

R601 Rev 0

January 2015

**Goldfields Esperance Development
Commission**

**Esperance
Cruise Ship Infrastructure Review**

marinas

boat harbours

canals

breakwaters

jetties

seawalls

dredging

reclamation

climate change

waves

currents

tides

flood levels

water quality

siltation

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Table of Contents

1.	Introduction	5
1.1	Stakeholders	6
2.	Background	7
2.1	Location	7
2.2	Existing Infrastructure	8
2.3	Tidal Range	13
2.4	Typical Wind and Wave Conditions	13
2.5	Volendam Visit 11/11/14	15
2.6	Existing Cruise Ship Facilities	17
3.	Comparison with Other Ports	23
3.1	Albany	24
3.2	Augusta	26
3.3	Geraldton	27
3.4	Estimated Number of Cruise Ships Visits	27
4.	Summary of Esperance Existing Situation	29
5.	Potential Infrastructure Locations	35
5.1	Bandy Creek	35
5.2	James Street	35
5.3	Taylor Street	40
5.4	Southern Ports Authority	43
5.5	Tanker Jetty	47
5.6	Cruise Ship Berthing at James Street	52
6.	Recommendations	55
7.	References	57
8.	Appendices	58
Appendix A	Concept Option Sketches	59

Table of Figures

Figure 1.1	Cruise Ship Anchored off Esperance Port.	5
Figure 1.1	Welcoming Passengers Ashore.	5
Figure 2.1	Esperance Location	7
Figure 2.2	Esperance Esplanade and Port	8
Figure 2.3	Esperance Yacht Club Pens	9
Figure 2.4	Esperance Yacht Club Wharf and Crane	9
Figure 2.5	Taylor Street Jetty	10
Figure 2.6	Cruise Ship Tender and Pontoon in Place at Yacht Club Wharf	10
Figure 2.7	James Street Swimming Jetty	11
Figure 2.8	Esperance Historical Tanker Jetty	12
Figure 2.9	Bandy Creek Commercial Boat Harbour Pens	12
Figure 2.10	Bandy Creek Commercial Boat Harbour Entrance	13
Figure 2.11	Esperance Ports Wave Recording Location Beacon 2	14
Figure 2.12	Esperance Ports Wave Recording Location	15
Figure 2.13	Total Significant Wave Height and Total Peak Period at Beacon 2 on 11/11/14	16
Figure 2.14	Esperance Ports Berth 1 & 2	18
Figure 2.15	Esperance Port Layout	18
Figure 2.16	Cruise Ship Anchored in Esperance Bay	19
Figure 2.17	Approximate Cruise Ship Anchoring Location	20
Figure 2.18	Tender Vessel, Pontoon, Gangway and Mooring Arrangement.	20
Figure 3.1	Cruise Ship Berthing at Albany Port	25
Figure 4.1	Esperance Port Existing Pontoons and Gangway	31
Figure 4.2	Tender Vessel and Pontoons in Place	32
Figure 4.3	Cruise Ship Passengers Current Walk into Town Centre	33
Figure 5.1	James Street Groyne and Swimming Jetty	36
Figure 5.2	James Street Floating Tender Pontoon Concept	37
Figure 5.3	Example Fixed Lower Level Vessel Landing	38
Figure 5.4	Concept Option 1 - Taylor Street Pontoon and Proposed Pedestrian Link	40

Figure 5.5	Concept Option 3 - Southern Ports Authority Concept for Multi User Berth and Relocation of the Yacht Club	44
Figure 5.6	Concept Option 4 - Tanker Jetty Extension Option	48
Figure 5.7	Concept Option 5 - Tanker Jetty Dredging Option	48
Figure 5.8	Concept Option 6 – Cruise Ship Berthing Facility at James Street	52

Table of Tables

Table 2.1	Advantages and Disadvantages of Berthing Options	22
Table 3.1	Tourism WA Rating of Cruise Ship Ports (TWA 2012)	24
Table 3.2	Estimated Number of Cruise Ship Visits to WA Ports	28
Table 4.1	Infrastructure Summary	34

1. Introduction

Cruise Ship tours are increasingly becoming a bigger sector of the Australian Tourism market. There is the potential for the Cruise Ship tourism industry to add to the tourism markets of Western Australia's regional towns. The Cruise Ships provide a short term impact from their immediate visit and there is also a longer term benefit in showcasing the region to a greater number of travellers who may decide to re-visit the region at a later date.

The Goldfields Esperance Development Commission (GEDC) in partnership with Tourism Esperance, Southern Ports Authority (Esperance Port), Shire of Esperance, Esperance Chamber of Commerce and Industry and Tourism WA wished to investigate the potential options for enhancing the Cruise Ship tourism sector within the Town.



Figure 1.1 Cruise Ship Anchored off Esperance Port.



Figure 1.1 Welcoming Passengers Ashore.

Passenger's opinions of the region derived from their brief visit on the Cruise Ship may impact the viability of future Cruise Ship visits to the town as well as the long term tourism potential. Providing the necessary infrastructure to make the transfer of passengers from the Ship to the Shore and vice versa safe and efficient adds to the passenger's enjoyment of the brief stopover. Providing an economical and safe transfer of passengers in all weather conditions as well as providing a strong tourism product aids in being a favourable Port of call with Cruise Ship companies.

GEDC commissioned specialist coastal and port engineers M P Rogers and Associates Pty Ltd (MRA) to undertake a review of the current infrastructure available within Esperance for the

berthing of Cruise Ships and also to provide some concepts that may optimise Cruise Ship visits to the region.

1.1 Stakeholders

Senior Engineer Dale Olsson from MRA undertook a site inspection of the existing facilities within the region on the 27 to 28 November 2014. Consultation with the following stakeholders was conducted in conjunction with GEDC:

- Southern Ports Authority (Esperance Ports Sea and Land).
- Shire of Esperance.
- Tourism Esperance.
- Esperance Cruise Ship Committee.
- Esperance Bay Yacht Club (Yacht Club).
- Esperance Chamber of Commerce and Industry.

2. Background

2.1 Location

Esperance is located on the south coast of Western Australia, approximately 700 km south east of Perth. It is located approximately 1,500 km west of Adelaide and the next closest major Port is Albany which sits a further 400 kilometres west. Figure 2.1 shows the general setting of Esperance Bay.



Figure 2.1 Esperance Location

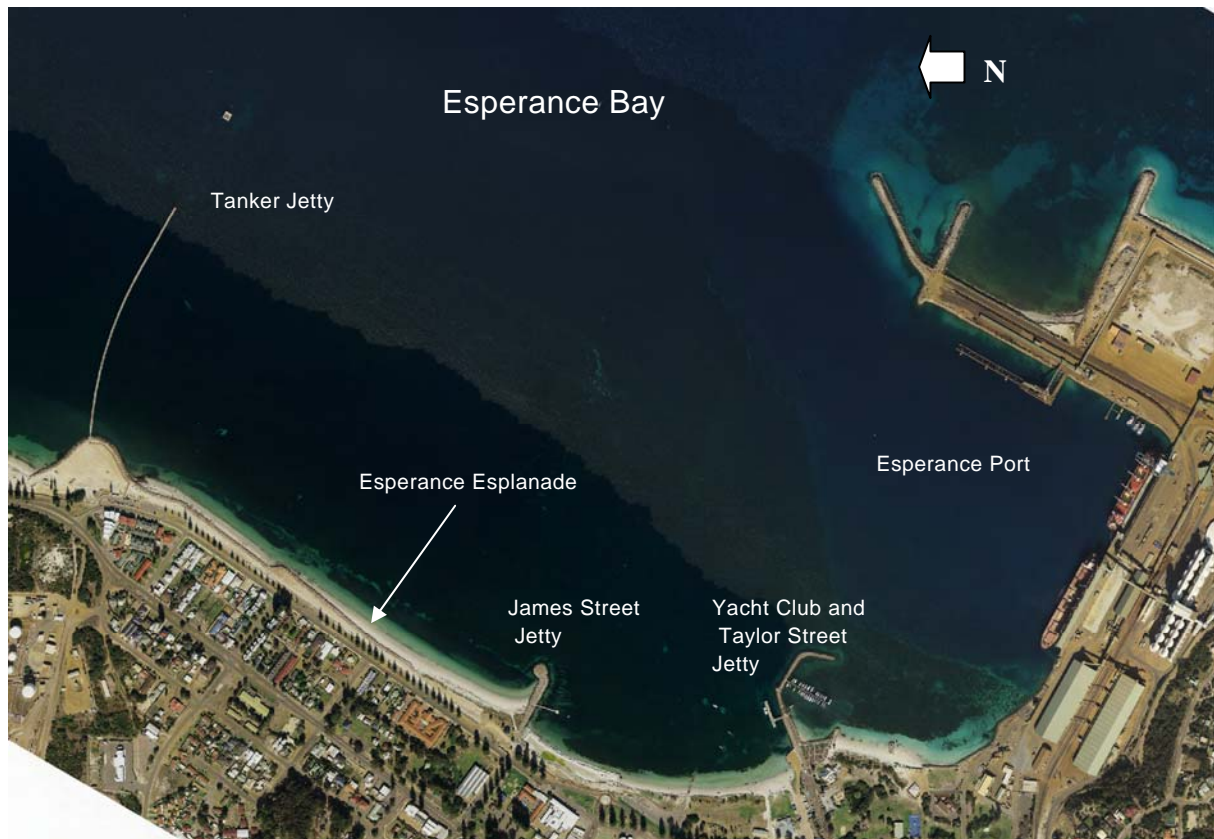


Figure 2.2 Esperance Esplanade and Port

2.2 Existing Infrastructure

The Port forms the southern end of Esperance Bay as seen in Figure 2.2. It is in close proximity to the Town and there are several jetty structures along the front of the Town Esplanade.

2.2.1 Esperance Bay Yacht Club

The Yacht club sits between the Port and the main section of the Esplanade. The Yacht club has a small breakwater to form a marina with fixed jetty pens for approximately 35 recreational vessels as seen in Figure 2.3. The marina structure is in a degraded condition and the yacht club is looking at replacement options in the coming years. The Yacht club also has a small land back wharf area to allow for the small vessels to be lifted into and out of the water (Figure 2.4). This wharf and crane area is also where the Cruise Ship temporary pontoons are located.



Figure 2.3 Esperance Yacht Club Pens



Figure 2.4 Esperance Yacht Club Wharf and Crane

2.2.2 Taylor Street Jetty

A small commercial jetty exists on the northern side of the Yacht club breakwater. This jetty is known as Taylor Street Jetty and can be seen in Figure 2.5. Two commercial vessels currently permanently berth against this jetty and use it for pick up and drop off for charters. Currently Cruise Ship Tenders pull into a pontoon put in place by the Southern Ports Authority at the Yacht Club wharf and crane adjacent to the Taylor Street Jetty. Figure 2.6 shows the pontoons in place with a Tender vessel berthed against the pontoon.



Figure 2.5 Taylor Street Jetty



Figure 2.6 Cruise Ship Tender and Pontoon in Place at Yacht Club Wharf

Further north of the Yacht Club wharf and Taylor Street Jetty is the recreational boat ramp and finger jetty. This finger jetty structure is quite narrow and due to this is not particularly suitable for the unloading of elderly passengers associated with cruise ships.

2.2.3 James Street Groyne

The next structure northwards is the James Street Groyne and Swimming Jetty as seen in Figure 2.7. This groyne acts to hold sand on the northern side of the structure and a swimming jetty and offshore swimming pontoon is located on the southern side of the structure. This jetty is not designed to accommodate vessels; however with some modifications it would be possible to berth vessels in this location.



Figure 2.7 James Street Swimming Jetty

2.2.4 Tanker Jetty

The most notable feature along the Town Esplanade is the historical Tanker Jetty as seen in Figure 2.8. The Tanker Jetty is approximately 500 m long and is constructed from timber piles with a concrete deck. The Tanker Jetty is in a degraded condition and is close to the end of its service life.

As with similar grand structures, the Tanker Jetty holds a pride of place with the local community and is a popular place for recreation, including walking and fishing from the structure. A dive trail has also been established off the end of the structure which provides additional recreational opportunities as well as preserving some of the heritage of the Tanker Jetty.



Figure 2.8 Esperance Historical Tanker Jetty

2.2.5 Bandy Creek Boat Harbour

Approximately 6 kilometres out of town is the commercial marina at Bandy Creek. This is primarily where the commercial fishing vessels are berthed. The fixed pens and breakwater entrance of Bandy Creek can be seen in Figure 2.9 and 2.10 respectively.



Figure 2.9 Bandy Creek Commercial Boat Harbour Pens



Figure 2.10 Bandy Creek Commercial Boat Harbour Entrance

2.3 Tidal Range

The maximum tidal range at Esperance can be up to 1.4 m and the tides are largely diurnal. Typically the daily tidal range is about 0.5 m to 1 m.

2.4 Typical Wind and Wave Conditions

Esperance is located on the southern Western Australian coastline in the Southern Ocean. The region is renowned for large open ocean swells and strong winds.

The setting of the town facing directly east and the location of the Port's breakwaters provides some protection to the town beaches. This shelters the Town beaches from the direct impact of westerly seas and swells. However, large southerly swells are able to refract in nearshore waters and then diffract around the Port's breakwaters. These diffracted swells generally impact the Port and the Town beaches.

Strong westerly breezes associated with the passing of low pressure systems generally blow offshore, however the Town's beaches are directly open to any wind and sea action generated by breezes with any easterly component.

The local sea breeze typically comes from a SSW to SE direction and can be regularly of the order of 15 to 20+ knots. This can generate significant local seas.

Typical morning land breezes blow from a NE direction. A summer pattern is for a N to NE land breeze, followed by an afternoon sea breeze from the S to SE direction.

Winter winds are generally quite light except for when low pressure systems pass the coastline. Winds during the passage of low pressure systems are generally from the N through to the W and can regularly exceed 30 knots. A summary of the wind data recorded at Esperance Port was kindly supplied by the Southern Ports Authority.

Wave conditions within the Southern Ocean are typically characterised by long periods and large significant wave heights. Strong winds also generate locally generated large seas.

Esperance town site is provided a degree of protection due to its orientation and protection from the Port's breakwaters and the offshore islands. Southern Ports measure wave conditions off the Port at their navigation Beacon Number 2, the general location of which is shown in Figure 2.11.

