configured to provide for barges and ferries up to 40m overall length.

The harbour entrance and breakwater configuration has been configured to provide a safe all-weather haven for vessels and minimise entrance channel length to deep water.

3.0 VESSEL TRAFFIC ASPECTS

3.1 Existing Rosslyn Bay Harbour Traffic

Great Keppel Island is located within 15 kilometres of Rosslyn Bay Boat Harbour. The next mainland harbour, Gladstone, is approximately 90 kilometres from Great Keppel Island. It is therefore reasonably assumed that mainland harbour impacts would be substantially confined to Rosslyn Bay, the coastal waters between Great Keppel Island, the mainland and the region's other island and reef destinations.

Existing levels of vessel activity have been assessed from interviews (telephone) with Rosslyn Bay Harbour management, commercial operators and relevant available vessel registration statistics.

Existing vessel traffic primarily comprises the following:

- Trailerable (day) boats
- Commercial vessels including charter, fishing and ferry
- Private vessels moored within Rosslyn Bay, and
- Transient cruising vessels

3.1.1 Trailerable Boats:

There are well established boat ramp and car and trailer facilities within Rosslyn Bay. These launching facilities are all-weather protected and provide all-tide vessel launching and retrieval.

The majority of the area's trailerable vessel activity originates from this facility.

Trailer boat activity is heavily weather dependant with peak activity corresponding to favourable (calm, sunny conditions). Typical activity is characterised in Table1.

TRAILERABLE VESSEL ACTIVITY

TABLE 1

Vessel Launchings	Conditions
10 to 15	Average week day
60 to 70	Average weekend day
20 to 30	Good weather week day
Up to 100	Good weather weekend day
Up to 10	Poor weather week day
40 to 50	Poor weather weekend day
300 plus	Excellent weather public holiday

It is estimated that approximately 25% of these activities would comprise day boaters who would be likely to make Great Keppel Island or surrounding islands their destination.

The remaining 75% primarily comprise fishing activities within the immediate coastal waters, islands and reefs.

3.1.2 Rosslyn Bay Marina Vessels:

There are approximately 330 marina berths in Rosslyn Bay and 64 pile moorings.

These berths primarily house private pleasure craft.

There are reportedly around 20 commercial vessels located within the marina mainly providing charter services for fishing and diving.

Again vessel activity is highly weather dependant and week day activity much lower than the weekend.

It is estimated that on good warm weather weekend days, up to 20% of vessels would depart the marina.

Typically during the week days in good weather, around ten private vessels would depart the marina per day.

3.1.3 Commercial Vessels:

There are approximately 25 commercial vessels operating within the harbour which primarily comprise ferries, water police, fishing and charter vessels.

Of the twenty commercial vessels located within the marina facilities, around 50% are actively providing charter fishing and dive trips.

There are currently three fishing trawlers and three line fishing boats operating from the harbour.

Most commercial fishing activity is based around prawning between January and March and scallops between November to January.

The existing ferry activity comprises a one trip per day service from Roslyn Bay to Great Keppel Island. Typical passenger numbers are around 50.

When the Great Keppel Island Resort was open, there were three to four ferry services per day averaging around 100 passengers a trip.

3.2 Vessel Registration Statistics

Vessel statistics for the region have been reviewed to ascertain regional base data and trends.

Annual Registration Data is sub-divided into Local Government Authority regions. This analysis reviews data for the Rockhampton region.

Table 2 details registration and percentage changes.

ROCKHAMPTON REGIONAL COUNCIL

VESSEL REGISTRATIONS

TABLE 2

Year	Total Registrations	Change from Previous Year	Registrations up to 8m	Change from Previous Year	Registrations 8m and over	Change from Previous Year
2011	8321	+ 2.51%	7900	+ 2.47%	421	+ 3.18%
2010	8117	+ 2.46%	7709	+ 2.36%	408	+ 4.35%
2009	7922	+ 3.66%	7531	+ 3.59%	391	+ 5.11%
2008	7642		7270		372	
	Total % Increase 8.88%		**Total % Increase 8.66%**		**Total % Increase 13.17%**	

As detailed above, vessel registrations since 2008 have continuing strong growth despite the Global Financial Crisis. This suggests that there will be ongoing regional pressure on marine infrastructure.

