



Future Harbour Requirements Study 2020

Options Development and Evaluation

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States of Guernsey

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Abbreviations

ABI	Area of Biodiversity Importance
CSF	Critical Success Factor
FHRS 2010	Future Harbour Requirements Study 2010
FHRS 2020	Future Harbour Requirements Study 2020
HFO	Heavy Fuel Oil
ISPS	International Ship and Port Facility Security
LHS	Longue Hougue South
LOA	Length Overall
LoLo	Load on Load off
mCD	Metres Chart Datum
MLWS	Mean Low Water Springs
NAABSA	Not Always Afloat But Safely Aground
RoRo	Roll on Roll off
SEA	Seafront Enhancement Area
SoG	States of Guernsey
SSS	Site of Special Significance
STSB	States Trading Supervisory Board
TGS	Twenty-foot Ground Slots

Executive summary

This report covers the options development and evaluation for the Future Harbour Requirements Study 2020 (FHRS 2020) carried out for the States of Guernsey (SoG).

The FHRS 2020 sits as one of the projects within the Harbour Development Programme and has its own Project Board. The FHRS 2020 aims to understand the future demand up to the year 2050 for commercial and leisure sectors in the ports, identify the spatial and facilities requirements for the ports and consider at least three options to meet these demands. The FHRS 2020 aims to produce rough order of magnitude costs and identify options to allow the States of Guernsey to determine a preferred way forward. It also provides information to assist the States Trading Supervisory Board (STSB) in responding to elements of the requête resolved in May 2019.

Earlier activities

Jacobs began the project with the Discovery phase, collecting and collating existing data and where possible filling the gaps and dealing with the uncertainties arising. The Discovery phase confirmed the key facilities and services provided in St Peter Port and St Sampson's Harbours.

Jacobs engaged with port users to better understand their needs. A demand forecast was then developed and the spatial and facilities requirements needed to meet the demand were assessed. The demand forecast included estimates for low, base and high demand scenarios for the period up to the 2050. The demand and requirements for commercial and leisure sectors, defined by Guernsey Harbours, were assessed as follows:

- Commercial: unitised cargo (LoLo and RoRo), bulk solids, international passenger and vehicular traffic (passengers, private vehicles, small commercial vehicles), and inter-island freight (Alderney)
- Leisure: cruise ships and tenders, visiting yachts, local yachts, super yachts, fishing vessels, inter-island passenger and inter-island freight (Herm, Sark and Brecqhou)

The bulk liquid demand was taken from the demand estimate established in the Hydrocarbons Supply Programme and has not been reforecast within this project.

The project team developed seven assessment criteria to provide a basis for evaluating whether a particular solution would properly address the objectives of the FHRS 2020 project:

- 1) Meets base demand and facility/spatial study requirements in 2030
- 2) Meets base demand and facility/spatial study requirements in 2050 and could meet high/low demand
- 3) Has limited environmental footprint
- 4) Meets or exceeds the safety and reliability of existing facilities
- 5) Can be delivered in stages to allow flexibility and financial management
- 6) Has synergy with other SoG infrastructure programmes
- 7) Will have a neutral or positive impact on the built environment

This report

This report describes and evaluates the options developed to meet the demand and assessment criteria.

Locations considered

We considered six locations along the east coast of Guernsey as illustrated below.

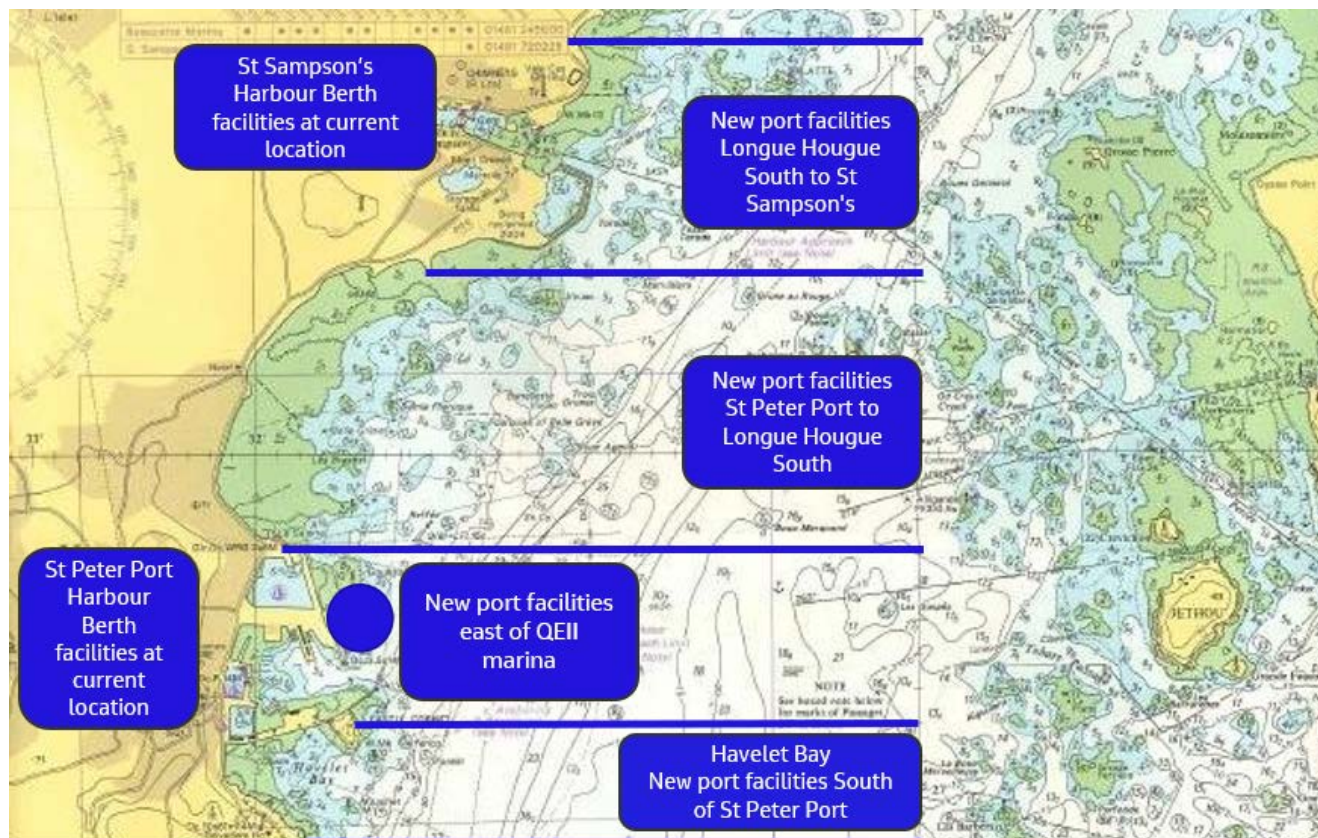


Figure 0.1: Considered locations

In general, locations north of St Peter Port Harbour (including St Sampson's Harbour and Longue Hougue South) typically achieved amber ratings against the assessment criteria, due to the difficult navigation access and/or environmental footprint.

The location east of QE II Marina in relatively deep water resulted in generally higher ratings than locations further north.

In Havelet Bay, south of St Peter Port Harbour, the environmental footprint and the main island power cable from Jersey typically led to amber ratings against the assessment criteria.

The existing facilities at St Peter Port Harbour generally met the assessment criteria, because their existing role ensured they met the environment, flexibility and built environment assessment criteria. Other assessment criteria could be met through reorganisation of facilities, which may involve the expansion of harbour operations into areas currently used for parking. In St Sampson's Harbour the evaluation was mixed because of the difficult marine access, known issues with the hydrocarbons upload and storage facilities failing to meet the Hydrocarbons Programme Critical Success Factors.