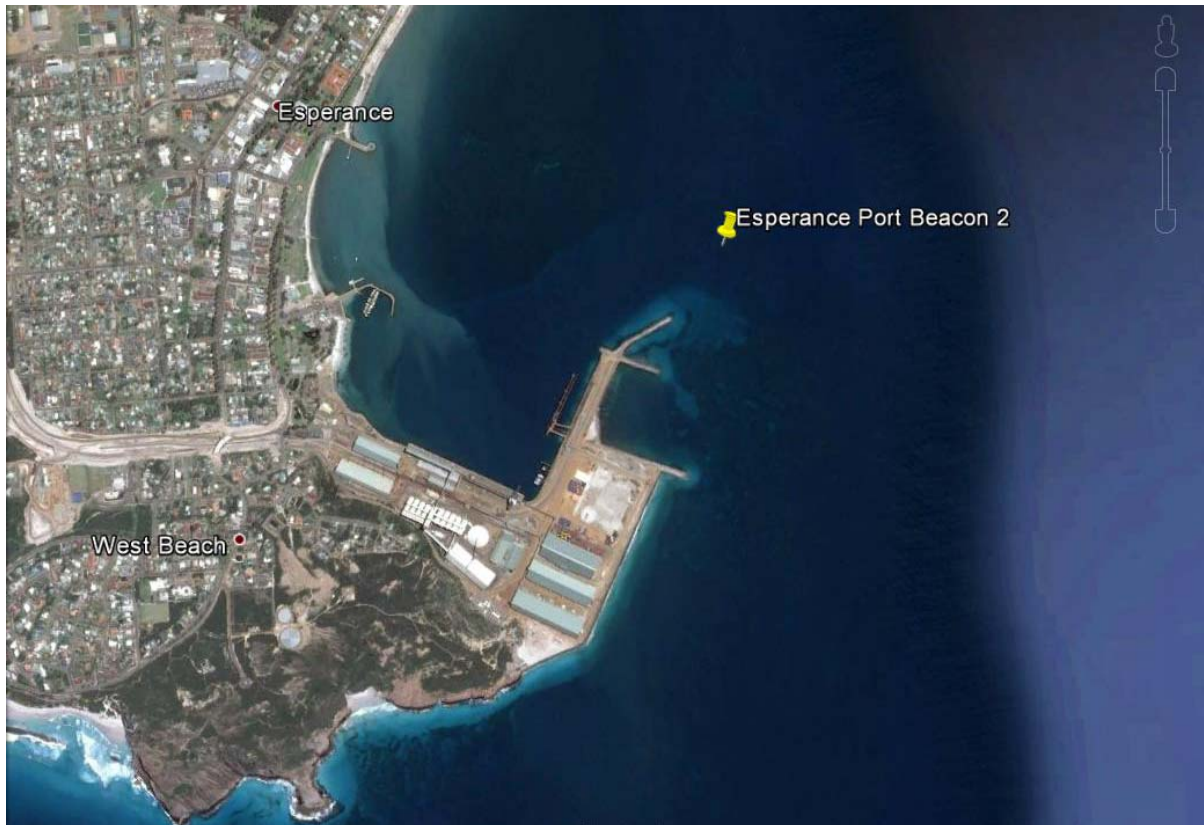


Figure 2.11 Esperance Ports Wave Recording Location Beacon 2

A summary of the wave data since March 2014 was kindly supplied by the Southern Ports Authority and Grant Ryan of Trematron Pty Ltd. Wave conditions over the recording period from March to December 2014 at Beacon 2 are summarised as follows:

- Minimum Total Significant Wave Height 0.13 m.
- Maximum Total Significant Wave Height 1.37 m.
- Average Total Significant Wave Height approximately 0.5 m.
- Total Peak Period Range 2 – 21 seconds.
- Total Mean Period 2 – 10 seconds.

A plot of the Total Significant Wave Height and Direction data recorded at Beacon 2 is provided in Figure 2.12. This shows that the majority of the energy at the site is received from the SE swells and sea breeze.

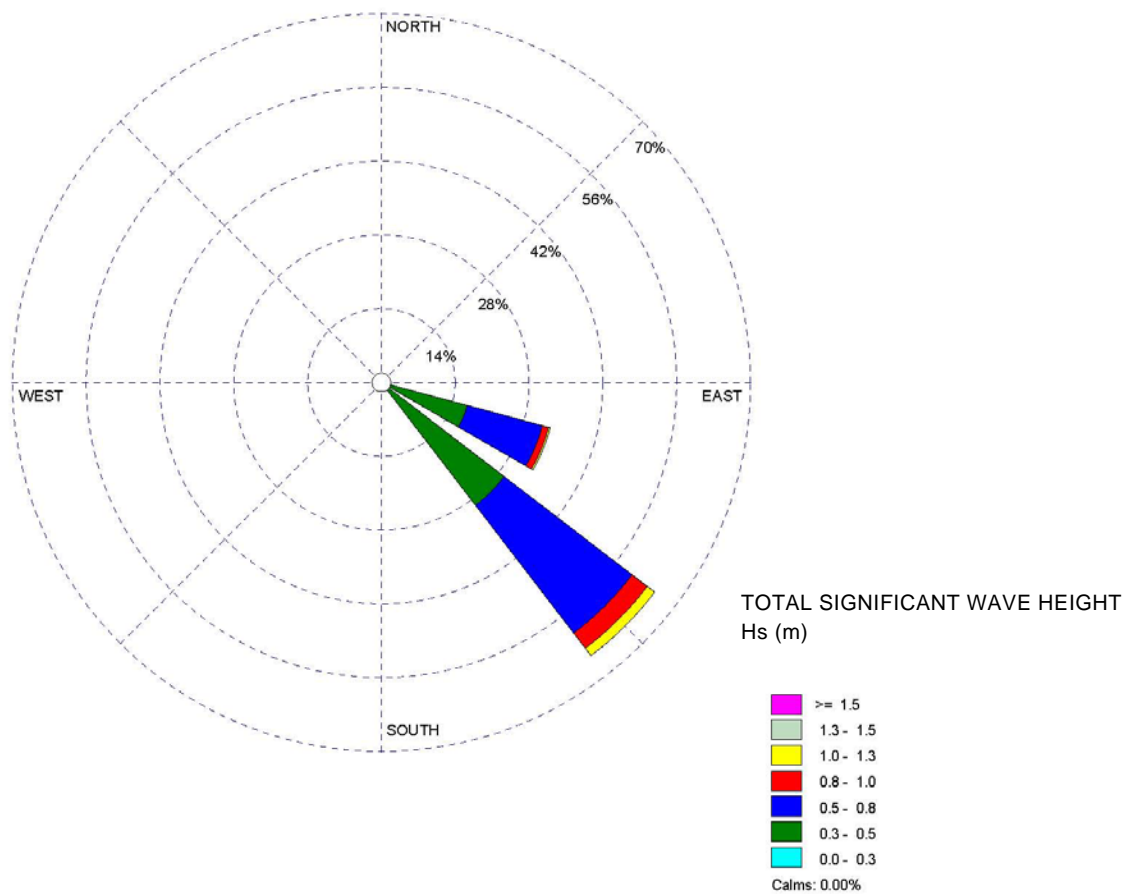


Figure 2.12 Esperance Ports Wave Recording Location

2.5 Volendam Visit 11/11/14

On the 11 November 2014, the cruise ship Volendam stopped into Esperance to anchor offshore. On the day conditions were deemed too dangerous in which to transfer passengers via Tender into shore. Subsequently the Volendam pulled anchor and sailed past the Port.

The wave conditions on the day of the Volendam could be used as an initial criterion in which to assess what conditions are unsuitable for cruise ships to Tender passengers into shore. Conditions on the day are detailed in the following sections.

2.5.1 Waves

Total Significant Wave Height was approximately 0.3 m throughout the morning until approximately 3 pm when the wind strength increased and wave heights subsequently rose to a peak of 0.55 m by 6 pm, before rapidly falling again back to 0.3 m by midnight.

Peak wave periods were approximately 12 seconds (consistent with swell waves). The increase in wind strength during the afternoon increased the shorter period sea component and reduced peak wave periods to around 4 seconds. A plot of Total Significant Wave Heights and Peak Periods on the day is provided in Figure 2.13.

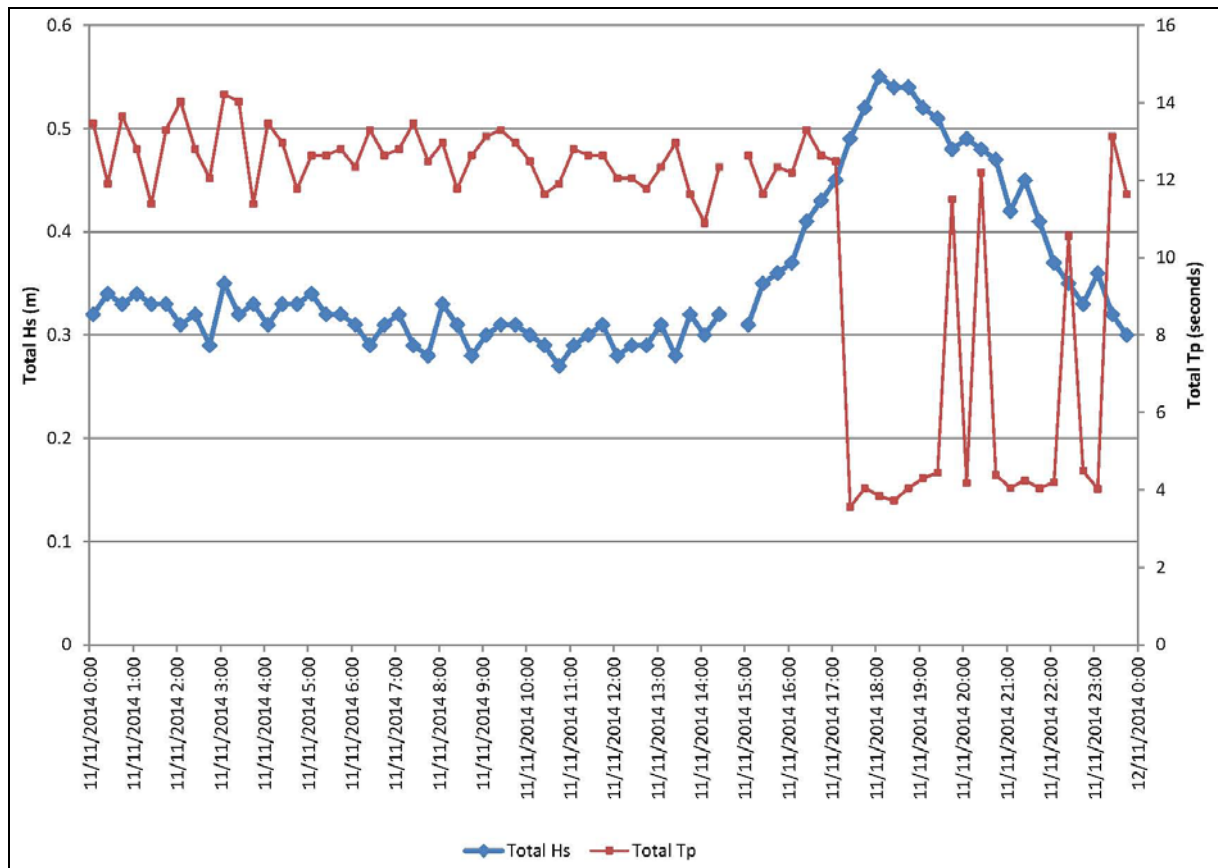


Figure 2.13 Total Significant Wave Height and Total Peak Period at Beacon 2 on 11/11/14

2.5.2 Winds

Winds recorded by the Bureau of Meteorology Esperance site day were a mild SW 19 km/hr (~ 10 knots) at 9 am with winds increasing to S 24 km/hr (~13 Knots) at 3 pm. Maximum winds recorded on the day was 41 km/hr (22 knots) at 3.15 pm.

It is noted that these were recorded at the Bureau of Meteorology Weather station and winds offshore could have been significantly stronger.

2.5.3 Cruise Ship Tender Criteria

Conditions during the morning (from 5 am to 12 pm) had a Total Significant Wave Height of approximately 0.3 m with Total Peak Periods on average 12.6 seconds.

Using these two values as a limit, the wave record provided by Southern Ports was briefly analysed for the number of days that would be unsuitable for cruise ships to transfer passengers by Tender.

Wave records from the Port were only available from March to December this year (approximately 270 days of data). Based on these wave conditions experienced during the Volendam, the criteria for Tendering passengers would have been exceeded on approximately 155 days out of the 270 days. This suggests that conditions would be unsuitable for the Tendering of passengers approximately 57% of the time.

Acceptable criteria may vary from ship to ship. Factors such as Tender vessel sizes and predicted weather conditions for the next 24 hours would be expected to affect the decision whether to disembark passengers. It is noted that weather conditions worsened in the afternoon on the day of the Volendam, which may have also impacted the Captain's decision that it was unsafe to unload passengers.

Anecdotal discussions with staff from Southern Ports indicated that travelling within one of the Volendam's Tenders on the day was a significantly rough ride to shore from the vessel and would have been difficult with elderly passengers.

Given the relatively moderate ocean conditions and rough Tender ride on the reasonably short voyage from the anchored Volendam to shore, in conjunction with the number of days that this baseline criteria is exceeded, it is recommended that strong consideration be given to a proper berth at the Port for cruise ships.

2.6 Existing Cruise Ship Facilities

Cruise companies have informed Tourism WA that Esperance is a preferred stopover location over other south coastal Ports when they are travelling westwards from Adelaide. This provides Esperance with a significant advantage over the Port of Albany and Augusta Boat Harbour.

Cruise ships voyages are defined by costs and fuel is a major factor in determining voyage costs. Esperance has an advantage over Albany as it is within a suitable economical fuel range for cruise vessels when ships are travelling from Adelaide at a travelling speed of approximately 20 knots. Esperance is an approximate 48 hour sail from Adelaide, allowing the ship to arrive and anchor overnight and passengers to disembark in the morning.

Berthing fees also add significantly to the Cruise Ship's costs. If the costs to the Cruise Ship are marginal to a voyage, a vessel may wish to anchor and Tender passengers ashore rather than paying for tug, berthing and pilotage fees.

Currently vessels at Esperance can berth by either of the following methods:

- Anchor and Tender passengers ashore.
- Utilise a Berth at the Port, typically Berth 1 (Larger ships greater than 300 m in length or ships with overhanging decks may not be able to utilise a berth at the Port).

A photograph of Berth 1 and Berth 2 viewed from Taylor Street Jetty can be found in Figure 2.14. An aerial photograph showing the layout of Esperance Port can be found in Figure 2.15 and a photograph of a cruise ship anchored offshore from Esperance Port can be seen in Figure 2.16.