4.0 GREAT KEPPEL ISLAND REVITALISATION PLAN IMPACTS

Impacts on vessel activity due to the proposed development are predicted as follows:

4.1 Trailerable Boats

There is expected to be continued growth in trailerable boats in the region commensurate with growth in vessel registrations.

Noting that around 75% of trailerable boat activities are for fishing and others tend to enjoy "away from the crowd" destinations, it is expected that the Great Keppel Island revitalisation itself will not have a significant multiplier effect on trailerable boat activity.

4.2 Marina Vessel Activity

With the proposed 250 marina berths as part of the development, clearly marina vessel activity regionally will increase.

It is not expected that mainland-based recreational or charter vessel activity would be significantly affected by the development, primarily due to the ease and preference of mainland boaters and tourists to access boating from the mainland rather than travelling to Great Keppel Island to do so.

Increase in vessel activity as a result of the development's marine facilities is expected to be similar to mainland marinas.

As such, it would be expected that high activity, good weather weekend days could generate 20% vessel usage (50 vessels) from the Great Keppel Island marina.

Around 10 private local vessel movements would be expected during the week days (per day).

Charter vessel movements from the marina generated by the revitalisation of Great Keppel Island would be expected to comprise a daily fishing/dive charter and several daily excursions to the underwater observatory and round the islands tours.

4.3 Watersports Activities

Watersports activities associated with the resort development at Fisherman's Beach are expected to comprise a small number of jet skis, one or two person off-the-beach sailing catamarans and one or two watersports powerboats for tube rides and parasailing. These activities would be essentially confined to the sheltered waters adjacent to the proposed Hotel.

The powerboats would be housed within the Great Keppel Island marine facility.

4.4 Ferry and Barge Traffic

4.4.1 Barge Traffic

Currently, with the island's resort not operating, there are no regular barge services to the island.

During construction it is estimated that two barge trips per week day would be required for civil and building works and two per week day during harbour construction.

To provide reliable all-weather barge facilities at the island, the marina facility would require construction prior to the island's major civil and

building works. This being the case, two barge trips per week day is expected during the period of major construction activity.

Regular barge trips will be required for the resort's provisioning and servicing following construction completion. One barge per day is expected to be required for supplies to the island including return trip rubbish removal as required.

4.4.2 Ferry Traffic

Regular ferry service requirements are essential for the successful operation of the resort.

Ferry passenger make-up comprises hotel, villa and apartments arrivals and departures, day visitors and mainland commuting staff.

It has been estimated that 70% of hotel, villa and apartment occupants would arrive/depart by plane. Therefore, the remaining 30% would depart by ferry from Rosslyn Bay as would day visitors and commuting staff.

Based on the above, it has been estimated that the average daily passenger arrivals/departures by ferry would be approximately 370.

It is envisaged that this level of passenger demand would be serviced by three return trip services per day.

5.0 OPERATIONAL VESSEL MANAGEMENT

Recreational vessel management within the harbour will be the responsibility of Marina Management.

As depicted on Figures 1 and 2 the harbour's entrance channel has been configured to minimise length to deep water.

The approach to the harbour is therefore from the north between the rock outcrops of Putney Point and Passage Rocks.

Detailed hydrographic survey and production of seabed contours as depicted on Figures 1 and 2 confirm that there is a navigable width between the -4.5m AHD contours (2.1m below LAT) between the rock outcrops of approximately 150 metres (refer Figure 5) and 70 metres at 3.6m below LAT.

The proposed width of the dredged portions of the entrance channel (to -5.9m AHD) is 45 metres (excluding side batter slopes).