Scenarios considered

SCENARIO 0	SCENARIO 1	SCENARIO 2	SCENARIO 3
Leisure and commercial	Commercial sector only		
<div>Do Nothing</div> <div>Option 0.1: Do Nothing at St Peter Harbour</div> <div>Option 0.2: Do Nothing at St Sampson's Harbour</div>	<div>Do Minimum</div> <div>Option 1.1: Reconfiguration of existing landside space & international passenger facilities on the New Jetty</div> <div>Option 1.2: Reconfiguration of existing landside space & international passenger facilities on Cambridge berth</div> <div>Option 1.3: Reconfiguration of existing landside space and providing passenger terminal above car marshalling area</div>	<div>E of QE II Marina</div> <div>Option 2.1: Breakwater and land reclamation with quay space.</div> <div>Option 2.2: Breakwater, dredging and land reclamation with quay space.</div>	<div>Longue Hougue South</div> <div>Option 3.1: Most commercial sectors to new port adjacent to Longue Hougue South</div> <div>Option 3.2: LoLo and bulk to new port adjacent to Longue Hougue South</div>
SCENARIO 4	SCENARIO 5	SCENARIO 6	
Leisure sector only			
<div>Cruise Sector</div> <div>Option 4.1: Breakwater, dredging and land reclamation with quay space.</div> <div>Option 4.2: Additional tender berth</div>	<div>Leisure Sectors</div> <div>Option 5.1: Breakwater, dredging, additional marinas (St Peter Port & St Sampson's) and super yacht dedicated berth</div> <div>Options 5.2, 5.3: Breakwater, dredging, additional marinas (St Peter Port) and super yacht dedicated berth.</div>	<div>Havelet Bay Leisure Sectors</div> <div>Option 6.1: Havelet Bay Marina</div>	

Conclusions

All scenarios and their associated options are summarised in the table below. This table summarises each options' overall compliance with spatial and facilities requirements and the project's assessment criteria. Where the option is designed to cover only some sectors, compliance with the spatial and facilities requirements is presented only in relation to these sectors. The table also provides a capital cost estimate for each option.

Scenario / option	Meets relevant spatial and facilities requirements	Meets assessment criteria	Estimated capital cost range* (GBP) million
Scenario 0: Do Nothing			
Option 0.1: Do Nothing at St Peter Port Harbour	Partly	Partly	0
Option 0.2: Do Nothing at St Sampson's Harbour	Partly	Partly	0
Scenario 1: Do Minimum at St Peter Port Harbour for commercial sectors			
Option 1.1: Minimum changes at St Peter Port Harbour to meet requirements	Mostly	Yes	21 to 35
Option 1.2: Optimised St Peter Port Harbour layout to meet requirements and improve efficiency and security	Yes	Yes	27 to 45
Option 1.3: Alternative St Peter Port Harbour layout to meet requirements and improve efficiency and security	Yes	Yes	32 to 53
Scenario 2: Move St Peter Port Harbour commercial sectors to new facility East of QE II marina			
Option 2.1: E of QE II Marina no dredging	Yes	Partly	255 to 423
Option 2.2: E of QE II Marina most compact layout	Yes	Partly	217 to 360
Scenario 3: New Port for commercial sectors adjoining Longue Hougue South			
Option 3.1: Most commercial sectors to new port adjoining Longue Hougue South	Yes	Partly	164 to 272
Option 3.2: LoLo and bulk to new port adjoining Longue Hougue South	Yes for selected sectors	Partly	121 to 201
Scenario 4: Provide new cruise facilities			
Option 4.1: Cruise berth E of QE II marina	Yes	Partly	144 to 239
Option 4.2: Additional cruise tender berth	Yes	Yes	1.4 to 2.3
Scenario 5: Address future requirements for leisure facilities			
Option 5.1: New St Peter Port breakwater and marina with extended St Sampson's marina	Yes	Yes	60 to 100
Option 5.2: New breakwater, fishing quay and marinas in St Peter Port	Yes	Yes	70 to 115
Option 5.3: New breakwaters and marinas in St Peter Port with repurposed commercial berths	Yes	Yes	65 to 105
Scenario 6: Repurpose Havelet Bay			
Option 6.1: Havelet Bay Marina	Yes for selected sectors	Partly	55 to 95

Table 0.1: Summary of scenario compliance and cost

* Costs presented include Green Book recommended 66% optimism bias for high values and excludes any bias for low values

While no one option provides a solution for all commercial and leisure sectors, some options could be combined to address this. For example, if the following options were combined all spatial and facilities requirements and assessment criteria would be met:

- Option 1.2: Optimised St Peter Port Harbour layout to meet requirements and improve efficiency and security
- Option 5.1: New St Peter Port Harbour breakwater and marina with extended St Sampson's marina
- Option 4.2: Additional cruise tender berth

These options do not include a dedicated cruise ship berth, but that could be provided by replacing Option 4.2 with Option 4.1: Cruise berth E of QE II marina.

This example combination would fully satisfy all current and future spatial and facilities requirements to 2050, including the high demand scenario and would meet all assessment criteria. If Option 4.2 were progressed rather than 4.1, this could be achieved at the lowest capital cost.

Other combinations could be selected to achieve similar benefits, though at differing costs.

For the scenarios involving relocation of commercial activities from the existing ports, no assessment of the value/benefit to Guernsey has been considered regarding the space freed up within St Peter Port Harbour or St Sampson's Harbour. This assessment is beyond the scope of this FHRS 2020 but may be assessed at a later stage within the Harbour Development Programme or Seafront Enhancement Area (SEA) programme.

Limitation statement

The sole purpose of this report is to describe the development and evaluation of potential future harbour requirements for Guernsey within the framework of the Future Harbour Requirements Study 2020, as detailed in a contract between States of Guernsey and Jacobs.

Indicative harbour layouts and cost estimates have been prepared for comparative purposes only and will require further design development, site investigations and cost estimation to reduce uncertainty.

This report should be read in full, with no excerpts to be representative of the findings.

This report has been prepared exclusively for the States of Guernsey and no liability is accepted for any use or reliance on the report by third parties.

1. Introduction

1.1 Purpose

This report covers the options development and evaluation for the Future Harbour Requirements Study 2020 (FHRS 2020) carried out for the States of Guernsey (SoG).

1.2 Objective and context of the project

The objective of the FHRS 2020 is to evaluate the harbour requirements with the aim of identifying options to cater for the future needs of the harbours. The FHRS 2020 will also provide an updated version for the FHRS 2010 (carried out by Jacobs (formerly Halcrow)) and support a requête approved in May 2019 to:

"....carry out a detailed analysis of the future harbour requirements, including consideration of any requirement for new berth facilities east of the QEII marina or nearer to St Sampson's Harbour, and an assessment of the impacts, practicalities, and potential benefits of relocating some commercial port operations away from St Peter Port, and to report back to the States by December 2020....";

The requête is to be addressed in full by the Harbour Development Programme. The FHRS 2020 is only one part of the Harbour Development Programme, as on its own it does not address all of the questions raised in the requête.

1.2.1 Discovery

The project started with a Discovery phase – to collect/collate existing data, identify gaps that may affect the successful delivery of the Analysis phase and to make recommendations on how to fill the gaps or deal with the uncertainties arising. We have presented the results in the Discovery Report (B2382200-JAC-01-XX-RP-C-0001).

During the Discovery phase we confirmed the key facilities and services provided in St Peter Port and St Sampson's Harbour as illustrated in Figure 1.1 and Figure 1.2 respectively.