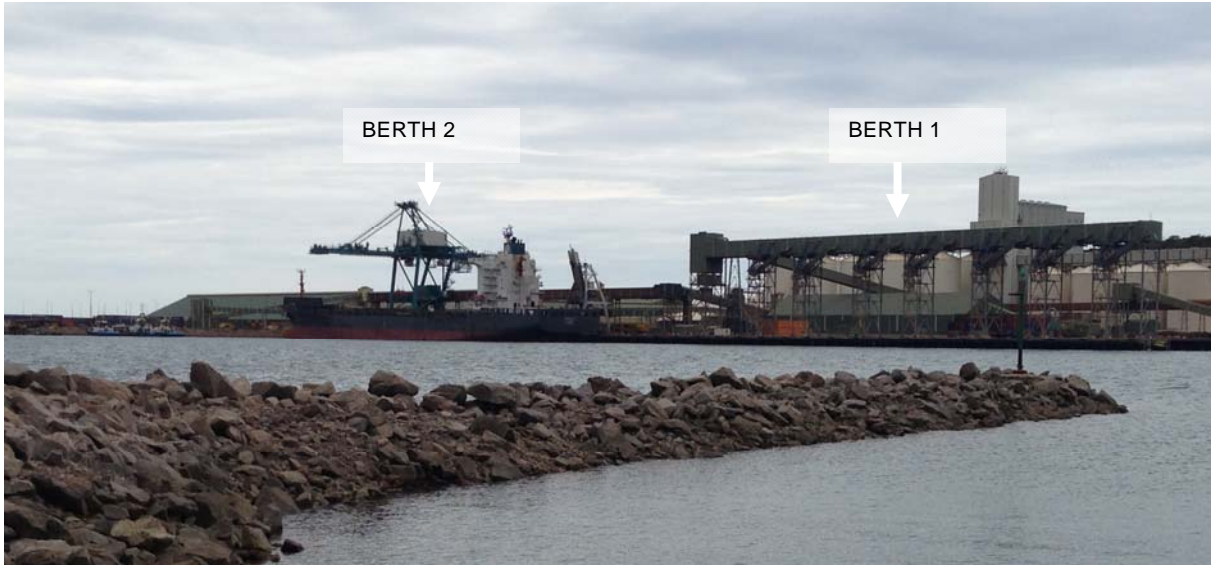


Figure 2.14 Esperance Ports Berth 1 & 2



Figure 2.15 Esperance Port Layout



Figure 2.16 Cruise Ship Anchored in Esperance Bay

Currently Cruise Ships are charged full commercial rates to berth at the Port. While Cruise Ships provide a boost to the local economy, the Port still incurs costs in providing pilotage, tug services and occupation of the berth.

None of the berths at the Port are specifically designed for Cruise Ships. Cruise Ships can berth at any of the Port's three berths, however the land backed wharves of Berth 1 and 2 are more suited. Typically the Port has utilised Berth 1 for Cruise ships as passengers can be more easily escorted onto buses. Berth 1 has a size limit of approximately 300 m, therefore larger vessels may not be able to utilise the Berth.

The Port has some restrictions with Cruise Ships with overhanging decks or life rafts due to the container and bulk material load out facilities.

When Cruise Ships anchor offshore, they anchor in approximately 10 to 15 m of water depth. The approximate location is shown in Figure 2.17. Cruise Ships then Tender passengers ashore using their Tenders (motorised life boats), an example of which can be seen in Figure 2.18 with the pontoon and gangway arrangement at Taylor Street.

Southern Ports have purchased an approximate 25 m long steel pontoon to enable the berthing of Tender vessels alongside the Yacht club breakwater at Taylor Street. Currently, the pontoon is lifted into place each Cruise Ship visit and moored by lines to concrete anchor blocks. This situation is satisfactory for a temporary solution, however there is a risk that one of the mooring lines may break free with excessive vessel impact or movement of the pontoon.



Figure 2.17 Approximate Cruise Ship Anchoring Location



Figure 2.18 Tender Vessel, Pontoon, Gangway and Mooring Arrangement.

Discussions with officers from the Southern Ports Authority indicates that the Port proposes to provide permanent piles in this location for the Tender pontoon to save craning the pontoon into place each cruise ship visit. This would significantly improve the current Tender berthing location.

The Port currently charge a nominal fee for the usage of the pontoons to cover the costs of the crane required to install and remove the pontoons and two staff to assist with the berthing of the Tender vessels.

The Port has indicated that in order to avoid Cruise Ships trying to anchor in poor weather to avoid berthing fees, they may explore opportunities to reduce berthing costs (if a berth is free at the time). This provides a short term solution for the town to minimise the risk of Cruise Ships sailing past due to poor weather.

A summary of the advantages and disadvantages of either option are provided in Table 2.1.

Table 2.1 Advantages and Disadvantages of Berthing Options

Mooring Option	Advantages	Disadvantages
Berth at Port		
	Reduced risk of poor weather causing ship to sail past, ship more likely to berth regardless of weather.	Costs of berthing.
	Relatively safe environment to transfer passengers.	Passengers required to disembark in Industrial Port Setting.
	May have more people disembark vessel.	Passengers required to be transferred by bus to City.
		Waiting times for passengers to be transferred via bus.
		Risk that berth is occupied by another vessel when cruise ship arrives.
Anchor offshore and Tender Passengers Ashore		
	Minimal cost to Cruise Ships.	Higher Risk that wind and wave conditions are too dangerous to transfer passengers.
	Not reliant on a berth being available at the Port (in its current configuration).	Longer transfer time of passengers. May reduce the availability of tours able to be provided.
	Passengers are able to walk directly into Town and back to Tender Vessels.	Regular vessel 'sail pasts' may reduce communities active involvement in assisting cruise ships and negative sentiment with commercial businesses.
	Southern Ports already has suitable pontoons for Tender berthing. Provided as an "in kind" donation to the community.	Southern Ports Pontoon location is temporary only, and is required to be lifted in and out with a crane each visit. Currently this cost is largely borne by the Southern Ports Authority. Pontoons tied off to mooring blocks and trucks on shore to stabilise.
	Pontoon arrangement is reasonably safe way to transfer passengers.	Current temporary pontoon mooring arrangement is not ideal.
	Suitable areas for tour bus pick ups and turn arounds.	South to North Easterly winds may pose an issue for Tender berthing against the pontoon and wave actions.
	Suitable grassed areas to establish market stalls and welcoming stalls.	Risk that passengers disembark in calm weather and then weather comes up in afternoon and too rough to reboard the cruise ship offshore.

3. Comparison with Other Ports

Tourism WA produced a document titled;

“Western Australian Cruise Shipping Strategic Plan 2012 -2020”.

Within this document, Tourism WA undertook an assessment of the current cruise ship Ports around Western Australia and rated each High(H), Medium (M), or Low(L) based on a number of key business areas. These factors are:

- Destination Awareness and Marketing.
- Port Infrastructure and Policy.
- Industry Capacity and Ownership.
- Landside Destination and Development.

The combination of these ratings then ranked each Port against a classification system which summarised the capabilities of the Port and associated Tourism Sector. Ports were divided into 3 classifications as below:

- Tier 1 Port.
- Tier 2 Port.
- Tier 3 Port.

A Tier 1 port is classified as a turn around port, in that they score highly in the four business areas and have sufficient infrastructure to be able to reprovision large Cruise Ships with all required supplies and fuel between cruises. The destination is typically an international air gateway.

A Tier 2 port scores on average a medium across the four criteria. They generally have a high degree of port infrastructure to support visitation but lack the tourism infrastructure, industry capacity or destination awareness among the cruise industry. Alternatively the destination has a high level of destination awareness and industry capacity but lack the port infrastructure to rate highly across all four criteria.

Tier 3 ports score on average a low rating across the four business areas. These Ports may provide a medium level of port infrastructure but destination marketing and awareness is low and industry capacity and tourism destination infrastructure is low.

Fremantle and Broome are likely to be the only Tier 1 ports in the coming 5 plus years in Western Australia.

All of Western Australia’s Cruise Ship Ports and their associated rankings (as detailed by Tourism WA 2012) are provided in Table 3.1.

Table 3.1 Tourism WA Rating of Cruise Ship Ports (TWA 2012)

Port	Destination Awareness and Marketing	Port Infrastructure and Policy	Industry Capacity and Ownership	Landside Destination Development	Tier Ranking
Fremantle	H	H	H	H	1
Broome	H	M	M	M	2
Bunbury	M	M	H	M	2
Albany	M	M	M	M	2
Esperance	M	L	M	L	2
Geraldton	M	L	M	L	2
Exmouth	M	L	L	L	3
Port Hedland	L	M	L	L	3
Augusta	L	L	L	M	3

Note: 1. Table replicated from Tourism WA Cruise Ship Strategy 2012 - 2020

Esperance's main competitors for the Cruise Ship market on the south coast are Albany and Augusta. As seen in Table 3.1 Esperance ranks lower than Albany in terms of Port Infrastructure and Landside Destination Development.

Busselton has recently (as of November 2014) been accepting Cruise Ships and has multiple visits planned for 2015. Busselton has some significant issues with respect to the anchoring of the ship and Tendering of passengers inshore, however it has a well established tourism market and a strong brand awareness with the Margaret River wine region. It is likely that Busselton will largely become the gateway to the Margaret River region and become a preferred gateway for cruise ships to this south west region over Bunbury and Augusta.

3.1 Albany

Albany Port enables the berthing of Cruise Ships using the land backed wharves Berth 1 or Berth 2. These berths are also the closest to Town and have no height or overhanging restrictions as no loaders or cranes are present at these berths. Longer Cruise Ship vessels will have some turning basin restrictions.



Figure 3.1 Cruise Ship Berthing at Albany Port

Albany Port provides reduced berthing costs to Cruise Ships and covers the cost of a port to town shuttle bus. The provision of the free shuttle also assists in managing the security issues of having passengers within a Port environment.

Albany Port and the City of Albany have also recently installed a new footpath from the Port to link into paths around the new Waterfront development, Albany Entertainment Centre and onto the Town centre for passengers wishing to walk. Berths 1 and 2 allow this due to the close proximity to the Port gates, where passengers can be carolled onto the pathway quite easily. This walk into town is approximately 1.5 km.

The Town provides a pipe band on arrival, markets and live music for the arrival of larger Cruise Ships.

Albany is able to market itself recently to Cruise Ships on the basis of ANZAC centenary celebrations. Predominantly it is an alternate stopover to Esperance for vessels travelling westwards from the Eastern States and South Australia.

Increasing numbers of ships being home based out of Fremantle (such as the Astor) provides the opportunity for shorter round trip cruises from Fremantle to Albany and Esperance. These cruises are approximately 5 days long.

Esperance is seen as being behind Albany in terms of port infrastructure and also landside destination development. A key review of the Esperance Port which provided information to the *Western Australian Cruise Shipping Strategic Plan 2012-2020* indicated the following regarding Esperance:

- While the Port was keen to assist and secure more Cruise Ship visits, the current berths restricted some vessels with projecting balconies or decks.
- Additional dolphins would be required to accommodate some of the larger Cruise Ships.
- Tourism products that meet the expectations of all Cruise Ship passengers of all demographics need to be addressed.
- There was a lack of ground transportation within the town.

However Cruise Ships companies have indicated that Esperance has an advantage over Albany in terms of it being a more suited location in their voyage planning.

Discussions with stakeholders suggests that the visitor experience is significantly improved since Tourism WA's review in 2012, however there is still significant potential for further improvement.

Development of suitable port infrastructure and landside destination development would elevate Esperance to a similar level to Albany, although it is likely to remain long term as a Tier 2 port.

Should Esperance prefer to continue to Tender passengers ashore, it will likely fall behind Albany in terms of the level of port infrastructure and there will always be a significant risk that the weather is too poor to transfer passengers.

Regardless if infrastructure is provided to make the shore to Tender transfer safer, the ship to Tender transfer is always going to be the greatest risk as the Cruise Ship itself is anchored in more exposed waters. In order to remove this risk, Esperance would need to provide a similar permanent Cruise Ship berth to that of Albany in close proximity to the town centre.

Esperance has recently seen the situation where a Port berth was made available to a cruise ship, however the ship chose to Tender passengers ashore to avoid having to pay berthing charges. The weather on arrival of the ship was poor and the decision was made by the cruise ship company to sail past Esperance.

This highlights another risk in dealing with Cruise Ships. If costs on a Cruise Ship voyage are marginal, Cruise Ship companies may choose not to take up a Port berth due to the significant costs it adds to the voyage costs. The risk is that costly infrastructure is put in for Cruise Ships and then Cruise Ships do not take up the berth.

In order to avoid this situation, it is recommended that any item of infrastructure put in for Cruise Ships should have another main use and is able to accommodate Cruise Ships for the short periods of the year when they arrive. Business cases for infrastructure worth millions of dollars is unlikely to be feasible for the 3 or 4 cruise vessels Esperance currently sees.

It is recommended that any potential new berth that is required at the Port is able to accept Cruise Ships in conjunction with another primary use.

Similarly to Albany Port, berthing fees for Cruise Ships may have to be adjusted to ensure that the Port covers its costs of the infrastructure, pilotage and tug services, but are not significant enough that it deters Cruise Ship companies from using the facility.

3.2 Augusta

The other south coast port for Cruise Ships is Augusta. Augusta has recently built a recreational marina and installed a large floating pontoon suitable for the berthing of Cruise Ship Tenders. As with Esperance, Cruise Ships are required to anchor offshore and then Tender passengers ashore.

While Augusta has several advantages in short Tender distances, the anchoring location is quite exposed. Augusta Marina is also a long way out of town and passengers have no option other than to be shuttled into Town approximately 4 kilometres away. The majority of tours at Augusta would be into the Margaret River wine region.

It is thought that Esperance has significant benefits over that of Augusta in terms of options for passengers to walk directly into town, tourism industry capacity and destination awareness.

Esperance having the Port as a potential berthing option would provide an additional advantage over Augusta.

3.3 Geraldton

Geraldton is another Tier 2 Port which services Cruise Ships on passing voyages as they travel northwards to Broome and also potentially for round trip 5 days tours out of Fremantle.

Geraldton is a larger port than Esperance and while it is able to accept Cruise Ship vessels, there are conflicts with tourists being inside the working port.

Cruise ships calling into Geraldton now prefer to anchor offshore and transfer passengers via Tender into the marina, where a floating pontoon has been installed to accept cruise ship Tenders. This also provides passengers with a better experience rather than disembarking in an industrial setting.

Passengers arriving into Geraldton had little knowledge of what there was to undertake within the town and there are also transportation issues. Geraldton aimed to improve the lack of understanding by providing a full time cruise ship coordinator within the town to assist in organising tours.

Esperance provides similar services to that of Geraldton, although it would be expected that Esperance provides greater tourism opportunities over that of Geraldton. It is thought Esperance would only be competing with Geraldton on the short tours out of Fremantle.

3.4 Estimated Number of Cruise Ships Visits

Information regarding the number of planned Cruise Ship visits for previous years and out to 2016 was sourced from Tourism WA and is summarised in Table 3.2.

Ports that Tender passengers to shore are prone to visits being cancelled as the vessel is offshore due to poor weather conditions. Esperance experienced a sail past of the Volendam in November 2014 and Exmouth is also prone to the sail past of vessels due to poor weather conditions from strong winds and locally generated seas.