This width is considered a comfortable minimum for the proposed maximum size vessels to be accommodated within the harbour, namely 30 metres maximum pleasure craft and 40 metres maximum ferries and supply barges.

A harbour entrance width greater than 45 metres have been avoided to ensure a satisfactory reduction of wave energy into the harbour.

The proposed 45 metre channel width is comparable to boat harbours such as Manly and Scarborough and Hamilton Island Marina.

The gap between Passage Rocks and the Putney Point outcrops as mentioned above is significantly wider.

It is also noted that vessels with drafts less than 2.5 metres can approach the dredged channel from the southern side of Passage Rocks. However, designation of the channel and navigational aids would need to be determined with Maritime Safety Queensland.

With the airport runway approach just south of the marina, yachts with tall masts (over 20 metres) will have their entry into and exit from the harbour coordinated with Marina Management to ensure aviation safety.

6.0 CONSTRUCTION VESSEL MANAGEMENT

During re-development construction, materials and equipment is required to be transported to the island.

The re-development build out is proposed over a period of ten years. A major portion of construction activity will be within the first 18 months. This will include construction of the Harbour, Airport and Hotel.

Harbour breakwaters and revetments have been designed to incorporate a geofabric contained sand core utilising dredged material to create the harbour. However there is a need to import approximately 70,000 cubic metres of armour rock from the mainland.

Notwithstanding the details of the marine contractor who will not be confirmed until award of the construction contract, as discussed in Section 4.4, it is estimated that up to two barge trips per week day would be likely during harbour construction with one barge per day for rock armour delivery over a six month period.

Whilst materials and equipment transport for general civil works and building construction could be undertaken using smaller roll on roll off barges out of Rosslyn Bay, it is not considered that bulk transport of rock armour out of Rosslyn Bay would be satisfactory.

It is therefore proposed that rock armour be sourced from a suitable quarry close to the Fitzroy River and transported via the River to the site (refer Figures 3 and 4).

Management of vessel movements in and out of the Fitzroy River and Rosslyn Bay would be formulated in consultation with the Regional Harbour Master and other MSQ staff as required to ensure safe and acceptable operating procedures.

Any mooring of construction equipment within mainland harbours and Great Keppel Island sheltered areas again would be formulated in consultation with the Regional Harbour Master.

Sheltered mooring areas adjacent to the island include areas offshore from Putney Beach and Fisherman's Beach. Both these beaches have significant shallows extending from the shore such that vessels would need to be moored at least 500 metres from the shore. Appropriate vessel mooring lighting will be required to ensure navigational safety within these areas.