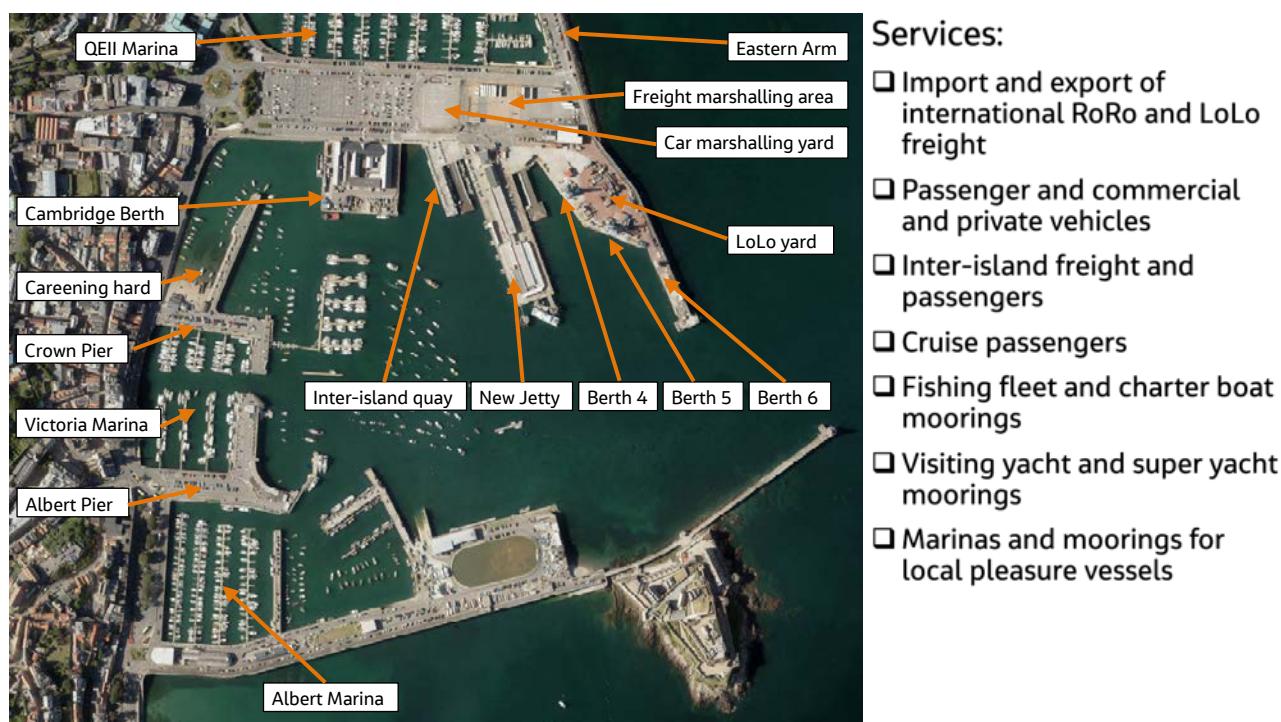


Figure 1.1: Key facilities and services in St Peter Port Harbour (image: Copyright States of Guernsey 2020)

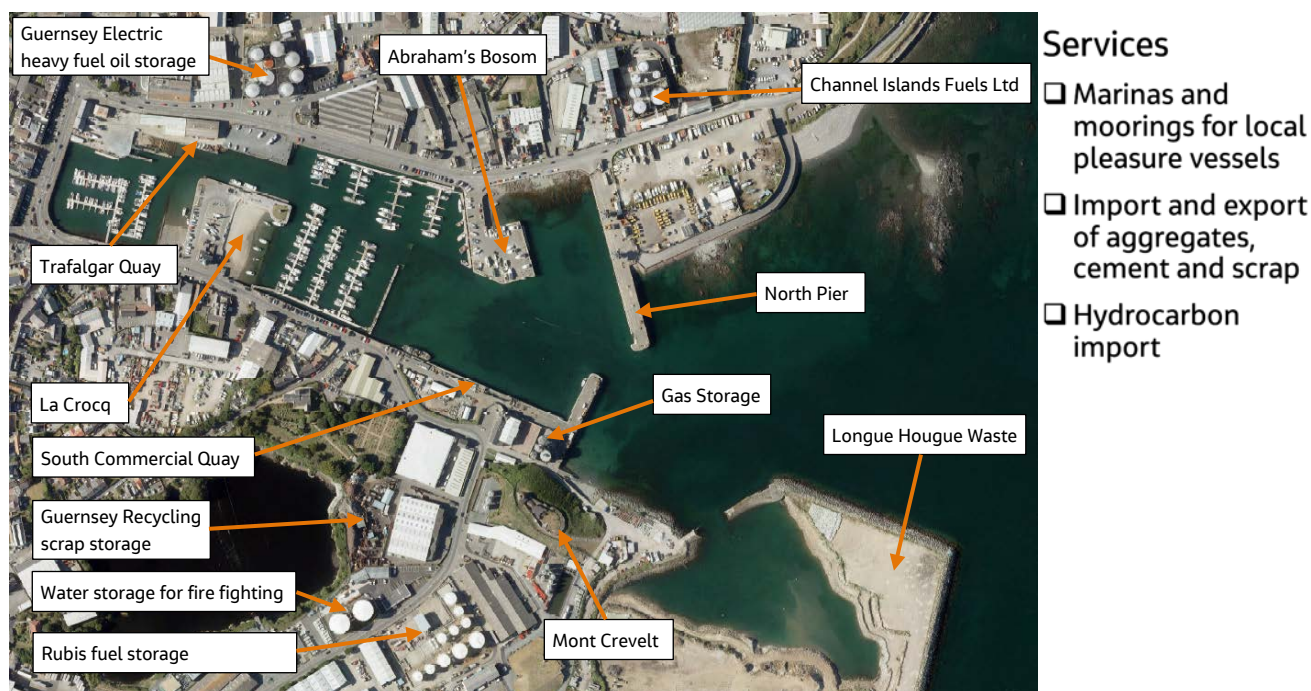


Figure 1.2: Key facilities and services in St Sampson's Harbour (image: Copyright States of Guernsey 2020)

1.2.2 Stakeholder engagement

We followed the Discovery phase with an initial engagement with port users to understand their existing operations, their plans/needs for the future and to get information/data from them to supplement that gained in the Discovery phase. A summary of the meetings is presented in the Guernsey Stakeholder Meetings Summary (B2382200-JAC-01-XX-CO-C-0001).

1.2.3 Demand forecast, spatial and facilities requirements

These activities helped to inform our demand forecast and development of the facility and spatial requirements needed to meet the demand. We reported these activities in the Demand Forecast (B2382200-JAC-02-XX-RP-C-0001) and Facilities and Spatial Requirements (B2382200-JAC-02-XX-RP-C-0002) reports respectively. Both the demand forecast and the spatial and facilities requirements were developed for each of the commercial and leisure sectors defined by Guernsey Harbour (Figure 1.3). Bulk liquids demand and associated spatial and facilities requirements were not assessed as these were and are still being developed as part of the ongoing Hydrocarbons Supply Programme. However, the options considered for the other commercial and leisure activities in this study will be influenced by the Hydrocarbons Supply Programme, this will be discussed further in the Output Phase report.

Commercial	Leisure
<ul style="list-style-type: none"> ▪ Unitised cargo <ul style="list-style-type: none"> – LoLo – RoRo ▪ Bulk solid ▪ International passenger and vehicular traffic <ul style="list-style-type: none"> – Passenger traffic – Private vehicles/small commercial vehicles – Car import/export ▪ Inter-island freight (Alderney) 	<ul style="list-style-type: none"> ▪ Cruise ships ▪ Visiting yachts ▪ Local yachts ▪ Super yachts ▪ Inter-island passenger ▪ Inter-island freight (Herm, Sark and Brecqhou) ▪ Fishing fleet

Figure 1.3: Port sectors as defined by Guernsey Harbours for evaluation of demand, spatial and facilities requirements

Note "International" passengers are those travelling outside of Bailiwick of Guernsey, while "Inter-island" passengers are those travelling between islands within the Bailiwick

The demand forecasts typically showed static demand or decline in demand over the forecast periods except under the high scenarios, in which demand increased in many sectors. The spatial and facilities requirements assessment showed that the space currently occupied by each sector was typically sufficient for current needs, but additional landside space was required by some sectors as illustrated in Table 1.1.