The time taken to disembark passengers, sufficient time onshore and then the tendering process of passengers back onto the vessel is significant. Due to the tight timeframes of the voyage plan to ensure they maintain schedule to the next port, the Cruise Ships don't have the ability to wait offshore for several hours or days until the weather conditions improve.

Table 3.2 Estimated Number of Cruise Ship Visits to WA Ports

Port	2009/10	2010/11	2011/12	2012/13	2013/14	2015 (planned)	2016 (planned)
Fremantle	39	29	39	17	33	51	17
Broome	19	15	25	11	13	14	4
Bunbury	9	9	7	0	3	0	0
Albany	11	9	8	7	7	9	1
Esperance	2	3	4	4	4	8	3
Geraldton	20	19	19	11	5	17	4
Exmouth	5	5	7	2	1	3	4
Port Hedland	0	0	0	4	4	5	1
Augusta							
Busselton					1	6	3

- Note:
1. Cruise Ship information numbers provided by Tourism WA.
 2. Supplementary numbers provided from Cruising Down Under summary reports.
 3. Augusta has only recently opened in the year 2014
 4. Busselton's first cruise ship arrived offshore November 2014.

Albany has approximately 7 to 11 vessels visit the town each year.

Esperance currently averages 2 to 3, with 2014 expected to have approximately 4 vessels and 8 vessels currently planned for 2015. The increased demand for berthing at Esperance in 2015 indicates that it is likely able to match Albany in terms of average numbers of visits per year with increasing numbers of Cruise Ships sailing in Western Australian waters.

4. Summary of Esperance Existing Situation

A summary of Esperance's existing Cruise Ship facilities and procedures and possible opportunities or risks are detailed below.

4.1.1 Strengths

- Aesthetically a spectacular bay for Cruise Ships to anchor in.
- Cruise Ships are able to easily anchor close to shore and transfer passengers via Tender vessels.
- Port has already purchased and uses suitable steel pontoons for the landing of Tender vessels.
- Tender Pontoon location at Taylor Street (in front of Yacht Club) is relatively protected.
- Port provides alternative berthing opportunity if required.
- Established Cruise Ship Committee to coordinate stakeholders and necessary preparation and planning for cruise ship arrivals.
- Multiple eco tourism opportunities. Explore islands, Pink Lake, local beaches and National Parks (Cape Le Grand), dive tours on Tanker Jetty.
- Current Taylor Street location has room for bus tours to pick up and drop off passengers.
- Passengers able to relatively easily walk throughout town. Local Historical Museum Village is within walking distance. Other tourism opportunities (eg replica Stone Henge requires transport).

4.1.2 Weakness

- Esperance Port is not specifically setup to accept cruise ships.
- Should a Cruise Ship berth at the Port, passengers are required to be transported from Port to Town which reduces time available for tours and in town.
- Lack of transport infrastructure (lack of buses in town).
- Poor pedestrian links to town from pontoon Tender landing location at the Yacht Club.
- Minimal toilets, shade and landscaping around the Taylor Street location.
- Recent foreshore landscaping works do not link into Tender pontoon location at Taylor Street.
- Landscaping works focussed up at Tanker Jetty Headland and James Street, which acts to draw people away from the Town Centre at Andrew Street.

4.1.3 Opportunities

- Geographic advantage in terms of location over other south coast ports for ships travelling from the East coast. Cruise Ship companies have identified Esperance as a preferred stop over location.

- Increasing Cruise Ship market and demand within Australia.
- Increasing number of Cruise Ships being home based out of Fremantle. Opportunities for short round trip south coast cruises such as Fremantle - Esperance – Albany – Fremantle. Opportunity to increase average numbers of visits from approximately 3 to approximately 8.
- Port has room to expand to accommodate a multi user berth that could accommodate Cruise Ships. The provision of a berth reduces the risks that ships sail past due to poor weather.
- Location of Yacht club breakwater is such that a facility in this location is outside of the Ports security zone. Reduced security and safety requirements for dealing with passengers from the Cruise Ship.
- Opportunity for a large multi user jetty structure to provide an additional berth for the Port and also provide for cruise ships for the benefit of the Town. If this facility is able to be utilised by the public when not in use it could also act as a replacement for the degradation of the existing Tanker Jetty structure.
- Yacht club marina and breakwater requires upgrade or replacement. Opportunity to relocate and to involve the marina into the Esplanade foreshore to form a southern extent for the Esplanade foreshore with the Tearooms and Yacht club.
- Port may review berthing fee structure for Cruise Ships.

4.1.4 Threats

- The major threat is that Cruise Ship companies decide to minimise numbers of voyages within Australian waters, or there is an economic down turn which reduces passenger numbers significantly.
- Relying on Cruise Ships to Tender passengers ashore. There is a risk of ships sailing past due to poor weather and sea states and therefore not being able to Tender passengers ashore. A brief analysis of a limited wave record provided by Southern Ports Authority indicates that conditions may be unsuitable for Tendering approximately 57% of the time.
- Multiple sail pasts of Cruise Ships may cause negative sentiment with the community volunteers and local businesses.
- Risk that weather is fine in the morning and then turns worse in the afternoon and passengers are unable to get back onto the Cruise Ship via tenders.
- Albany becomes a preferred port over Esperance as berthing at the Port is guaranteed. This means that Cruise Ships visiting Albany do not have to tender passengers ashore and passengers are Poor weather impacting visitor's perception of the area.
- Demand for Port capacity is increased and the option to berth Cruise Ships within the Port is reduced. Cruise Ships would then have to rely on tendering passengers.
- Port Berthing fees are kept at levels too high for Cruise Ships to justify berthing.

4.1.5 Summary

In general, Esperance appears to have good potential to increase the amount of Cruise Ship tourism within the town. This is particularly as it sits in a location that suits many of the Cruise operators when travelling from the eastern coastline.

While berthing at the port is an option, it is not preferred by the Cruise Ship companies due to high berthing fees, the lower ambience for passengers disembarking within an industrial setting and also there are security and safety issues within the Port which require passengers to be transferred into Town via a shuttle bus. Currently there is a lack of transport infrastructure within the Town to be able to accommodate the shuttle bus and the additional tours.

Esperance has an advantage in that deep and reasonably protected waters are relatively close to shore. This makes Tendering passengers ashore a viable option for Cruise Ship companies. The risk is that weather and sea state conditions have to be quiet mild in order to transfer passengers, transport them to shore in the tenders and then disembark them onto the shore. Should the conditions not be suitable, the tight timeframes of the Cruise Ships are such that the vessels are required to 'sail past'.

Esperance Ports has already purchased a large steel pontoon structure which is installed to allow for the easy transfer of passengers to shore at the small yacht club wharf at Taylor Street (Figures 4.1 and 4.2). This location is reasonably well protected by the larger Taylor Street commercial charter jetty and the yacht club marina breakwater. The Tendering of passengers ashore is sufficiently cheaper for the Cruise Ships as they don't incur berthing or tug costs.



Figure 4.1 Esperance Port Existing Pontoons and Gangway



Figure 4.2 Tender Vessel and Pontoons in Place

Currently the walk from the Tender Pontoon to the Town centre is around the back of the Yacht club as seen in Figure 4.3. This area is generally 'plain' and it is unclear as to where the Town centre is, which gives passengers a perception of a long distance.

This area was not included in the recent landscaping upgrades to the Esperance Esplanade.

A small ablution block and some small shade shelters are situated in close proximity to the Tender pontoon location. There is good access for Tour buses to pick up and drop off passengers.



Figure 4.3 Cruise Ship Passengers Current Walk into Town Centre

A summary of the infrastructure items and their various strengths, weaknesses, opportunities and threats are provided in Table 4.1.

Table 4.1 Infrastructure Summary

	Strength	Weakness	Opportunity	Threat
Location	Aesthetically a spectacular bay for cruise ships to anchor in Esperance Bay.	Esperance Port is not specifically setup to accept cruise ships.	Geographic advantage for ships travelling from the East coast. Cruise ship companies have identified Esperance as a preferred stop over location.	Cruise ship companies reduce numbers of voyages within Australian waters.
Methodology	Cruise vessels able to easily anchor close to shore and Tender passengers.	Should a cruise ship berth at the Port, passengers are required to be transported from Port to Town which reduces time available for tours and in town.	Port has room to expand to accommodate a multi user berth that could accommodate cruise ships. The provision of a berth reduces the risks that ships sail past due to poor weather.	Relying on ships to tender passengers ashore. There is a risk of ships sailing past due to poor weather and sea states and therefore not being able to Tender passengers ashore.
	Tender Pontoon location at Taylor Street (in front of Yacht Club) is relatively protected.		Permanent Piles to reduce pontoon movements (make safer for passengers) and also reduce costs incurred by Port for each ship visit.	Multiple sail pasts of ships due to poor weather may cause negative sentiment with the community volunteers and local businesses.
Existing Infrastructure	Port provides alternative berthing opportunity if required.	Lack of transport infrastructure (lack of buses in town).	Location of Yacht club breakwater is such that a facility in this location is outside of the Ports security zone. Reduced security and safety requirements for dealing with passengers from the cruise ship.	Albany becomes a preferred port over Esperance due to better levels of infrastructure and less weather risks.
	Port has already purchased and uses suitable steel pontoons for the landing of Tender vessels.		Yacht club marina and breakwater requires upgrade or replacement.	.
Economics & Costs	Tendering option is cheap for cruise companies.	Port berthing fees for a cruise ship are full commercial rates.	Port may review berthing fee structure for Cruise Ships.	Port Fees are kept too high for cruise ships to justify berthing.
	.		Opportunity to increase average numbers of visits from an average of 3/yr to 8/yr similar to Albany.	

5. Potential Infrastructure Locations

Esperance has a number of facilities that could assist in improving the experience for Cruise Ship passengers and making the transfer of passengers as safe and efficient as possible. Options for infrastructure upgrades are explored below.

Sketches of the concepts can be found in Appendix A.

5.1 Bandy Creek

Whilst Bandy creek is a commercial marina and would provide safe environment in which to transfer passengers to and from Tender vessels, it is a significant distance out of town. Passengers would have to be transported into and out of town.

The area is also more of a commercial setting and therefore would not provide a great initial ambience for Cruise Ship visitors.

It is not believed that Bandy Creek would be a suitable location for the development of additional infrastructure to benefit Cruise Ships.

5.2 James Street

The groyne at James Street would be the closest entry point for Cruise Ship visitors into town. A facility in this location would be an approximate 300 m walk to the roundabout on the foreshore at Andrew Street.

Existing infrastructure at James Street includes the existing rubble mound groyne, a swimming jetty and a swimming pontoon on the southern side of the groyne.

The groyne and swimming jetty at James Street is in a slightly more exposed location than the current commercial jetty at Taylor Street. The jetty structure at James Street is not designed to handle vessel loads, therefore any additional structures designed to utilise the existing jetty should be structurally isolated, such that no additional loads or deflections due to vessel impacts are imparted onto the existing James Street jetty structure. It would be possible to make use of the existing jetty structure as a walkway.

In order to berth Tender vessels at James street, one of the following new items of infrastructure would be required:

- A fixed jetty structure with a lower landing suitable for the berthing of Tender vessels.
- A floating pontoon structure.



Figure 5.1 James Street Groyne and Swimming Jetty

A floating pontoon structure requires a modest wave climate so that the floating pontoon is not subjected to large movements which cause damaged to the pontoon structure and the piles. Therefore, if a floating pontoon type structure is utilised at James Street, an extension to the existing groyne would be required to provide adequate protection to the pontoon. A concept something similar to that seen in Figure 5.2 (*Appendix A Concept Option 2*) would likely be suitable at James Street.



Figure 5.3 Example Fixed Lower Level Vessel Landing

The issue with a tidal difference is not expected to be a large issue as staff from the cruise vessel would be available to assist passengers onto the jetty from the Tender vessel, or alternatively there could be landings at different heights to accommodate various tide and vessel sizes. In conditions where the waves are too dangerous to berth a vessel at Taylor Street, it is unlikely that the cruise ship would be able to transfer passengers offshore from the Ship to the Tender anyway.

It is recommended that any new structure for Cruise Ships provide universal access down to the lower level landing or pontoon. Grades for universal access are typically 1 vertical to 14 horizontal, therefore a significant ramp structure is likely to be required.

5.2.1 Estimated Costs

A concept cost estimate has been prepared on an option of utilising the existing Southern Ports Pontoons at James Street for the berthing of Tender vessels only.

The option would require a breakwater extension to provide a reduced wave climate for the pontoon, a fixed jetty section that ramps down to the water level, a gangway onto the floating pontoons and piling for the pontoons.

Several elements would require further investigation and preliminary and detail design, including the breakwater extension, investigate the impacts of the breakwater extension on the adjacent beaches and the structural elements of the jetty and the pontoon piles.

Esperance Cruise Ship Options

Project Details: Option 2 Tender Berthing at James Street.

Prepared by: Dale Olsson

Checked by: M Rogers

Date: 27/1/2014

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	Design Work					\$ 160,000
1.1	Develop Preliminary Concept & Wave modelling to confirm protection and wave climate behind breakwater extension.	1	Item	\$ 30,000	\$ 30,000	
1.2	Environmental & brief Geotechnical Investigation (review of previous piling records and diver jet probes)	1	Item	\$ 80,000	\$ 80,000	
1.3	Detailed Engineering Design & Approvals	1	Item	\$ 50,000	\$ 50,000	
2	Construction				\$ -	\$ 674,750
2.1	Preliminaries & Insurances	1	Item	\$ 30,000	\$ 30,000	
2.2	Mobilisation	1	Item	\$ 50,000	\$ 50,000	
2.3	Piling for Ramp Access to Pontoon	14	pile	\$ 15,000	\$ 210,000	
2.4	FRP Decking for Ramp	40	m2	\$ 2,350	\$ 94,000	
2.5	Piles for Mooring Pontoon	4	pile	\$ 18,000	\$ 72,000	
2.7	Refurbish or replace existing concrete deck on James Street Jetty (pedestrian only).	113	m2	\$ 1,500	\$ 168,750	
2.8	Demobilisation and Site Clean Up	1	Item	\$ 50,000	\$ 50,000	
5	Extend Breakwater at James Street				\$ -	\$ 2,150,000
5.1	Supply & Place Core material to extend breakwater approximately 120m to provide protection to pontoons	10,000	m3	\$ 105	\$ 1,050,000	
5.2	Supply & Place Granite (or similar) Armour material to extend new breakwater	10,000	t	\$ 110	\$ 1,100,000	
	Subtotal 1				\$ 2,984,750	\$ 2,984,750
	Management & Design Fees	7	%		\$ 208,933	\$ 208,933
	Contingencies	20	%		\$ 596,950	\$ 596,950
	Subtotal 2				\$ 3,790,633	\$ 3,790,633
	Goods & Services Tax				\$ 379,063	\$ 379,063
	Total Estimated Cost				\$ 4,169,696	\$ 4,169,696

Notes 1. Concept Costing Only. Estimates based off similar construction projects and some costing information kindly provided by Southern Ports Authority.