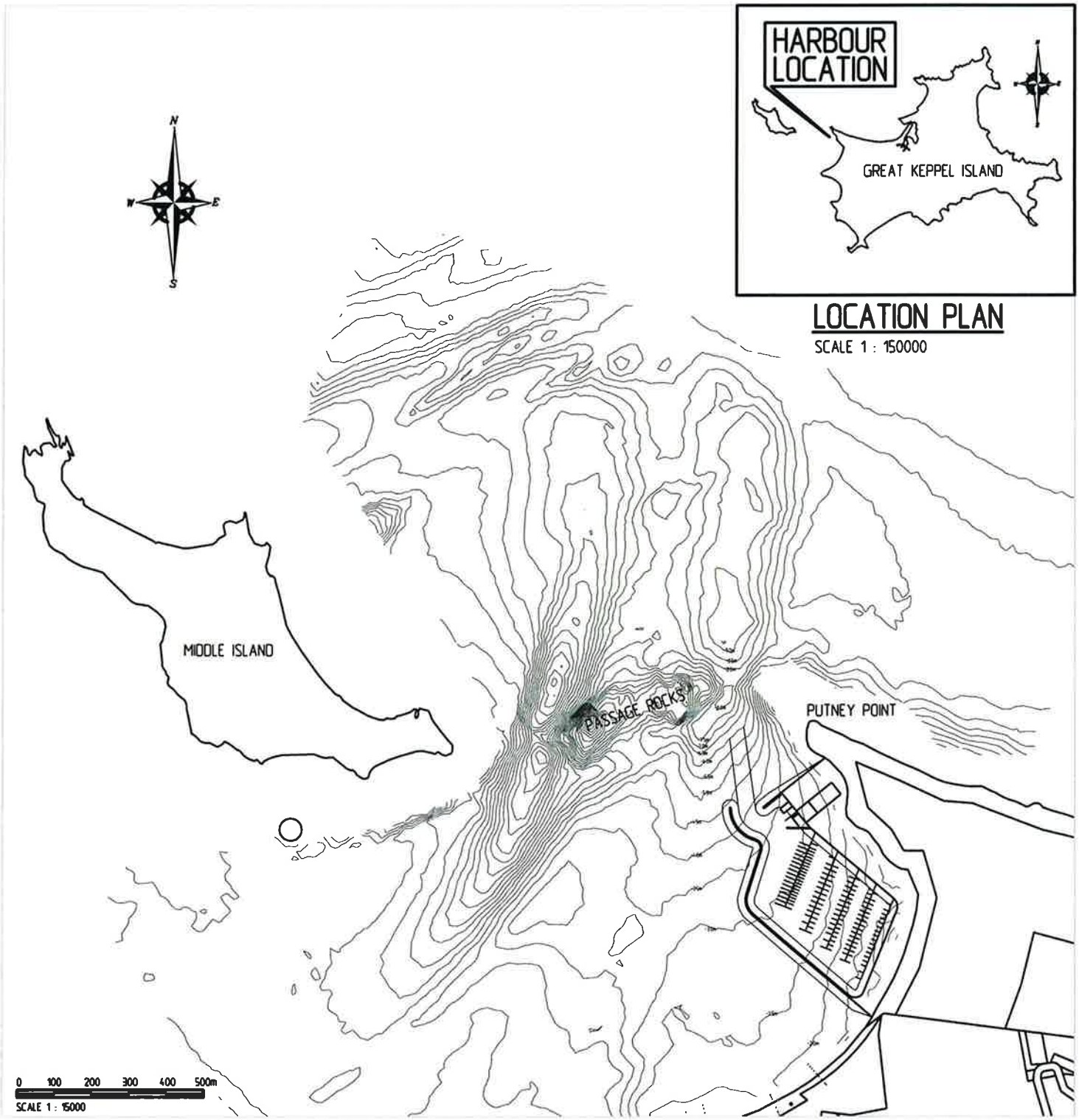
7.0 CONCLUSION

With the bulk construction materials for creation of the harbour being sourced from harbour dredgings and rock transport from the Fitzroy River, significant impacts on Rosslyn Bay Boat Harbour have been avoided.

The creation of the harbour and marina at Great Keppel Island is considered to provide the benefit of additional boating infrastructure within the Queensland Coast rather than causing increased or unmanageable pressures on existing harbours, particularly Rosslyn Bay Boat Harbour.

It is recognised that management, particularly during construction, needs to be co-ordinated with MSQ to ensure safe maritime operations are maintained.