Sector	Historic trend (2008 - 2019)	2019 Demand	2050 Low demand forecast	2050 Base demand forecast	2050 High demand forecast	Additional facilities required 2050 high demand forecast
Unitised cargo (tonnage)	Decline (-0.8%)	200,000	193,100	218,900	303,000*	+3,000m ² landside LoLo +1,600m ² landside RoRo
Bulk liquid cargo (tonnage)	Decline (-2.5%)	75,000	42,000	52,200	69,300	New terminal and storage facility location or convert to unitised cargo
Bulk solid cargo (tonnage)	Decline (-6.2%)	41,000	0**	20,000	135,000	No further requirements
International passenger traffic (No.)	Decline (-0.6%)	288,000	236,000	236,000	528,000	+300m ² passenger terminal, +1,000m ² parking, 15m berth extension
Private vehicles and small	Decline	95,000	84,000	96,000	157,000	+1,650m ² landside

Sector	Historic trend (2008 - 2019)	2019 Demand	2050 Low demand forecast	2050 Base demand forecast	2050 High demand forecast	Additional facilities required 2050 high demand forecast
commercial vehicles (No.)	(-0.5%)					
Car import and export (No.)	Decline (-7.5%)	3,570	345***	2,230	5,020	No further requirements
Inter-island passengers (No.)	Growth (+1.1%)	137,000	100,000	138,200	183,000	No further requirements
Inter-island freight (tonnage)	Growth (+0.49%)	9,800	7,170	11,500	19,950	No further requirements
Visiting yachts (No.)	Decline (-2.3%)	8,800	6,500	8,000	14,300	2 x shower and toilet blocks
Local yachts (No.)	Growth (+0.7%)	1,767	646****	1,760	2,110	+32,000m ² +343 berths
Super yachts (No.)	Growth (+33%)	29	6	45	70	90m long 4.5m deep berth, 90m ² fuelling area
Fishing & charter vessels (No.)	Decline (-2.6%)	120	46	118	149	+1,650m ² marine area for +29 berths
Cruise*****	Growth (0.4%)	116,000	95,000	176,000	286,000	50m tender berth extension

* High forecast assumes bulk liquid cargo transfers to unitised

** Low forecast assumes demand is met by unitised cargo rather than bulk cargo

*** Low forecast assumes new cars imported directly by end customer and recognised car parc has longer life, so vehicle turnover is slower

**** Low forecast assumes same rate of decline in local yachts as per recent trends (2016-2019)

***** Figures for cruise includes initial estimate of recovery post COVID-19

Table 1.1: Summary of demand and facilities requirements

1.2.4 Assessment criteria

The assessment criteria set out below were developed to enable the evaluation of options. Each option is considered against each of the assessment criteria in a high-level, qualitative manner to help in comparing the relative merits of each option against criteria considered important to the project.

Assessment criteria	Comment
Meets base demand and spatial/facilities requirements in 2030	Our evaluation against this criterion relates only to the sectors which the option is designed to address
Meets base demand and spatial/facilities requirements in 2050 and could meet high/low demand	Our evaluation against this criterion relates only to the sectors which the option is designed to address
Limited environmental footprint	<p>There is limited information about the marine environment around Guernsey, therefore this assessment considered only the scale and nature of options in terms of their likely relative environmental impact on the broad marine environment, in the immediate vicinity of the development, without considering local sensitive receptors or environmental designations in any detail</p> <p>It is recognised in the States of Guernsey Biodiversity Strategy (2015) that a lack of marine habitat and species data is a threat to the biodiversity of Guernsey's marine environment. In the context of this report, where the presence of important marine habitats (i.e. Maerl or Eelgrass beds) at a site is known, these have been flagged in the RAG status in each of the options to be considered. Where there is a lack of environmental data for a site, options will be flagged in accordance with the precautionary principle, in order to note that there is potentially an internationally important habitat at this site, but that this is yet to be determined</p>
Meets or exceeds safety and reliability of existing facilities	We assumed that existing facilities (except hydrocarbon imports) meet or exceed Guernsey's safety needs. However, reliability in some sectors may not be adequate at existing facilities
Can be delivered in stages to allow flexibility and financial management	Where major capital works are required, consideration is given to whether the facilities could be developed or used in part before the whole/substantial part is constructed
Has synergy with other States of Guernsey infrastructure programmes	We considered (to the extent possible) the Hydrocarbons Supply Programme, Inert Waste Project, Coastal Defence in Belle Grève Bay, the Visit

Assessment criteria	Comment
	Guernsey Strategy and the Seafront Enhancement Area (SEA) Programme
Provides additional (non-harbour related) benefits to Guernsey	Principally this considered whether an option freed up space within the existing harbour areas that might be used for other purposes
Will have a neutral or positive impact on the built environment	A high-level assessment against considerations such as visual, noise or traffic impacts

Table 1.2: Assessment criteria

1.3 This report

A range of options were developed and evaluated to meet the demand forecast and the assessment criteria. The following sections of this report are summarised below:

- Section 2 - outlines the sectors and locations considered and their pros and cons
- Section 3 - presents options for the do nothing and do minimum scenarios at the existing harbour locations
- Section 4 - presents options for commercial activities at other locations
- Section 5 - presents options for leisure sectors

2. Sectors and locations

2.1 Port sectors

We used thirteen port sectors/functional elements, based on those identified in Figure 1.3 and used in the demand forecast, spatial and facilities requirements assessment:

- Unitised cargo – RoRo
- Unitised cargo – LoLo
- International passengers
- Inter-island freight
- Inter-island passengers
- Bulk liquids
- Bulk Solids
- Cruise ships (alongside berth)
- Cruise ship tenders
- Visiting yachts
- Local yachts
- Super yachts
- Fishing and charter

2.2 Locations

We considered six general locations on Guernsey's east coast based on the location of existing facilities, the requirements of the requête and the unsuitability of other more distant locations (Figure 2.1).