5.3 Taylor Street

The Taylor street location is the current Tendering location for Cruise Ships. It is less exposed than the groyne at James Street and is adjacent to the existing commercial Taylor Street jetty. Esperance Ports currently proposes to install some permanent piles for the pontoon and maintain the pontoon in place for the majority of the year. This will significantly reduce the movements of the pontoon making it safer during vessel berthing and when disembarking passengers. Siltation of this berth may occur from time to time, which may have to be managed by some minor excavation or dredging works.

The Taylor Street location provides good tour bus access which is significant for Cruise Ship passengers.

There is an opportunity to improve the Cruise Ship passengers experience by providing a pedestrian link across the front of the yacht club into the Town Centre. The distance to the roundabout at Andrew Street is approximately 500 m using this route across the front of the Yacht Club.

A link across the front of the Yacht Club would provide opportunity for markets / stalls and tourism information along the grassed area. Figure 5.4 (Appendix A Concept Option 1) provides an indicative pedestrian link across the Yacht club grounds.

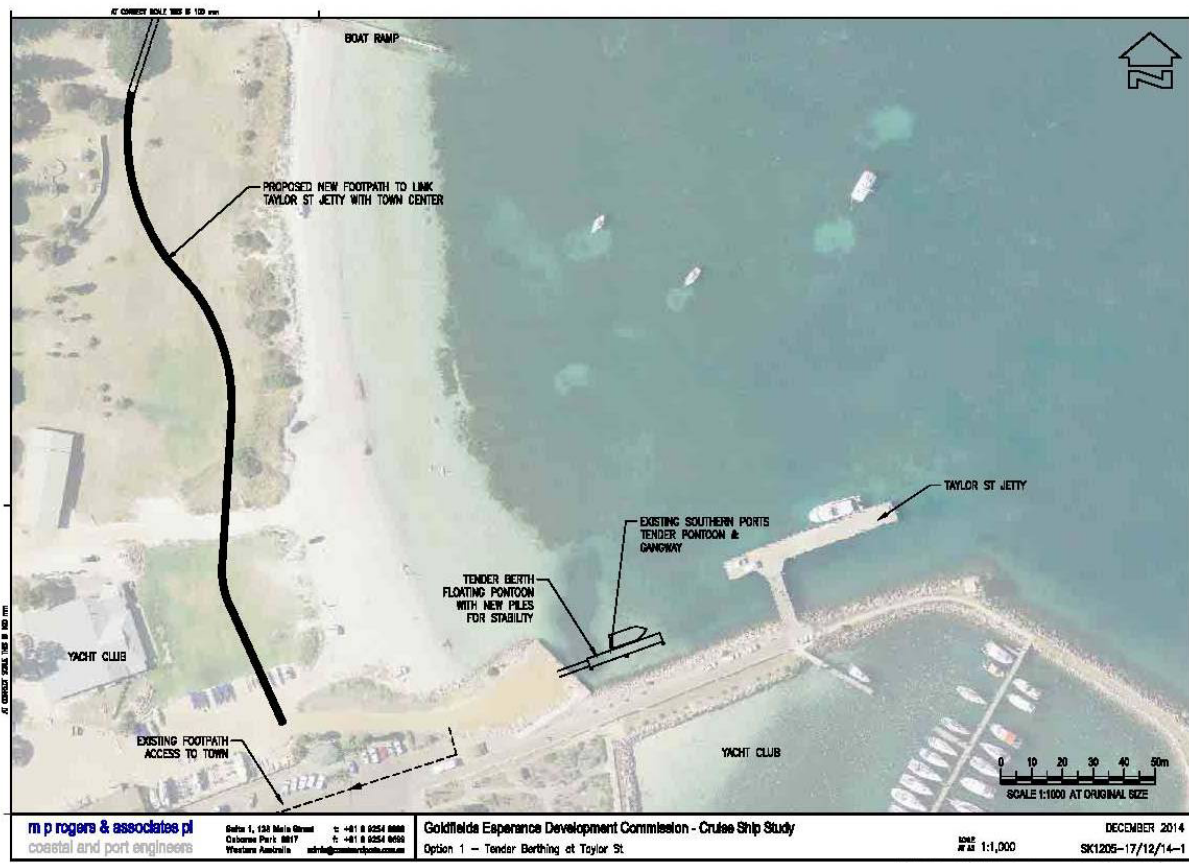


Figure 5.4 Concept Option 1 - Taylor Street Pontoon and Proposed Pedestrian Link

This pedestrian path could then link into the existing landscaping and foreshore pathway near the boat ramp. Other considerations for the area would be to improve the toilet facilities and possibly provide some shaded seating areas.

Given that the Port is already undertaking the permanent piling of the landing pontoon in this location, this appears to be the most logical short term solution for improving the Cruise Ship passengers experience and initial perception of Esperance.

This is also the easiest option to implement as no significant marine design or construction works are required. Some basic landscaping and concrete path works and possibly an improved toilet facility with some shade and seating would be enough to significantly improve the amenity of the area.

Discussions with the Yacht Club regarding a path across the front of the area indicated that they would be open to discussions regarding the final form of the pathway across the front of their rigging area. They did not believe that an appropriately designed pathway would cause a major disruption to their use of the area.

5.3.1 Estimated Costs

A cost estimate has been prepared for this option at Taylor Street based on *Appendix A - Concept Option 1*. This allows for a pathway link behind the dunes and in front of the EBYC between Taylor Street and the Esperance Esplanade. It is noted that the level of landscaping proposed is not to the same level as the recently landscaped Esperance Esplanade.

Southern Ports has indicated that they propose to install some permanent piles in the location of the pontoon. Some detailed design work would be required to size the piles. The cost estimate includes an allowance for these piles and some design work to subsidise some of the Ports costs.

The cost estimate does not allow for the improvement of the current ablution block or any additional shade structures.

Esperance Cruise Ship Options

Project Details: Option 1 Tender Berthing at Taylor Street.

Prepared by: Dale Olsson

Checked by: M Rogers

Date: 27/1/2014

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	Design Work					\$ 40,000
1.1	Develop Preliminary Concept and Landscaping Design with Stakeholders	1	Item	\$ 10,000	\$ 10,000	
1.2	Detailed Landscaping Design & Approvals	1	Item	\$ 20,000	\$ 20,000	
1.3	Pile Design for Pontoons	1	Item	\$ 10,000	\$ 10,000	
6	Upgrade Landscaping				\$ -	\$ 750,000
6.1	Upgrade link between Taylor Street and Esplanade Pathway (approx 250 lineal m) with basic landscaping and path. (Have not allowed for full landscaping to Esperance Esplanade standard).	250	per m	\$ 3,000	\$ 750,000	
7	Tender Pontoon				\$ -	\$ 60,000
7.1	Allowance to permanently pile Tender Pontoon in position, fabrication & fitting of new pile guides to pontoon and lift pontoons into position.	4	pile	\$ 15,000	\$ 60,000	
	Subtotal 1				\$ 850,000	\$ 850,000
	Management & Design Fees	7	%		\$ 59,500	\$ 59,500
	Contingencies	20	%		\$ 170,000	\$ 170,000
	Subtotal 2				\$ 1,079,500	\$ 1,079,500
	Goods & Services Tax				\$ 107,950	\$ 107,950
	Total Estimated Cost				\$ 1,187,450	\$ 1,187,450

Notes 1. Concept Costing Only. Estimates based off similar construction projects and some costing information kindly provided by Southern Ports Authority.

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MRAJOBS\Cost Estimate Esperance Options\Concept Option 1 Tender Pontoon Printed on 29/01/2015 Page 1 of 1

5.4 Southern Ports Authority

Discussions with Southern Ports Authority indicated that they are already considering a Multi User Berth facility that would be able to accommodate Cruise Ships. The Port is considering a Multi User Berth (primarily Tankers and Cruise Ships) on the side of its dredge basin as it may have capacity issues in the coming short to medium term timeframe.

Long term planning of the order of 20 – 50 years could also see another berth between the proposed Multi User Berth and the existing Berth 2. This could potentially have some long term conflicts with the existing Yacht club marina.

Southern Ports Authority have indicated a concept similar to that provided in Figure 5.4 (*Appendix A Concept Option 3*) is a possibility to provide a permanent berthing location for Cruise Ships, remove conflicts with the Yacht club marina and provide additional benefits to several existing items of marine infrastructure.

Having the Multi User Berth located on the outside of the Ports secured boundary directly off the Taylor Street breakwater means that security issues experienced when Cruise Ship passengers disembark within the Port Grounds are reduced. The Multi User Berth could act primarily as a public jetty for the majority of the time, with the area locked off by a security gate when a commercial vessel is using the berth.

Cruise Ship passengers would be able to directly walk off the ship and walk to buses or directly into Town via a pedestrian pathway across the front of the Yacht club.

Master planning for the Town of Esperance has previously indicated that the Yacht club marina could be relocated to the northern side of the Taylor Street breakwater and a new breakwater hook be built to the north. It is believed that the relocation of the Yacht club to the north side of the Taylor Street breakwater was proposed in order to provide a southern boundary to the Esplanade Foreshore. Therefore the Esplanade would be bound to the north by the Tanker Jetty and the south by the Yacht Club, giving a focus at either end for visitors.

Relocating the Yacht club marina would also remove the long term conflict that will occur between the Port and recreational vessels going into and out of the Yacht club marina.

Extending the Yacht club marina breakwater to the north also has a number of other benefits to adjacent items of marine infrastructure in that it provides:

- Additional sheltering to the existing swing moorings.
- Additional sheltering to the commercial Taylor Street Jetty.
- Additional sheltering to the existing Cruise Ship Tender floating pontoon location.
- A degree of protection to the existing recreational boat ramp in the prevailing South Easterly weather conditions.

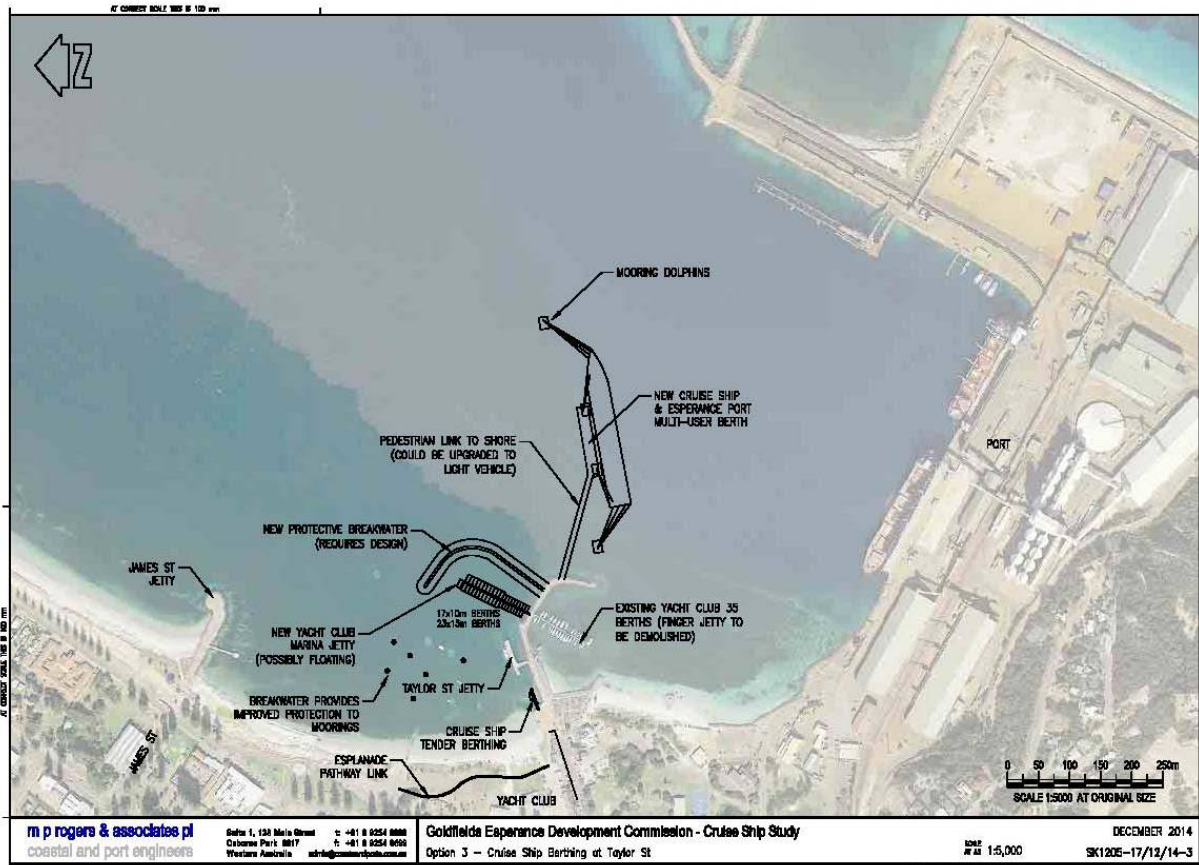


Figure 5.5 Concept Option 3 - Southern Ports Authority Concept for Multi User Berth and Relocation of the Yacht Club

This concept option has a number of benefits and long term staging options which all build onto each other to improve the area with no redundant items of infrastructure. Possible staging options are:

- Immediate Timeframe < 1 year
Port installs permanent piles for existing floating pontoon and permanently moors pontoon at Taylor Street.
- Short Term 1 – 3 year Timeframe
Pedestrian Links and Landscaping improved across the front of the Yacht Club Grounds.
- Short to Medium Term
Yacht Club Marina and Breakwater relocated to the northern side of Taylor Street.
- Medium to Long Term
Port installs Multi User Berth.

5.4.1 Estimated Costs

Southern Ports kindly provided initial budget estimates for a Multi User facility at Taylor Street. While a pedestrian only access jetty would be significantly cheaper, it is recommended that providing light vehicle access along the structure would be more user friendly for Ports staff, allow more room for the landing of a gangway or stairs from the cruise ship to the structure and also

allow for small buses to transport the more restricted cruise ship passengers. There would also be some significant costs to upgrade the structure at a later date should light vehicle access be required.

The provided cost estimate also includes some preliminary costings for extending the Yacht Club breakwater and installation of approximately 40 new marina pens. Extending this breakwater would provide ancillary benefits in improving the wave climate of the existing moorings and to a lesser degree the existing recreational boat ramp.