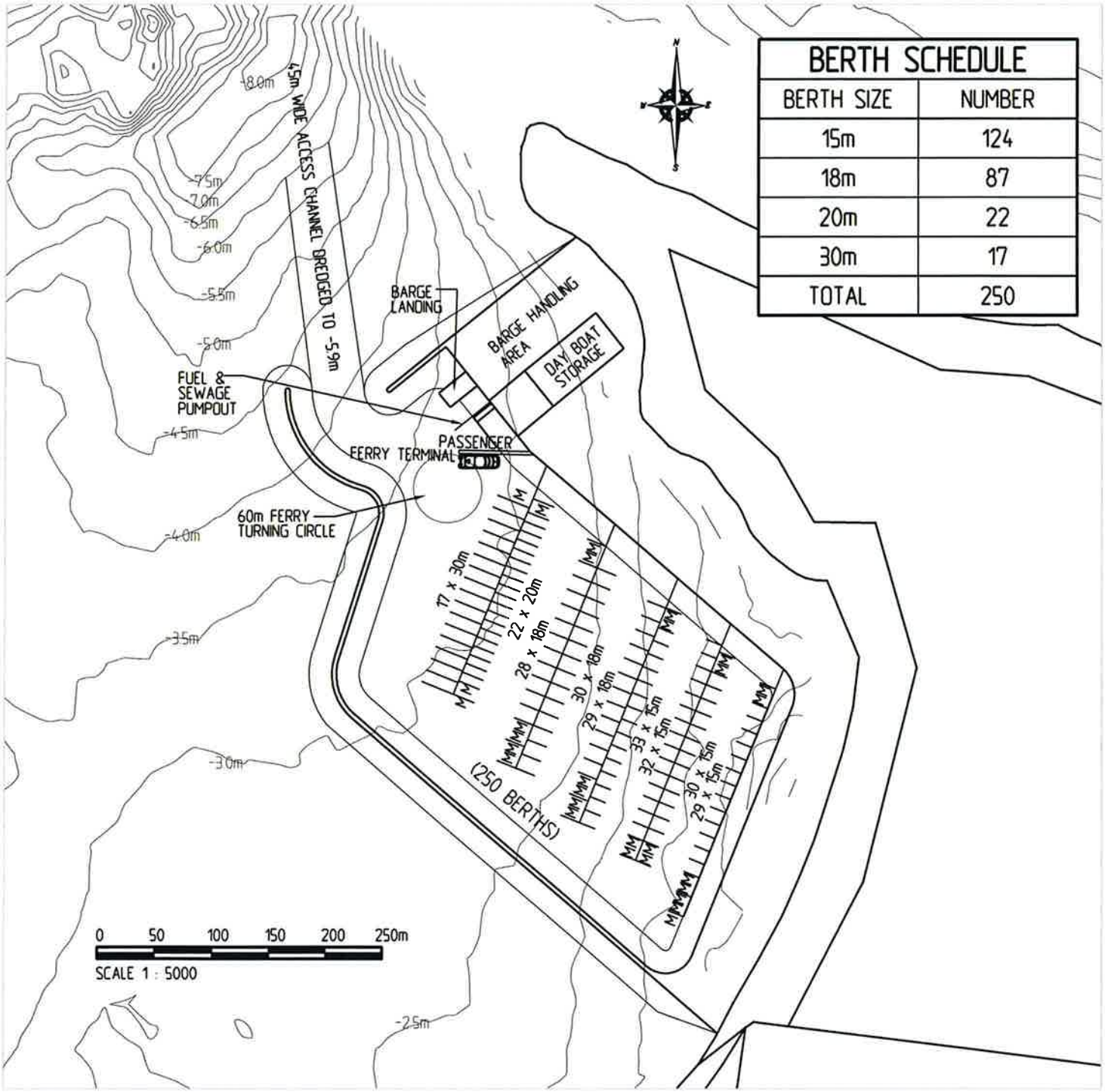
It is also clearly understood that MSQ will need to review navigational aid requirements and any interim measures including mooring of vessels and equipment during the construction phase.