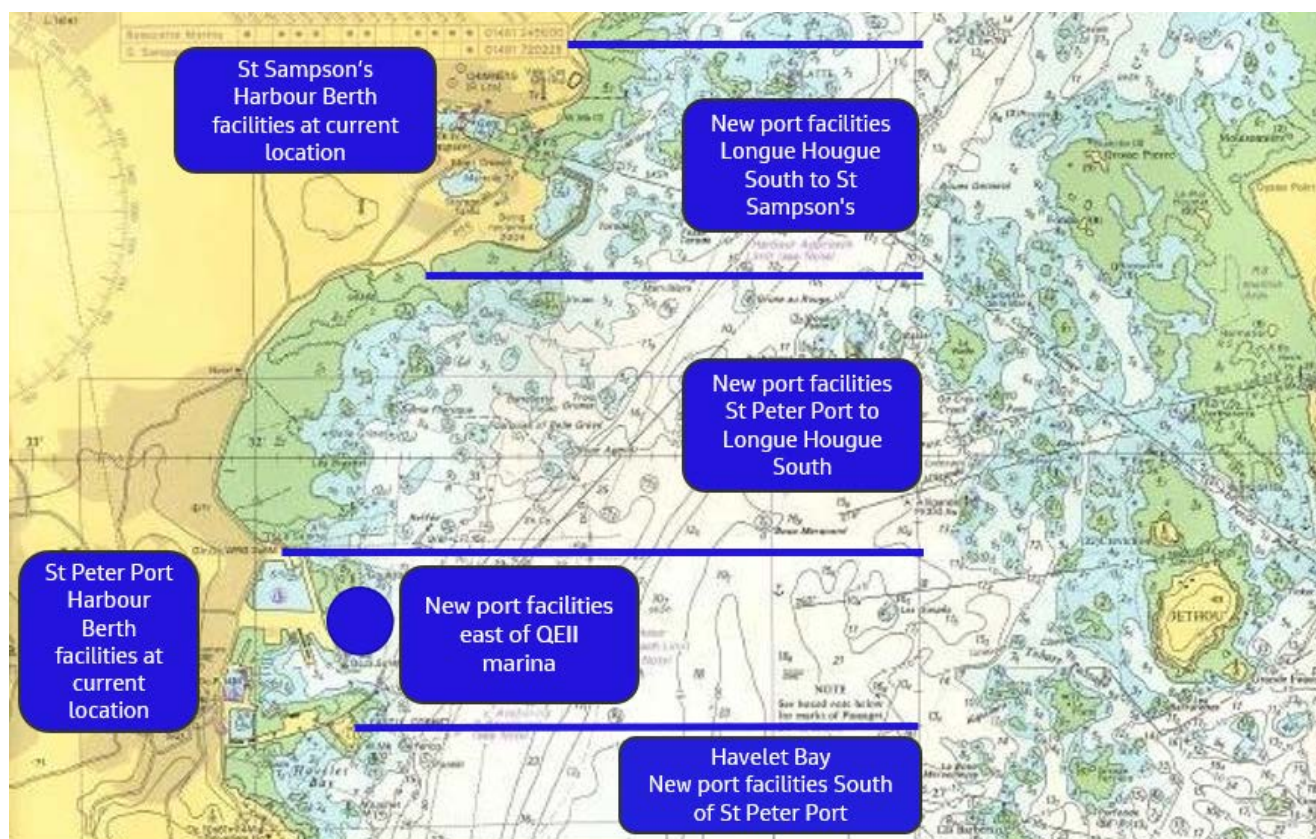


Figure 2.1: Six locations considered

During our previous work on both the Future Harbour Requirement Study (2010) and the Guernsey Hydrocarbons Supply Programme (GHSP Upload Location Study 684723-CH2-SOC-00-RP-0008) we used a similar grouping of locations on the east coast. Those locations and their boundaries were developed in consultation with the Guernsey Harbour Pilots when considering potential locations for port facilities and during

the Hydrocarbons Supply Programme; specifically, a hydrocarbons upload facility (fixed jetty or single point mooring). The advantages and disadvantages of different locations around the coast of Guernsey were also considered. Locations on the north, west and south coast were excluded, mostly due to adverse wind/wave exposure and a lack of natural deep water. Thus, we feel that all potentially viable locations for Guernsey's future harbour requirements are covered by the six zones illustrated in Figure 2.1.

2.3 Evaluation of locations

In the following figures we provide an overview of how locations perform against the assessment criteria and give a high-level summary of some of the pros and cons (opportunities / constraints) of each location. The summary does not differentiate between sectors or specific scenarios at these locations, as that is covered in more detail in later sections. This section tries to provide a simple overview of the key differences between locations when considered against the project's assessment criteria.

New port facilities Longue Hougue South to St Sampson's

Opportunities

- Synergies with Hydrocarbon Supply Programme
- Release space in St Peter Port
- Remove current constraints with a facility close to existing port
- Synergy with hydrocarbons, inert waste programme and SEA



Constraints

- Limited depth
- Navigational challenges
- Environmentally sensitive

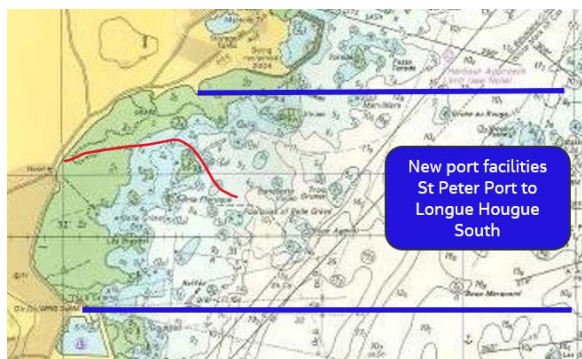
Assessment criteria	RAG	Notes
Meets demand in 2030 and 2050	Green	New facilities could be developed to meet demand but likely at high cost
Environmental (natural)	Yellow	Shallow water and unsheltered therefore all solutions likely to require dredging and breakwaters. Known areas of maerl beds offshore
Safety and reliability	Yellow	Can improve safety and reliability by providing deeper berths, however navigation to new facility will be subject to high cross currents. Adverse effect if leisure sectors are relocated as they will be further away from town
Financial flexibility (delivering in stages)	Yellow	Most solutions require construction of a breakwater and need to be built in a single phase
Synergies with other programmes	Green	Hydrocarbons – potentially could be combined with landside facility requirements Inert Waste - possible to merge with development at Longue Hougue South SEA – frees up space in St Peter Port, potentially allowing “SEA” sectors to grow Transport and tourism – adverse effect if leisure sectors are relocated as they will be further away from town
Enhances built environment	Yellow	Positive if commercial activities moved out of existing locations, but local visual impact may be adverse

Table 2.1: Characteristics of locations north of St Peter Port Harbour – Longue Hougue South to St Sampson's

New port facilities St Peter Port Harbour to Longue Hougue South

Opportunities

- Synergies with Hydrocarbon Supply Programme
- Release space in St Peter Port
- Large area available



Constraints

- Limited depth
- Exposed to waves and currents
- Long sea outfall
- Environmentally sensitive
- Distance landfill
- Away from town center for recreational users

Assessment criteria	RAG	Notes
Meets demand in 2030 and 2050	Green	New facilities could be developed to meet demand but likely at high cost
Environmental (natural)	Yellow	Shallow water and unsheltered therefore all solutions likely to require dredging and breakwaters along a coastline that is an 'Area of Biodiversity Importance'
Safety and reliability	Yellow	Can improve safety and reliability by providing deeper berths than existing however sectors are moved further away from ultimate destinations
Financial flexibility (delivering in stages)	Yellow	Most solutions require dredging and construction of a breakwater and need to be built in a single phase
Synergies with other programmes	Yellow	Hydrocarbons – potentially could be combined with landside and marine facility requirements SEA – frees up space in St Peter Port, potentially allowing "SEA" sectors to grow Transport and tourism – adverse effect if leisure sectors are relocated as they will be further away from town
Enhances built environment	Yellow	Positive if commercial activities moved out of existing locations, but local visual impact to Belle Greve Bay

Table 2.2: Characteristics of locations north of St Peter Port Harbour – St Peter Port to Longue Hougue South.

As shown above, locations north of St Peter Port Harbour typically had amber ratings against most criteria.

New port facilities east of QEII marina

Opportunities

- Naturally deep water
- Merge with SEA and Tourism strategy
- Close to existing port facilities



Constraints

- Exposed to waves and currents
- Potentially environmentally sensitive

Assessment criteria	RAG	Notes
Meets demand in 2030 and 2050		New facilities could be developed to meet demand but likely at high cost
Environmental (natural)		Will require construction of breakwaters but due to naturally deep water extensive dredging may be avoided/reduced. Potentially environmentally sensitive area
Safety and Reliability		Improved navigation and deeper berths. New facilities can be designed to improve safety and reliability
Financial flexibility (delivering in stages)		Most solutions require some dredging and construction of a breakwater and need to be built in a single phase
Synergies with other programmes		Hydrocarbons – Space allowance for hydrocarbons to be transferred through unitised cargo SEA – Frees up space in St Peter Port Harbour, potentially allowing “SEA” sectors to grow Transport and tourism – Increase in space for leisure sectors close to St Peter Port
Enhances built environment		Local visual impact from the land and approaching St Peter Port

Table 2.3: Characteristics of location east of St Peter Port Harbour

Havelet Bay new port facilities south of St Peter Port Harbour

Opportunities

- Can separate commercial and non-commercial activities



Constraints

- Exposed to waves and currents
- Environmentally sensitive

Assessment criteria	RAG	Notes
Meets demand in 2030 and 2050		New facilities could be developed to meet demand for some sectors but likely at high cost
Environmental (natural)		Will require construction of breakwaters and dredging in a environmentally sensitive area
Safety and reliability		New facilities in some sectors can be designed to improve safety and reliability
Financial flexibility (delivering in stages)		Most solutions require some dredging and construction of a breakwater and need to be built in a single phase
Synergies with other programmes		SEA – frees up some space in St Peter Port Harbour, potentially allowing “SEA” sectors to grow Transport and tourism – increase in space for leisure sectors close to St Peter Port
Enhances built environment		Provides new marina close to St Peter Port town, interacts with electricity cable landfall

Table 2.4: Characteristics of location south of St Peter Port Harbour

When compared with options to the north of St Peter Port Harbour, options to the east of St Peter Port Harbour have fewer constraints and more opportunities, leading to more green assessments. While Havelet Bay is more comparable to options north of St Peter Port Harbour with more constraints than opportunities.