The provided cost estimate has not been broken into stages and includes all elements of the proposed works, including the landscaping and piling of the Southern Ports pontoon. It is noted that the cost of the works could be broken up into stages and undertaken over a longer time frame. The works can be summarised into three main projects

1. Permanent installation of Southern Ports Pontoon and upgrade the landscaping link to the Esplanade foreshore.
2. Upgrade the Yacht Club by extending the breakwater to the north and install new marina pens on the northern side of Taylor Street.
3. Southern Ports Authority installs the Multi User Berth facility that provides light vehicle access to the berth.

Esperance Cruise Ship Options

Project Details: Option 3 Cruise Ship Berthing at Taylor Street.

Prepared by: Dale Olsson

Checked by: M Rogers

Date: 27/1/2014

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	Design Work					\$ 635,000
1.1	Develop Preliminary Concept	1	Item	\$ 60,000	\$ 60,000	
1.2	Environmental & Geotechnical Investigation	1	Item	\$ 300,000	\$ 300,000	
1.3	Detailed Engineering Design & Approvals	1	Item	\$ 275,000	\$ 275,000	
2	Construction				\$ -	\$ 13,100,000
2.1	Preliminaries & Insurances	1	Item	\$ 500,000	\$ 500,000	
2.2	Mobilisation	1	Item	\$ 200,000	\$ 200,000	
2.3	Piling (assume 2 piles per 5m bent over 180 m, 3 piles per 5 m bent over 110m)	138	pile	\$ 25,000	\$ 3,450,000	
2.4	Concrete Decking	2,100	m2	\$ 3,000	\$ 6,300,000	
2.5	Mooring Dolphins	4	per dolphin	\$ 200,000	\$ 800,000	
2.6	Fenders and mooring bollards	1	Item	\$ 750,000	\$ 750,000	
2.7	Services & Lighting	1	Item	\$ 1,000,000	\$ 1,000,000	
2.8	Demobilisation and Site Clean Up	1	Item	\$ 100,000	\$ 100,000	
3	Dredging				\$ -	\$ 650,000
3.1	Dredge Mobilisation (ex Southern Ports estimate)	1	Item	\$ 300,000	\$ 300,000	
3.2	Dredging Works (assumed undertaken in conjunction with maintenance dredging activities of the Port) (ex Southern Ports Estimate)				\$ 350,000	
4	Upgrade Breakwater Access				\$ -	\$ 570,000
4.1	Upgrade Existing Yacht Club Breakwater (150 lineal m)	150	per m	\$ 3,000	\$ 450,000	
4.2	Roadway access along top of breakwater	1,200	m2	\$ 100	\$ 120,000	
5	Yacht Club Upgrades				\$ -	\$ 6,135,000
5.1	Supply & Place Core material to extend new Breakwater to the North	25,000	m3	\$ 105	\$ 2,625,000	
5.2	Supply & Place Granite (or similar) Armour material to extend new breakwater	21,000	t	\$ 110	\$ 2,310,000	
5.3	40 new marina pens	40	per pen	\$ 30,000	\$ 1,200,000	
6	Upgrade Landscaping				\$ -	\$ 750,000
6.1	Upgrade link between Taylor Street and Espalade Pathway (approx 250 lineal m) with basic landscaping and path. (Have not allowed for full landscaping to Esperance Esplanade standard).	250	per m	\$ 3,000	\$ 750,000	
7	Tender Pontoon				\$ -	\$ 60,000
7.1	Allowance to permanently pile Tender Pontoon in position, fabrication & fitting of new pile guides to pontoon and lift pontoons into position.	4	pile	\$ 15,000	\$ 60,000	
	Subtotal 1				\$ 21,900,000	\$ 21,900,000
	Management & Design Fees	7	%		\$ 1,533,000	\$ 1,533,000
	Contingencies	20	%		\$ 4,380,000	\$ 4,380,000
	Subtotal 2				\$ 27,813,000	\$ 27,813,000
	Goods & Services Tax				\$ 2,781,300	\$ 2,781,300
	Total Estimated Cost				\$ 30,594,300	\$ 30,594,300

Notes 1. Concept Costing Only. Estimates based off similar construction projects and some costing information kindly provided by Southern Ports Authority.

2. Yacht Club Breakwater costing could be further refined with a preliminary design and rates for supply and place from local Contractors experienced in breakwater construction.

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MRAJOBS\Cost Estimate Esperance Options\Port Multi User Berth Option 3 Printed on 29/01/2015 Page 1 of 1

5.5 Tanker Jetty

Another option for consideration is to utilise the Tanker Jetty to berth Cruise Ships.

The location of the Tanker Jetty is not ideal due to the significant distance that the Jetty is out of Town. It would be an approximate 1,800 m walk from the end of the Jetty into Town.

In its current degraded state, the Tanker Jetty would not be able to withstand vessel loads. The Tanker Jetty would need to be replaced and built to a standard able to accept vessel loads or a set of mooring dolphins provided adjacent to the Tanker Jetty.

In order to be within waters deep enough for Cruise Ships, the Jetty would have to be significantly extended to reach waters of the order of 10 – 15 m deep, or alternatively a dredged channel would be required to bring the moored ships alongside the existing length of Tanker Jetty.

Two concept options are provided for the Tanker Jetty Option. Figure 5.6 provides an indicative extension of the Tanker Jetty (*Appendix A Concept Option 4*) and Figure 5.7 provides an indicative location and required dredge basin in order to berth vessels alongside the existing Tanker Jetty location (*Appendix A Concept Option 5*).

The berth would be too far from the Esperance Port to be of use for a multi user berth for the Port. There would also be conflicting uses with the recreational dive trail that has been established off the end of the Tanker Jetty that would need to be resolved.

While this option could be explored in further detail should it be required, it is likely that the limited use of a facility built specifically for Cruise Ships would not justify the capital expense of the project.

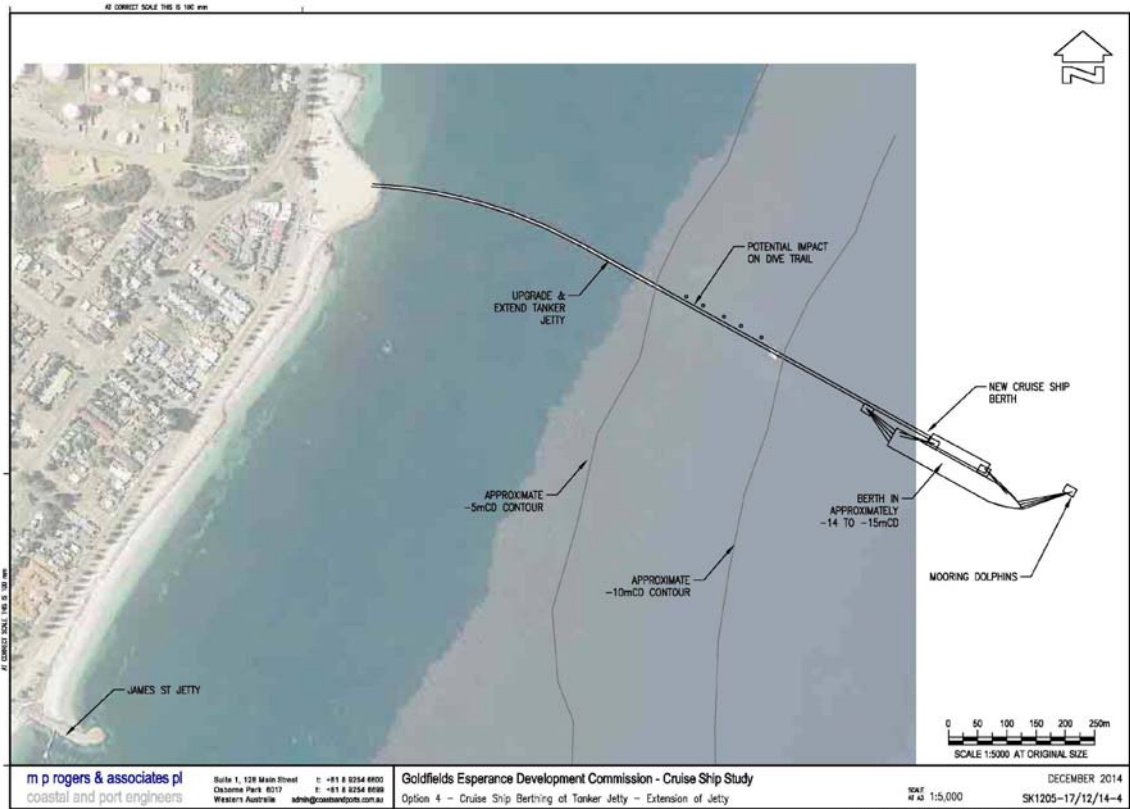


Figure 5.6 Concept Option 4 - Tanker Jetty Extension Option

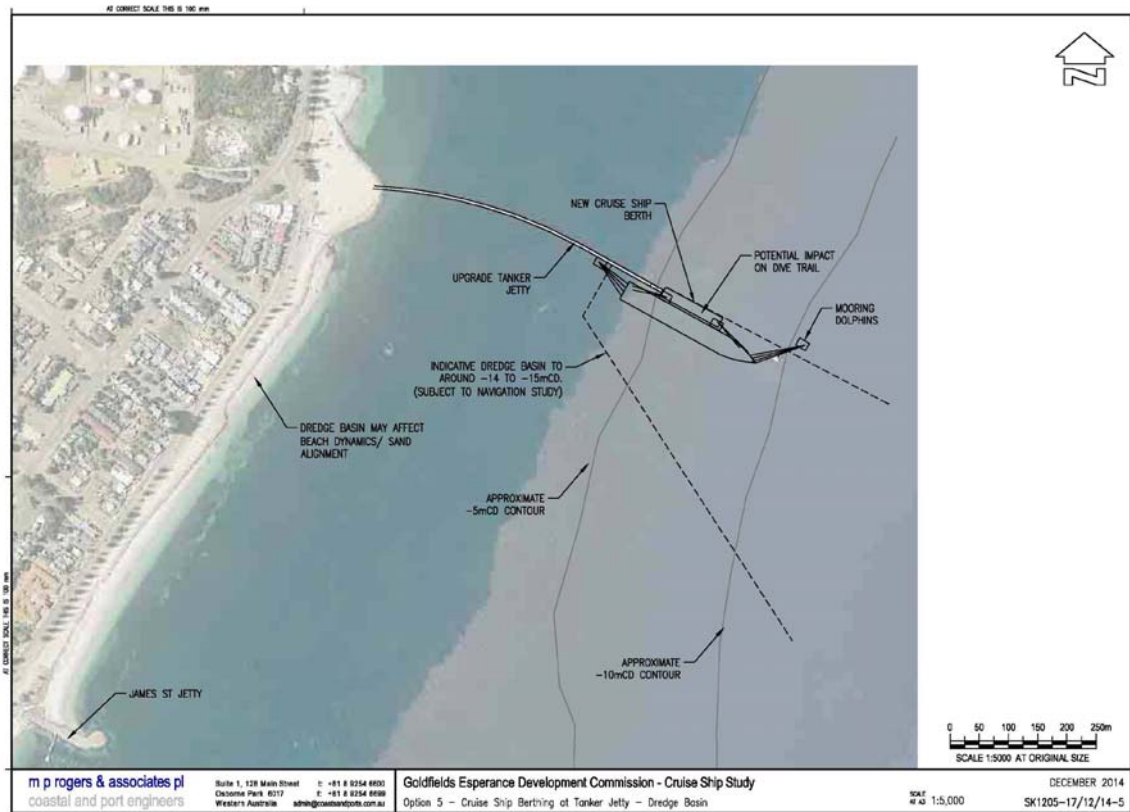


Figure 5.7 Concept Option 5 - Tanker Jetty Dredging Option

5.5.1 Estimated costs

Two options for the Tanker Jetty are available. In order to berth a Cruise Ship at the Tanker Jetty either of the following could occur

1. Concept Option 4. Replace the existing and also extend the Tanker Jetty into deeper waters.
2. Concept Option 5. Replace the existing and undertake a significant amount of dredging to create a channel and mooring basin alongside the Tanker Jetty.

Both of these options are significantly expensive, as the significant length of the jetty or the large volume of dredging required contributes to the significant cost of the project. Should this option be considered in further detail, it would be possible to optimise the length of the jetty and the required dredging volumes. The design of the approach channel and mooring basin would significantly affect the cost of the dredging works and would also require discussions with Southern Ports Authority in order to provide enough navigation clearance and manoeuvring room for the ship and tugs. Dredging costs are highly dependent upon the material dredged, the availability of suitable dredging vessels and the dredging methodology. Further works would be required to refine the dredging costs of the projects.

Esperance Cruise Ship Options

Project Details: Option 4 Cruise Ship Berthing at Tanker Jetty (Jetty Extension to approx -15 m CD).

Prepared by: Dale Olsson

Checked by: M Rogers

Date: 27/1/2014

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	Design Work					\$ 635,000
1.1	Develop Preliminary Concept	1	Item	\$ 60,000	\$ 60,000	
1.2	Environmental & Geotechnical Investigation	1	Item	\$ 300,000	\$ 300,000	
1.3	Detailed Engineering Design & Approvals	1	Item	\$ 275,000	\$ 275,000	
2	Construction				\$ -	\$ 36,270,000
2.1	Preliminaries & Insurances	1	Item	\$ 700,000	\$ 700,000	
2.2	Mobilisation	1	Item	\$ 200,000	\$ 200,000	
2.3	Piling (assume 2 piles per 5m bent over approximately 1000m, 3 piles per bent over 110m 9 m wide section)	466	pile	\$ 25,000	\$ 11,650,000	
2.4	Concrete Decking (light service vehicle access)	6,990	m2	\$ 3,000	\$ 20,970,000	
2.5	Mooring Dolphins	4	per dolphin	\$ 200,000	\$ 800,000	
2.6	Fenders and mooring bollards	1	Item	\$ 750,000	\$ 750,000	
2.7	Services & Lighting	1	Item	\$ 1,000,000	\$ 1,000,000	
2.8	Demobilisation and Site Clean Up	1	Item	\$ 200,000	\$ 200,000	
	Subtotal 1				\$ 36,905,000	\$ 36,905,000
	Management & Design Fees	7	%		\$ 2,583,350	\$ 2,583,350
	Contingencies	20	%		\$ 7,381,000	\$ 7,381,000
	Subtotal 2				\$ 46,869,350	\$ 46,869,350
	Goods & Services Tax				\$ 4,686,935	\$ 4,686,935
	Total Estimated Cost				\$ 51,556,285	\$ 51,556,285

Notes 1. Concept Costing Only. Estimates based off similar construction projects and some costing information kindly provided by Southern Ports Authority.

Esperance Cruise Ship Options

Project Details: Option 5 Cruise Ship Berthing at Tanker Jetty (Extension of Jetty and Dredging).