LOCATION PLAN
SCALE 1 : 150000

FIGURE 1

INTERNATIONAL MARINA CONSULTANTS



BERTH SCHEDULE	
BERTH SIZE	NUMBER
15m	124
18m	87
20m	22
30m	17
TOTAL	250

1. CONTOURS ARE SHOWN IN METRES AND REDUCED TO AHD
2. CHART DATUM IS 2.4m BELOW AHD

FIGURE 2

INTERNATIONAL MARINA CONSULTANTS

FIGURE 3

INTERNATIONAL MARINA CONSULTANTS

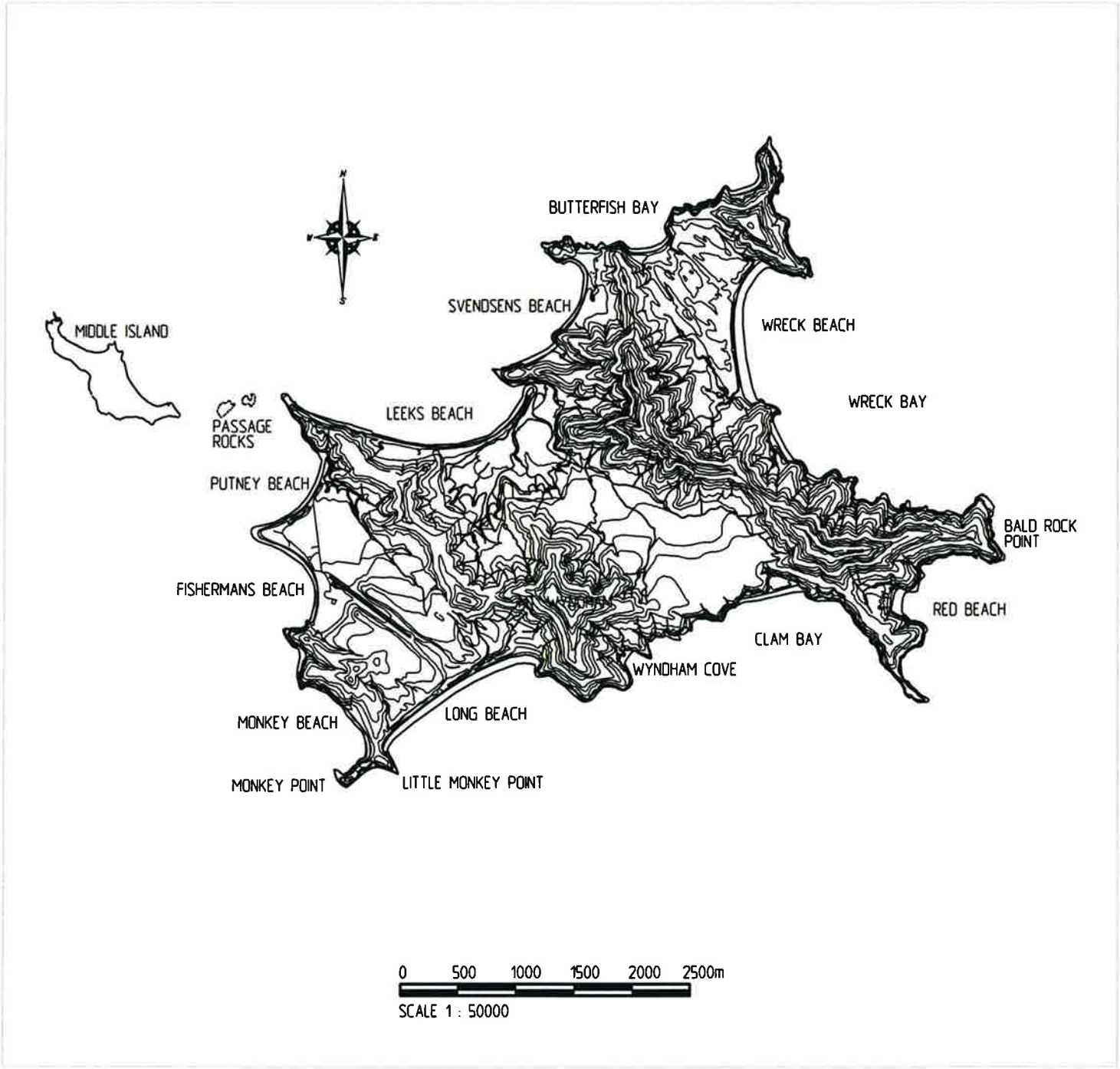


FIGURE 4

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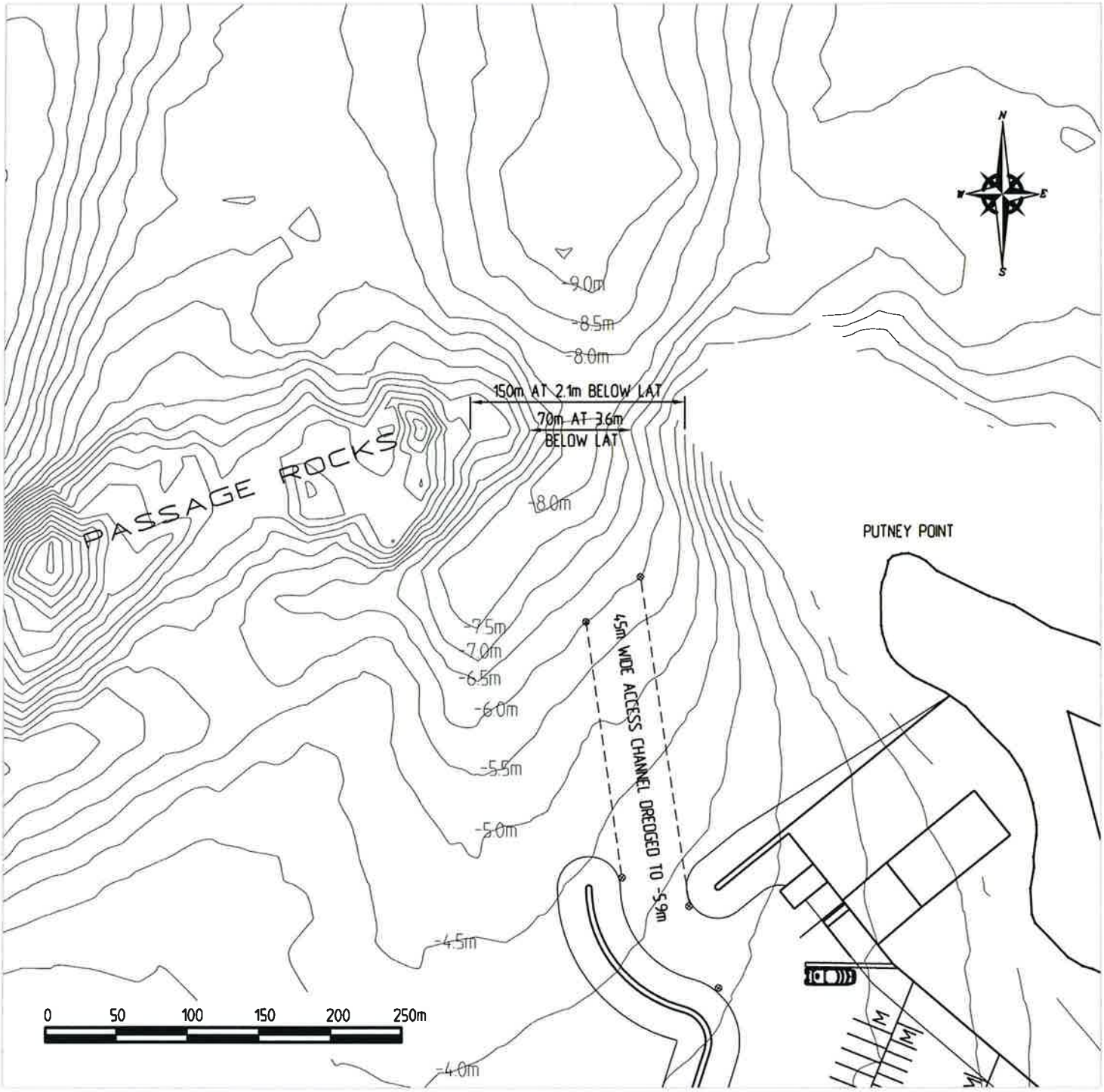

1. CONTOURS ARE SHOWN IN METRES AND REDUCED TO AHD
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FIGURE 5

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