Retain berth facilities at St Sampson's Harbour

Opportunities

- Can build some solutions in phases
- Existing infrastructure in place
- Sheltered



Constraints

- Limited depth
- Limited quay space
- Navigational access issues
- Road access constraints
- Hydrocarbons storage and upload health and safety issues

Assessment criteria	RAG	Notes
Meets demand in 2030 and 2050	Yellow	Do Nothing/Do Minimum options could meet demand for some sectors
Environmental (natural)	Green	Due to limited construction works/works being carried out in an existing port environment impacts are limited
Safety and reliability	Red	Current hydrocarbons and upload facilities do not meet Hydrocarbons Supply Programme critical success factors
Financial flexibility (delivering in stages)	Yellow	New vessels and new storage required unless hydrocarbons convert to unitised supply
Synergies with other programmes	Yellow	No alignment with other programmes
Enhances built environment	Green	No significant change to the existing environment

Table 2.5: Characteristics of existing facilities at St Sampson's Harbour

Retain berth facilities at St Peter Port Harbour

Opportunities

- Can build some solutions in phases
- Existing infrastructure in place
- Sheltered
- Space to improve local and visiting yachts



Constraints

- Not full tidal access for some sectors
- Conflicts between commercial and non-commercial sectors

Assessment criteria	RAG	Notes
Meets demand in 2030 and 2050		Do Nothing/Do Minimum options could meet demand for sectors
Environmental (natural)		Due to limited construction works/works being carried out in an existing port environment impacts are limited
Safety and reliability		Do Minimum options could improve safety and reliability
Financial flexibility (delivering in stages)		Do Minimum will likely have relatively low cost and may be developed in stages
Synergies with other programmes		No alignment with other programmes
Enhances built environment		No significant change to the existing environment

Table 2.6: Characteristics of existing facilities at St Peter Port Harbour

The existing facilities at St Peter Port Harbour generally rated well, but St Sampson's Harbour scored less well due to issues with navigation and arrangements for hydrocarbons upload and storage.

2.4 Location conclusion

As a result of the location analysis, consideration was not given to the development of new facilities between St Peter Port Harbour and the southern part of Belle Grève Bay. All other locations have been included in the scenarios developed.

In the following sections we outline several harbour development options under three broad themes:

- Keep commercial sectors at existing locations – Section 3
- New locations for commercial sectors – Section 4
- Improved provision for leisure sectors – Section 5

Each scenario and option is summarised in the following sections. Further details are provided in Appendix B - Technical Notes.

3. Keep commercial sectors at existing locations

3.1 Scenario 0: Do Nothing

Here we describe the current port facilities and assess how they meet the assessment criteria including the spatial and facilities requirements for the future demand scenarios.

3.1.1 Option 0.1: Do Nothing at St Peter Port Harbour

Key features

- Commercial facilities provided for RoRo, LoLo, international and Inter-island passengers and inter-island freight
- Leisure facilities provided for cruise tender access, local and visiting yachts, fishing and charter sectors
- Some capacity to handle super yachts, but no dedicated berth or refuelling facilities
- Harbour offices
- Variety of local businesses housed in office/workshop/retail spaces
- Car parking

Cost estimate

There will be ongoing maintenance costs to keep these facilities operating over the life of the forecast period. However, in line with the cost estimates for the other options, these are excluded from this analysis. There is no capital cost associated with this option.

Pros and cons

Pros	Cons
Existing facilities cope with existing demand	Queues and bottlenecks can occur in commercial and leisure sectors at peak times and may be limiting demand in some sectors
Existing facilities are close to centre of St Peter Port	ISPS Security arrangements for international trade/tourism are complex and non-optimal
	Many of the future spatial and facilities requirements are not met under the high scenario (see table below)

Table 3.1: Pros and Cons for Option 0.1

Compliance with spatial and facilities requirements

In Appendix A we present a summary table showing how Option 0.1 complies with the spatial and facilities requirements described in the Spatial and Facilities Requirements Report B2382200-JAC-02-XX-RP-C-0001 and Demand Forecast B2382200-JAC-02-XX-RP-C-0002. We consider each sector independently and assume each needs to provide for the peak demand forecast from present day to 2050.

Compliance with assessment criteria

Compliance of the Do Nothing option is assessed against the assessment criteria using a Red, Amber, Green (RAG) approach as illustrated below. As there are no new facilities, the environmental and flexibility assessment criteria are met. As the demand for some sectors does not increase over time these assessment criteria are partly met.

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for some sectors
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Fails requirements for several sectors
Safety reliability, environment, flexibility		
Improves safety and reliability over existing facilities		Yes, for some sectors
Limited environmental footprint		Existing
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Existing
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral
Positive impact on built environment		Existing

Table 3.2: Option 0.1 compliance with assessment criteria

3.1.2 Option 0.2: Do Nothing at St Sampson's Harbour

Key features

- All bulk liquids imported through the facility with two drying berths (shared with bulk solids), dedicated manifolds and adjacent hydrocarbons storage and distribution facilities
- All bulk solids currently imports/exported through two drying berths (shared with bulk liquids)
- Tidal restricted access for bulk vessels and Not Always Afloat But Safely Aground (NAABSA) capable bulk vessels required
- Marina with 331 berths
- Quayside parking

Cost estimate

There will be ongoing maintenance costs to keep these facilities operating over the life of the forecast period. However, in line with the cost estimates for the other options, these are excluded from this analysis. There is no capital cost associated with this option.

Pros and cons

Pros	Cons
Commercial activities are away from St Peter Port	Commercial vessel marine access severely restricted
Existing bulk liquids storage facilities are nearby	Safety of hydrocarbons storage and upload does not meet Hydrocarbons Programme critical success factors
Power station which uses hydrocarbons is nearby	Existing bulk liquid vessels will be retired within the planning horizon for this project
Local yachts have alternative location to St Peter Port	

Table 3.3: Pros and Cons for Option 0.2

Compliance with spatial and facilities requirements

In Appendix A we present a summary table showing how Option 0.2 complies with the spatial and facilities requirements described in the Spatial Requirement Study Report (B2382200-JAC-02-XX-RP-C-0002) and Demand Forecast (B2382200-JAC-02-XX-RP-C-0001). We consider each sector independently and assume each needs to provide for the peak demand forecast from present day to 2050. We present first the commercial sectors and then the leisure sectors at St Sampson's Harbour.

This project does not make any assessment of the requirements for bulk liquids as these were assessed in the Hydrocarbons Supply Programme. We have therefore used the requirements developed in that study to provide a high-level assessment of compliance of the existing facilities at St Sampson's Harbour.

Compliance with assessment criteria

Do Nothing option is measured against the assessment criteria using the RAG approach illustrated below. As there are no new facilities, the environmental and flexibility assessment criteria are met. As the demand for some sectors does not increase over time, these assessment criteria are partly met. Safety/ reliability is flagged as red, as the existing facilities fail to meet the Hydrocarbons Supply Programme assessment criteria for bulk liquids. The navigation approach and access for all bulk vessels is also difficult and tidally restricted.