Prepared by: Dale Olsson

Checked by: M Rogers

Date: 27/1/2014

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	Design Work					\$ 1,060,000
1.1	Develop Preliminary Concept	1	Item	\$ 60,000	\$ 60,000	
1.2	Environmental & Geotechnical Investigation	1	Item	\$ 500,000	\$ 500,000	
1.3	Detailed Engineering Design & Approvals	1	Item	\$ 500,000	\$ 500,000	
2	Construction				\$ -	\$ 22,270,000
2.1	Preliminaries & Insurances	1	Item	\$ 700,000	\$ 700,000	
2.2	Mobilisation	1	Item	\$ 200,000	\$ 200,000	
2.3	Piling (assume 2 piles per 5m bent over approximately 500m, 3 piles per bent over 110m 9 m wide section)	266	pile	\$ 25,000	\$ 6,650,000	
2.4	Concrete Decking (light service vehicle access)	3,990	m2	\$ 3,000	\$ 11,970,000	
2.5	Mooring Dolphins	4	per dolphin	\$ 200,000	\$ 800,000	
2.6	Fenders and mooring bollards	1	Item	\$ 750,000	\$ 750,000	
2.7	Services & Lighting	1	Item	\$ 1,000,000	\$ 1,000,000	
2.8	Demobilisation and Site Clean Up	1	Item	\$ 200,000	\$ 200,000	
3	Dredging				\$ -	\$ 20,810,000
3.1	Dredge Mobilisation	1	Item	\$ 5,000,000	\$ 5,000,000	
3.2	Dredging Works (assumed dredged to -15 m CD)	930,000	m3	\$ 17	\$ 15,810,000	
	Subtotal 1				\$ 44,140,000	\$ 44,140,000
	Management & Design Fees	7	%		\$ 3,089,800	\$ 3,089,800
	Contingencies	20	%		\$ 8,828,000	\$ 8,828,000
	Subtotal 2				\$ 56,057,800	\$ 56,057,800
	Goods & Services Tax				\$ 5,605,780	\$ 5,605,780
	Total Estimated Cost				\$ 61,663,580	\$ 61,663,580

Notes 1. Concept Costing Only. Estimates based off similar construction projects and some costing information kindly provided by Southern Ports Authority.

2. Dredging costs and mobilisation are highly dependant upon the availability and location of dredging equipment and the dredging and disposal methodology (whether pumped ashore for reclamation or disposed offshore).

5.6 Cruise Ship Berthing at James Street

Another option for the direct berthing of Cruise Ships close to shore is to extend a large jetty out from the James Street Groyne. The James Street location is a promising location as it would tie the Cruise Ship facility into the new Esplanade Foreshore landscaping project and also place tourists slightly closer to the Town Centre. The berth would be a similar arrangement to that proposed by Esperance Ports at Taylor Street, with mooring dolphins and a light service vehicle jetty out to the berthing location. However due to the shallowness of Esperance Bay in this location, it is likely that significant dredging would be required to be able to bring Cruise Ships into the James Street location. A concept arrangement for a Cruise Ship facility at James Street is provided in Figure 5.8 (*Appendix A Concept Option 6*).

This location would have to be checked with Southern Ports Authority as to whether it would be suitable as a Multi User Berth and allow the berthing of tanker vessels and the necessary infrastructure to pump back to the Port in this location. It would also be necessary to check the alignment of any pipe line route along the foreshore to ensure that pipelines can be run through an easement back to the Port. The pumping distance will also have to be checked to ensure that pumps will be sufficient to pump back to the Port's storage tanks. Unless the jetty structure is utilised by the Port as a Multi User Berth to generate some revenue on the structure, a facility built solely for cruise ships it is unlikely to be a positive business case for the town.

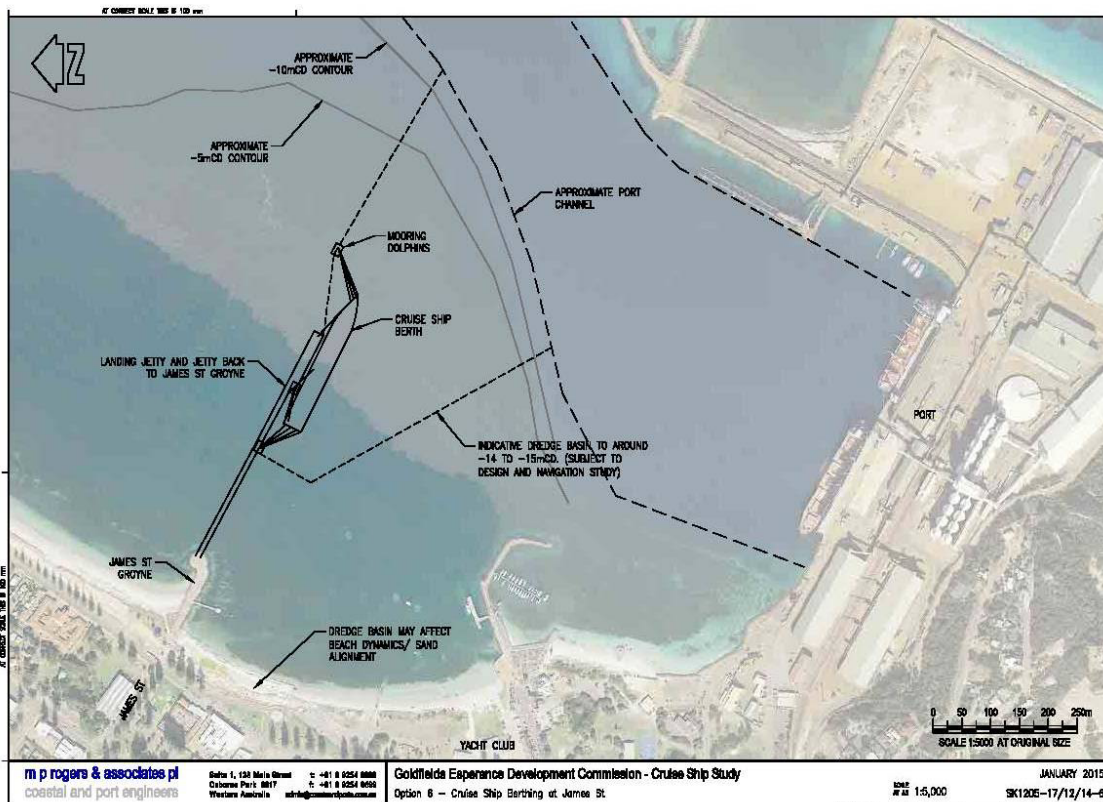


Figure 5.8 Concept Option 6 – Cruise Ship Berthing Facility at James Street

Major disadvantages with the James Street location over the Taylor Street location are listed below:

- Distance to sufficiently deep water (approx 10 m CD) is approximately 1 km offshore. This is a significant length and would be a significant project. This is also quite a long walk for the generally older Cruise Ship tourist demographic.
- The location is also slightly more exposed than a similar structure at Taylor Street. This would expose the berth to greater wave loads, which would increase the design loadings on the jetty and mooring structures, increasing the unit rate cost of the Jetty. This exposure may also restrict usage of the berth in certain conditions.
- A new dredge basin and channel will likely be required. An analysis of the cost/benefit between the length of jetty compared to the costs of dredging volume should be undertaken to optimise the length of jetty to the length of dredge channel. It is noted that costs associated with capital dredging and ongoing maintenance dredging will significantly add to the overall project.
- Southern Ports Authority has also experienced some issues with long waves affecting ships at Berth. It is recommended that any dredging in this area would have to be checked to confirm that the design of the dredge basin would not amplify these long wave issues or that the berth is not greatly affected by these issues. Also the impacts on the adjacent shoreline would need careful investigation.
- The facility does not provide secondary benefits of wave shelter to the existing moorings and boat ramp.

This option could be explored in further detail as an alternative for the Southern Ports Authority preferred concept (Option 3).

5.6.1 Estimated Costs

The cost estimate for a Multi User Berth facility at James Street is provided below. Several elements of the James Street option significantly add to the costs of the project over the Taylor Street option. The major cost item is the additional capital dredging. In conjunction with the dredging, the approvals process for this dredging would be significantly more extensive and also require more extensive environmental monitoring during both the approvals process and the construction works.

Esperance Cruise Ship Options

Project Details: Option 6 Cruise Ship Berthing at James Street Jetty (Extension of Jetty and Dredging).

Prepared by: Dale Olsson

Checked by: M Rogers

Date: 27/1/2014

Item	Activity	Quantity	Units	Unit Rate	Subtotal	Total for Item
1	Design Work					\$ 1,060,000
1.1	Develop Preliminary Concept	1	Item	\$ 60,000	\$ 60,000	
1.2	Environmental & Geotechnical Investigation	1	Item	\$ 500,000	\$ 500,000	
1.3	Detailed Engineering Design & Approvals	1	Item	\$ 500,000	\$ 500,000	
2	Construction				\$ -	\$ 16,670,000
2.1	Preliminaries & Insurances	1	Item	\$ 700,000	\$ 700,000	
2.2	Mobilisation	1	Item	\$ 200,000	\$ 200,000	
2.3	Piling (assume 2 piles per 5m bent over approximately 300m, 3 piles per bent over 110m 9 m wide section)	186	pile	\$ 25,000	\$ 4,650,000	
2.4	Concrete Decking (light service vehicle access)	2,790	m2	\$ 3,000	\$ 8,370,000	
2.5	Mooring Dolphins	4	per dolphin	\$ 200,000	\$ 800,000	
2.6	Fenders and mooring bollards	1	Item	\$ 750,000	\$ 750,000	
2.7	Services & Lighting	1	Item	\$ 1,000,000	\$ 1,000,000	
2.8	Demobilisation and Site Clean Up	1	Item	\$ 200,000	\$ 200,000	
3	Dredging				\$ -	\$ 40,368,500
3.1	Dredge Mobilisation	1	Item	\$ 5,000,000	\$ 5,000,000	
3.2	Dredging Works (assumed dredged to -15 m CD)	2,080,500	m3	\$ 17	\$ 35,368,500	
	Subtotal 1				\$ 58,098,500	\$ 58,098,500
	Management & Design Fees	7	%		\$ 4,066,895	\$ 4,066,895
	Contingencies	20	%		\$ 11,619,700	\$ 11,619,700
	Subtotal 2				\$ 73,785,095	\$ 73,785,095
	Goods & Services Tax				\$ 7,378,510	\$ 7,378,510
	Total Estimated Cost				\$ 81,163,605	\$ 81,163,605

Notes 1. Concept Costing Only. Estimates based off similar construction projects and some costing information kindly provided by Southern Ports Authority.

2. Dredging costs and mobilisation are highly dependant upon the availability and location of dredging equipment and the dredging and disposal methodology (whether pumped ashore for reclamation or disposed offshore).

6. Recommendations

Utilising a brief wave record obtained from Beacon 2 for a 9 month period and the conditions recorded when the Cruise Ship “Volendam” turned around due to poor weather, it suggests that the wave climate offshore of Esperance will exceed a ‘safe’ level to transfer passengers ashore by Tender approximately 57% of the time. This suggests that for the moderate to long term the Town should investigate berthing options for Cruise Ships if they wish to increase this component of the Tourism economy within the Town.

A proposed facility at James Street would rely on Cruise Ship vessels Tendering passengers ashore. Given the high probability of poor weather and conditions exceeding the criterion in which Cruise Ships can safely Tender passengers, it is not recommended that this would be a long term viable option for the Town to improve Cruise Ship tourism.

Unless there are significant increases in Cruise Ship tourism within Australia within the next two years, it is likely that Esperance will receive up to approximately 8 vessels each year in 2015 and 2016. This relatively small number of vessels is unlikely to justify large capital expenditure in the short term on a facility solely for the use of Cruise Ships.

Capital spending required to provide a facility on the Tanker Jetty would be prohibitive. The Tanker Jetty’s location out of Town also makes it non preferred as an option for Cruise Ship berthing.

Due to the relatively short usage of any item of infrastructure by Cruise Ship’s, it is recommended that any item of infrastructure have a major alternative use and then can also accommodate Cruise Ship vessels and or Tenders.

It is likely that 8 vessels per year will provide a worthy additional economic benefit to Town businesses and local Tourism operators, therefore some small improvements in infrastructure will continue to encourage Cruise Ship operators to stop over in Esperance.

Esperance has a geographic advantage that it can capitalise on as Cruise Ship Operators have indicated that stopping in Esperance suits their scheduling.

Southern Port Authority (Esperance Port) has indicated that they potentially require an additional Multi User Berth to provide additional capacity to the Port in the short to medium term. They have indicated that this facility would likely be built to accept Cruise Ships.

The Port also indicated that there is a long term user conflict between the Ports long term expansion options and the current location of the Yacht club marina. Relocating the Yacht Club marina to the northern side of Taylor Street and providing an additional breakwater would remove this and at the same time provide several pieces of marine infrastructure and the Town with multiple benefits.

The development of the Ports option at Taylor Street also allows for progressive staging of infrastructure. This avoids any redundant capital expenditure as every stage (short, medium and long term) is complimentary.

The following is recommended as a possible staging plan for the Ports multi user berth option.

- Immediate Timeframe < 1 year
Port installs permanent piles for existing floating pontoon and permanently moors pontoon at Taylor Street.
- Short Term 1 – 3 year Timeframe
Pedestrian Links and Landscaping improved across the front of the Yacht Club Grounds.
- Short to Medium Term (3 to 5 - 10 years)
Yacht Club Marina and Breakwater relocated to the northern side of Taylor Street.
- Medium to Long Term (5 to 10+ Years)
Port installs multi user berth.

Should funding or capacity requirements at the Port dictate earlier, then the Multi User Berth may be built sooner which would only act to benefit Cruise Ship Tourism within the Town.

It is recommended that the Port's Taylor Street option is progressed further as it has numerous benefits to the Town, is able to be staged easily with complimentary pieces of infrastructure and also aids the capacity of the Port, which provides further economic and employment prospects to the Town.

It is recommended however that discussions with the Port be held to ensure that berthing fees are suitable to encourage Cruise Ship tourism into the Town. Should the berthing fees be sufficiently high that it is not economical for the vessels to utilise a berth, then despite providing the infrastructure improvements, Cruise Ships may continue to prefer to anchor offshore and Tender passengers.

MRA would be pleased to assist any of the Stakeholders develop the options further to a detailed design stage. The following additional works would be required to progress the Ports option:

- Detailed design of piles for pontoon (underway by Southern Ports).
- Landscaping and path link across the Yacht Club foreshore.
- Approvals, preliminary and detailed structural design of the Multi User Berth and minor dredging works.
- Approvals, preliminary and detailed design of the Yacht club breakwater and marina layout.

7. References

AEC Group (2011). *Economic Impact Assessment of the Cruise Shipping Industry in Australia 2010 – 2011*. Prepared for Cruise Down Under.

AEC Group (2013). *Economic Impact Assessment of the Cruise Shipping Industry in Australia 2012 – 2013 – Executive Summary*. Prepared for Cruise Down Under.