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Fails for bulk liquids
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Fails for bulk liquids
Safety, reliability, environment and flexibility		
Improves safety and reliability over existing facilities		Fails Hydrocarbons assessment criteria, tidally restricted difficult navigation for all bulk
Limited environmental footprint		Existing
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Existing
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral
Positive impact on built environment		Existing

Table 3.4: Option 0.2 compliance with assessment criteria

3.2 Scenario 1: Do Minimum at St Peter Port Harbour for commercial activities

Three options have been developed, retaining all commercial operations within the existing port area at St Peter Port. In this scenario we assume bulk solids remain at St Sampson's Harbour. We assume that bulk liquids are accommodated through the recommendations in the Hydrocarbons Supply Programme either by provision of a multi-buoy mooring off the Longue Hougue reclamation or through conversion to unitised cargo.

3.2.1 Option 1.1: Minimum changes at St Peter Port Harbour to meet requirements

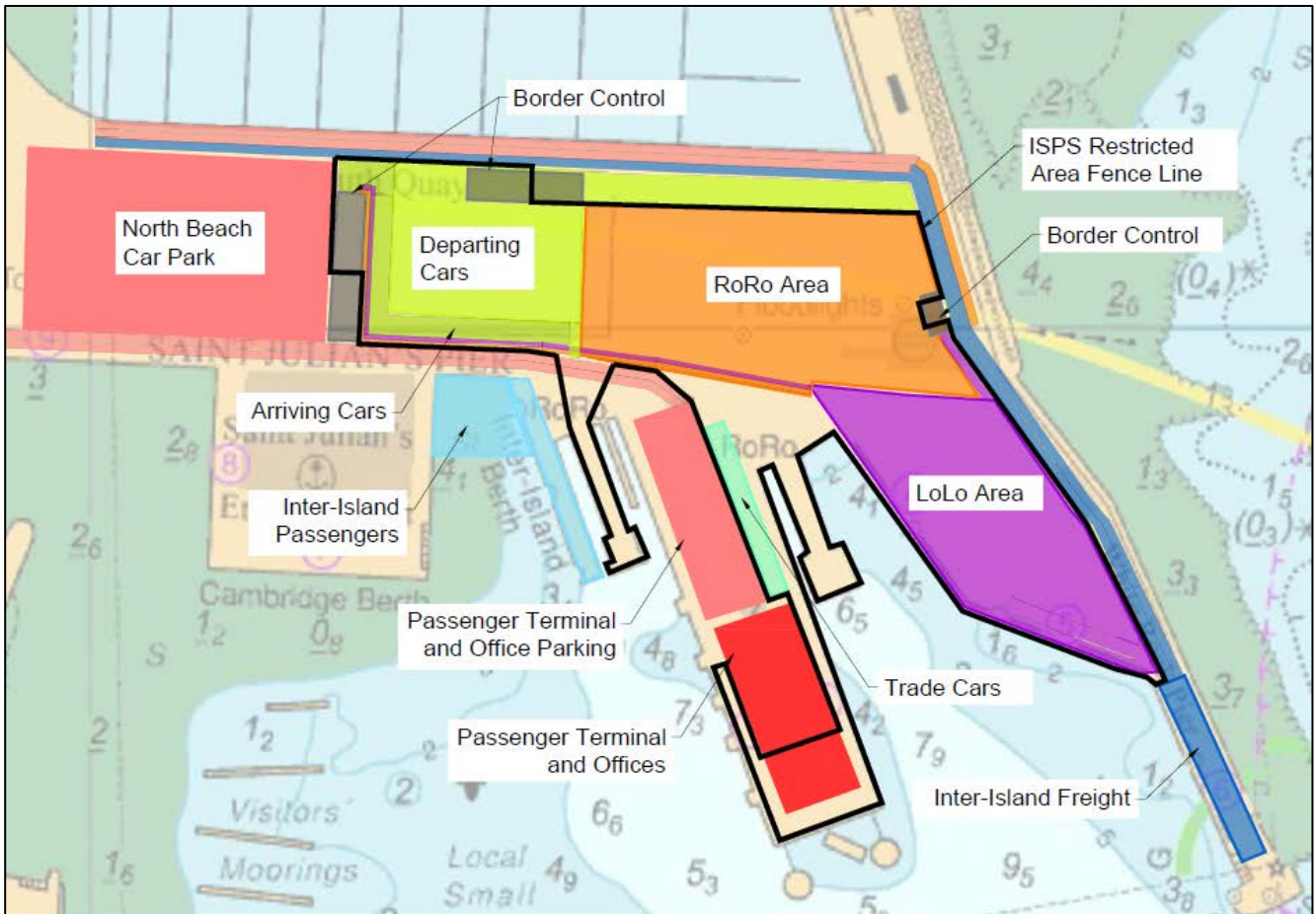


Figure 3.1: Option 1.1 layout

Key features

- Landside areas to accommodate future spatial requirements including the high demand scenario
- Extended building for international passenger terminal, parking spaces and drop/off areas for international passengers on the New Jetty to cover requirements of the high demand scenario
- Relocated Customs and border control area to improve traffic flow
- Provision of extra lanes for access roads to reduce town and port congestion
- Inter-island freight and passenger areas to remain unaltered
- LoLo and RoRo areas remain adjacent to enable fluctuation of market share between each other and the increased demand

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £21m or up to £35m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Meets all commercial demand scenarios and spatial and facilities requirements for sectors currently using the port	Requires relocation of some (non-port) businesses currently on the New Jetty to accommodate new passenger terminal and blue economy building
Improves and simplifies ISPS boundaries and interfaces	ISPS around RoRo ramp remains complex. Traffic to passenger terminal requires ramp to go over ISPS boundary.
Improves traffic circulation inside the port with potential to improve local traffic outside the port at peak periods	North Beach car park area is reduced by 5,000m ² (~45%) to accommodate layout changes
Provides improved flow through Customs and Excise facilities	

Table 3.5: Pros and Cons for Option 1.1

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for existing commercial sectors in the Port
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Meets requirements for existing commercial sectors in the Port
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		Improves reliability and safety
Limited environmental footprint		Existing
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Existing can be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral has no positive benefit
Positive impact on built environment		Comparatively low visual impact

Table 3.6: Option 1.1 compliance with assessment criteria

3.2.2 Option 1.2: Optimised St Peter Port layout to improve efficiency and security

Option 1.2 has a variant, Option 1.2a. The main difference between these variants is that in Option 1.2 non-port businesses currently located on Cambridge Berth are assumed to be relocated elsewhere, whereas in variant Option 1.2a, the space is provided by an extension to the Cambridge Berth.