AEC Group (2014). *Economic Impact Assessment of the Cruise Shipping Industry in Australia 2013 – 2014*. Prepared for Cruise Down Under.

Tourism WA. 2012, *Western Australian Cruise Shipping Strategic Plan 2012 -2020*.

Tourism WA. 2012, *Western Australian Ports Assessment for Cruise Ships*. Prepared by Richard Doyle.

8. Appendices

Appendix A Concept Option Sketches

Appendix A Concept Option Sketches

SK1205-17.12.14-1 *Concept Option 1 Tender Berthing at Taylor Street*

SK1205-17.12.14-2 *Concept Option 2 Tender Berthing at James Street*

SK1205-17.12.14-3 *Concept Option 3 Cruise Ship Berthing at Taylor Street*

SK1205-17.12.14-4 *Concept Option 4 Cruise Ship Berthing at Tanker Jetty – Extension of Jetty*

SK1205-17.12.14-5 *Concept Option 5 Cruise Ship Berthing at Tanker Jetty – Dredged Berth Pocket*

SK1205-17.12.14-6 *Concept Option 6 Cruise Ship Berthing at James Street*

AT CORRECT SCALE THIS IS 100 mm



BOAT RAMP

PROPOSED NEW FOOTPATH TO LINK TAYLOR ST JETTY WITH TOWN CENTER

TAYLOR ST JETTY

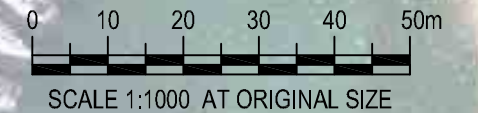
EXISTING SOUTHERN PORTS TENDER PONTOON & GANGWAY

TENDER BERTH FLOATING PONTOON WITH NEW PILES FOR STABILITY

YACHT CLUB

EXISTING FOOTPATH ACCESS TO TOWN

YACHT CLUB

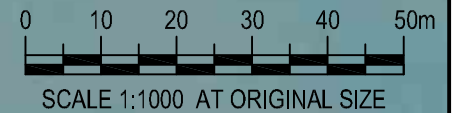


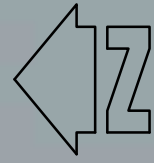
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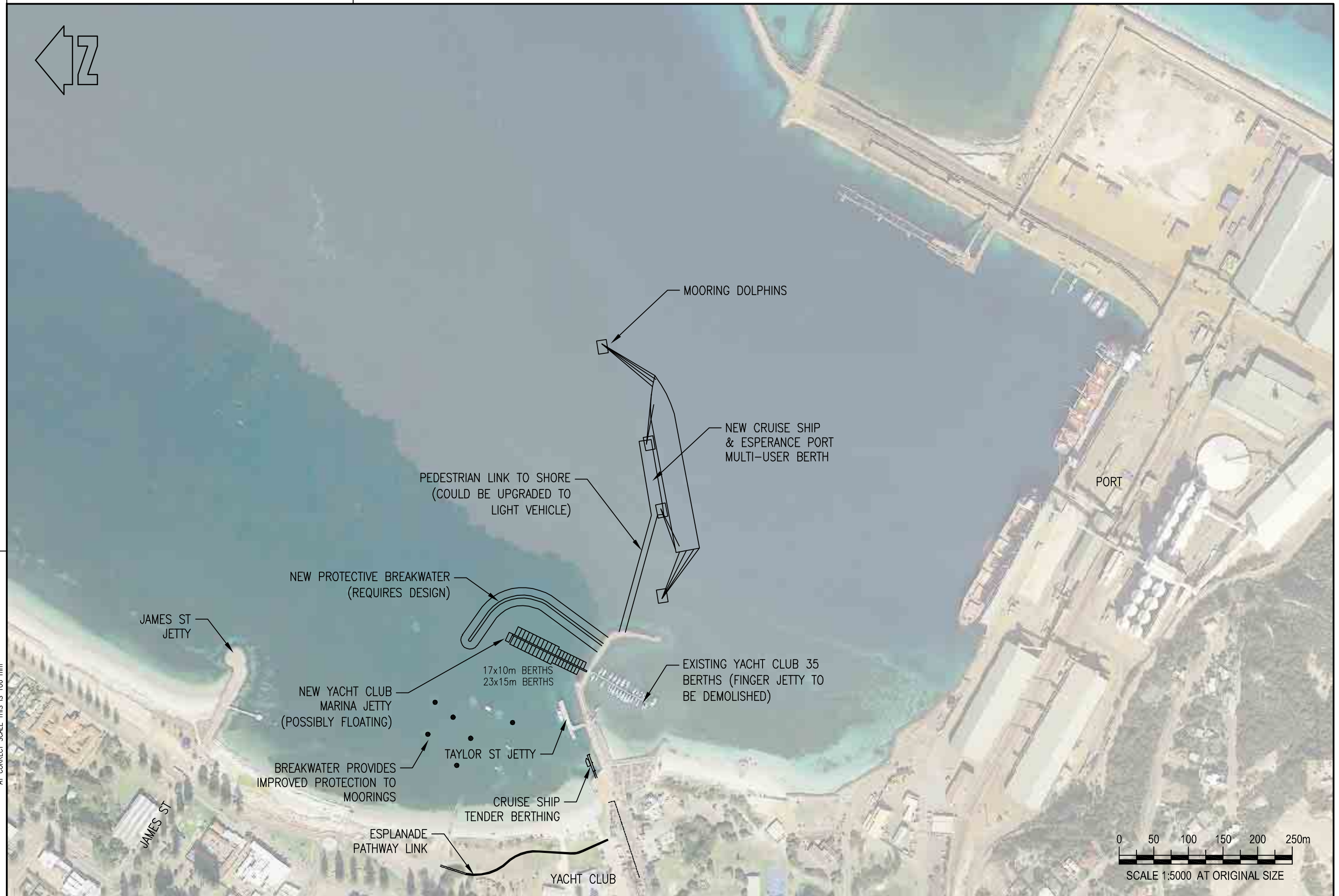


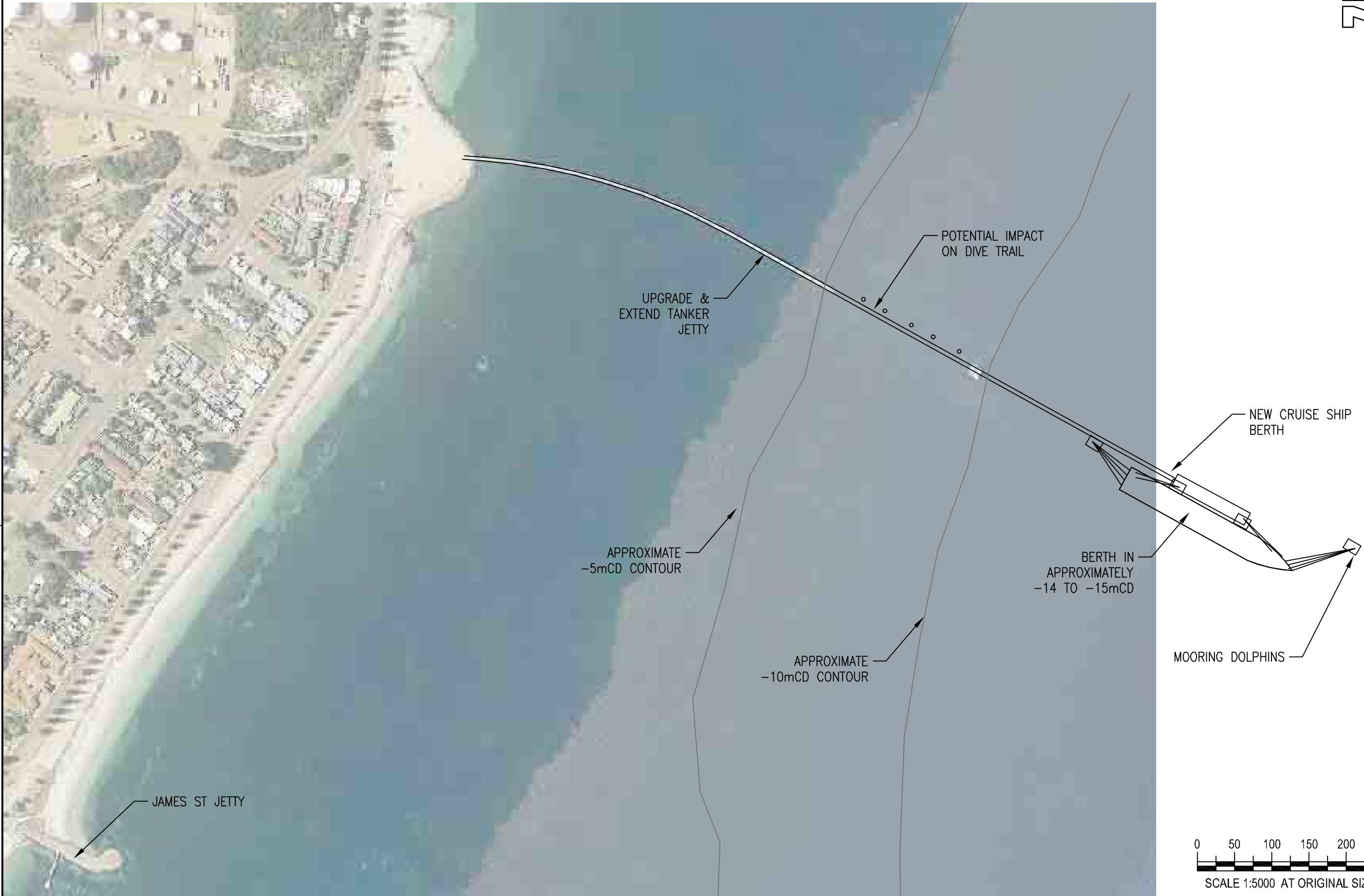
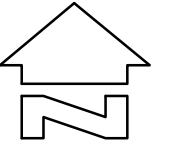
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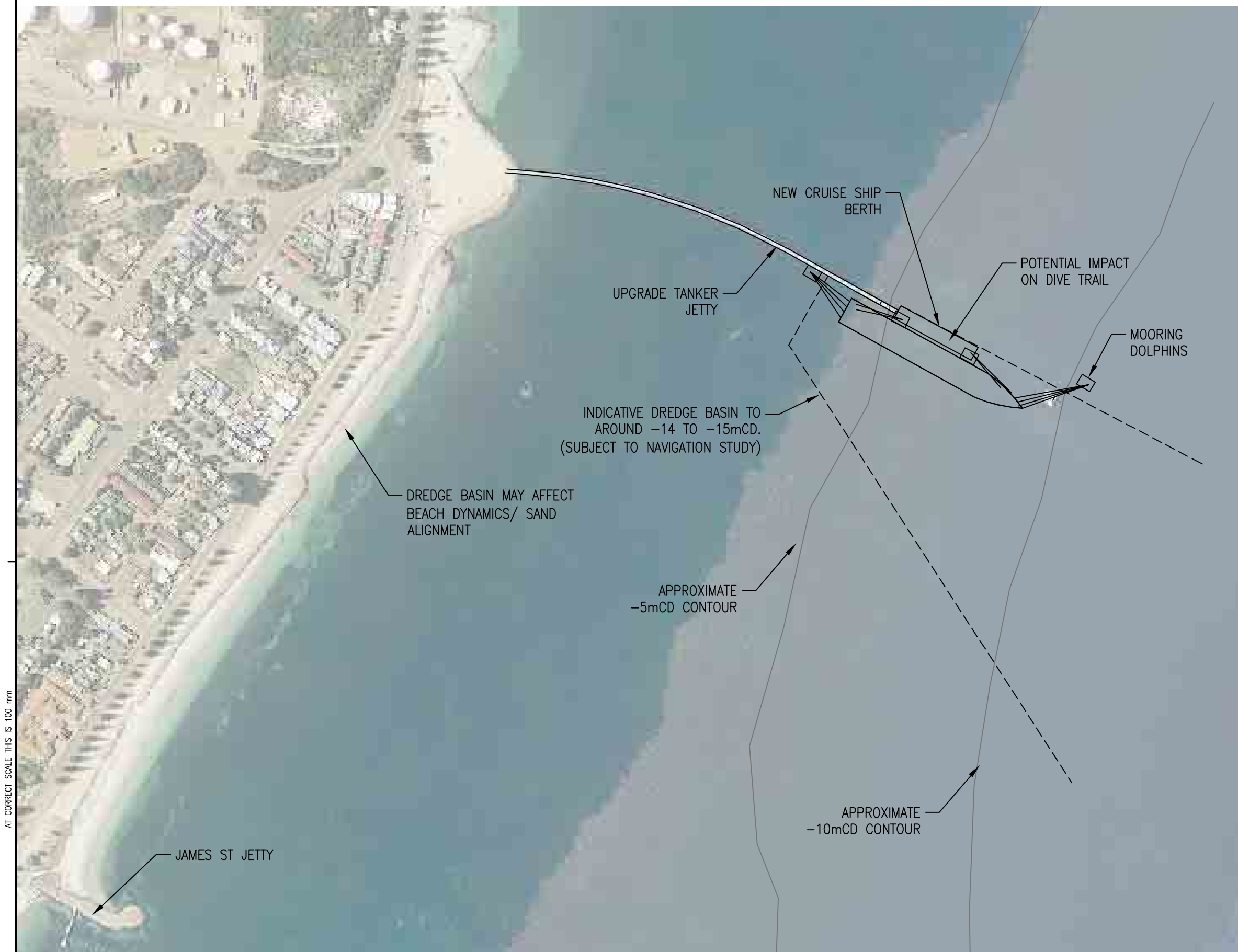
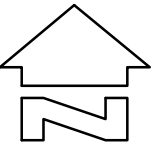


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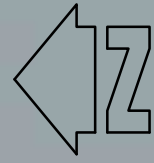


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AT CORRECT SCALE THIS IS 100 mm



APPROXIMATE
-10mCD CONTOUR

APPROXIMATE
-5mCD CONTOUR

APPROXIMATE PORT
CHANNEL

MOORING
DOLPHINS

CRUISE SHIP
BERTH

LANDING JETTY AND JETTY BACK
TO JAMES ST GROYNE

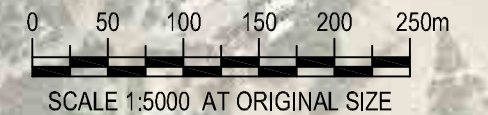
INDICATIVE DREDGE BASIN TO AROUND
-14 TO -15mCD. (SUBJECT TO
DESIGN AND NAVIGATION STUDY)

PORT

JAMES ST
GROYNE

DREDGE BASIN MAY AFFECT
BEACH DYNAMICS/ SAND
ALIGNMENT

YACHT CLUB



AT CORRECT SCALE THIS IS 100 mm

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