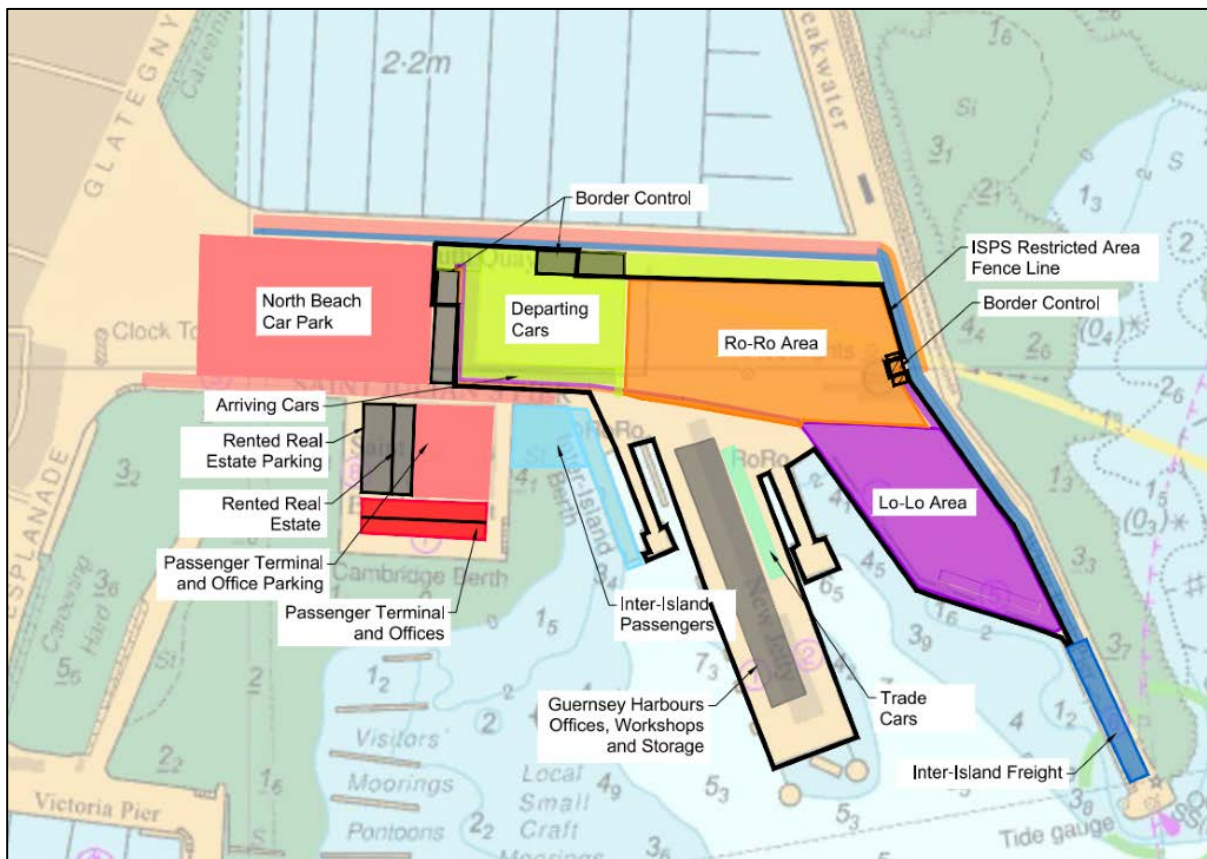


Figure 3.2: Option 1.2 layout

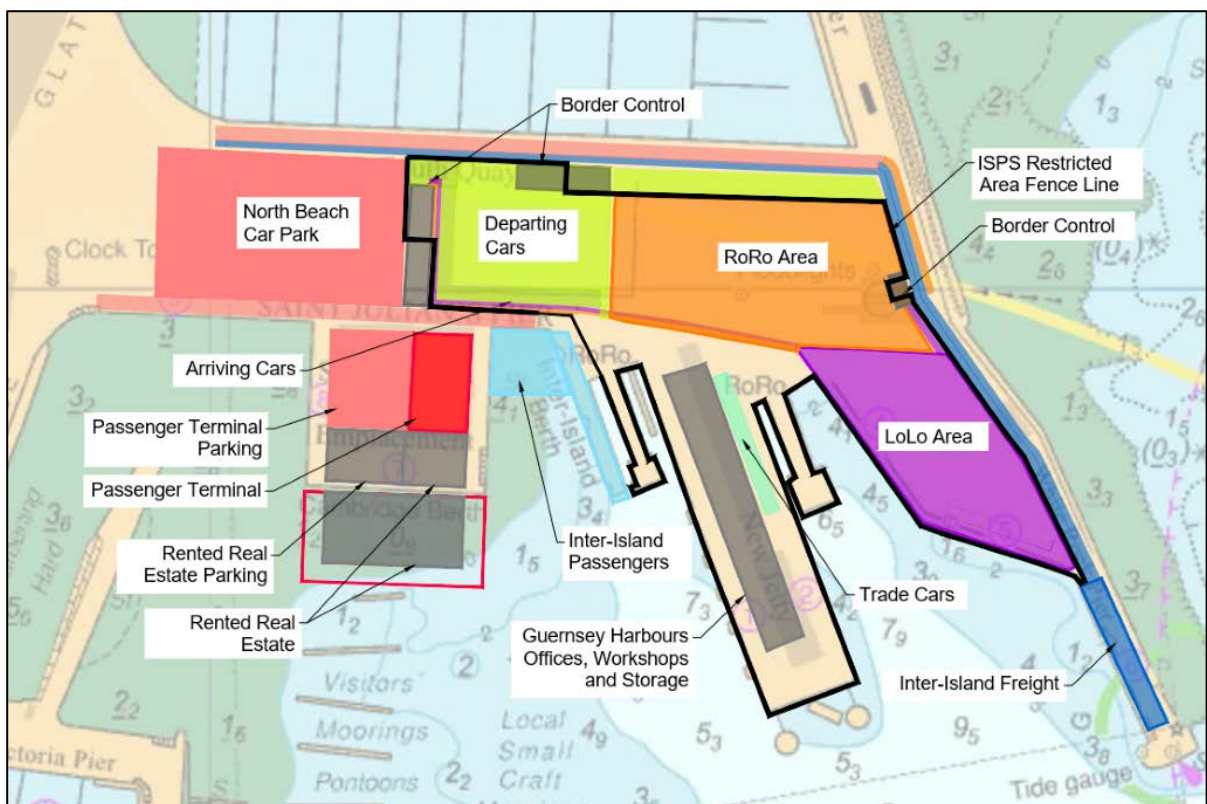


Figure 3.3: Option 1.2a layout

Key features

- Landside areas to accommodate future spatial requirements including the high demand scenario
- Demolition of existing buildings on Cambridge Berth to make space for port reconfiguration
- Provision of new buildings for international passengers' terminal, parking spaces and drop/off areas for international passengers on Cambridge berth to accommodate high scenario requirements
- Requires extra passenger transport facility (from terminal to vessels), vehicles and extra personnel
- In variant only - extension to Cambridge Berth to accommodate additional rented real estate
- Harbour Offices and maintenance facilities to be relocated on the New Jetty
- Provision of extra lanes for access roads to improve traffic circulation
- Inter-island freight and passengers' areas to remain unaltered
- LoLo and RoRo areas remain adjacent to enable fluctuation between each other and increased demand

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £27m or up to £45m including the Green Book recommended 66% optimism bias for this stage of concept definition, (for Option 1.2 only, excluding extension to Cambridge Berth).

Pros and cons

Pros	Cons
Meets all commercial demand scenarios and spatial and facilities requirements	Requires relocation of some/all (non-port) businesses currently on the New Jetty to accommodate new harbour offices moved from Cambridge Berth
Improves and simplifies ISPS boundaries and interfaces to provide one contiguous area	Option 1.2 requires relocation of all (non-port) businesses currently on the Cambridge Berth to a new (unidentified) location [Option 1.2a provided space for these facilities within the port]
Puts Harbour Offices inside the ISPS	North Beach car park area is reduced by 5,000m ² (~45%) to accommodate layout changes
Improves traffic circulation inside the port with potential to improve local traffic outside the port at peak periods	Requires extra passenger transport facility (from terminal to vessels), vehicles and extra personnel. This however could be negated with a passenger access structure between the terminal and the vessels
Provides additional parking for inter-island passenger drop off	

Table 3.7: Pros and Cons for Option 1.2

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for existing commercial sectors in the Port
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Meets requirements for existing commercial sectors in the Port
Safety reliability , environment and flexibility		
Improves safety and reliability over existing facilities		Improves reliability and safety
Limited environmental footprint		Existing
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Existing can be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral has no positive benefit
Positive impact on built environment		Comparatively low visual impact

Table 3.8: Option 1.2 compliance with assessment criteria

3.2.3 Option 1.3: Alternative St Peter Port layout to improve efficiency and security

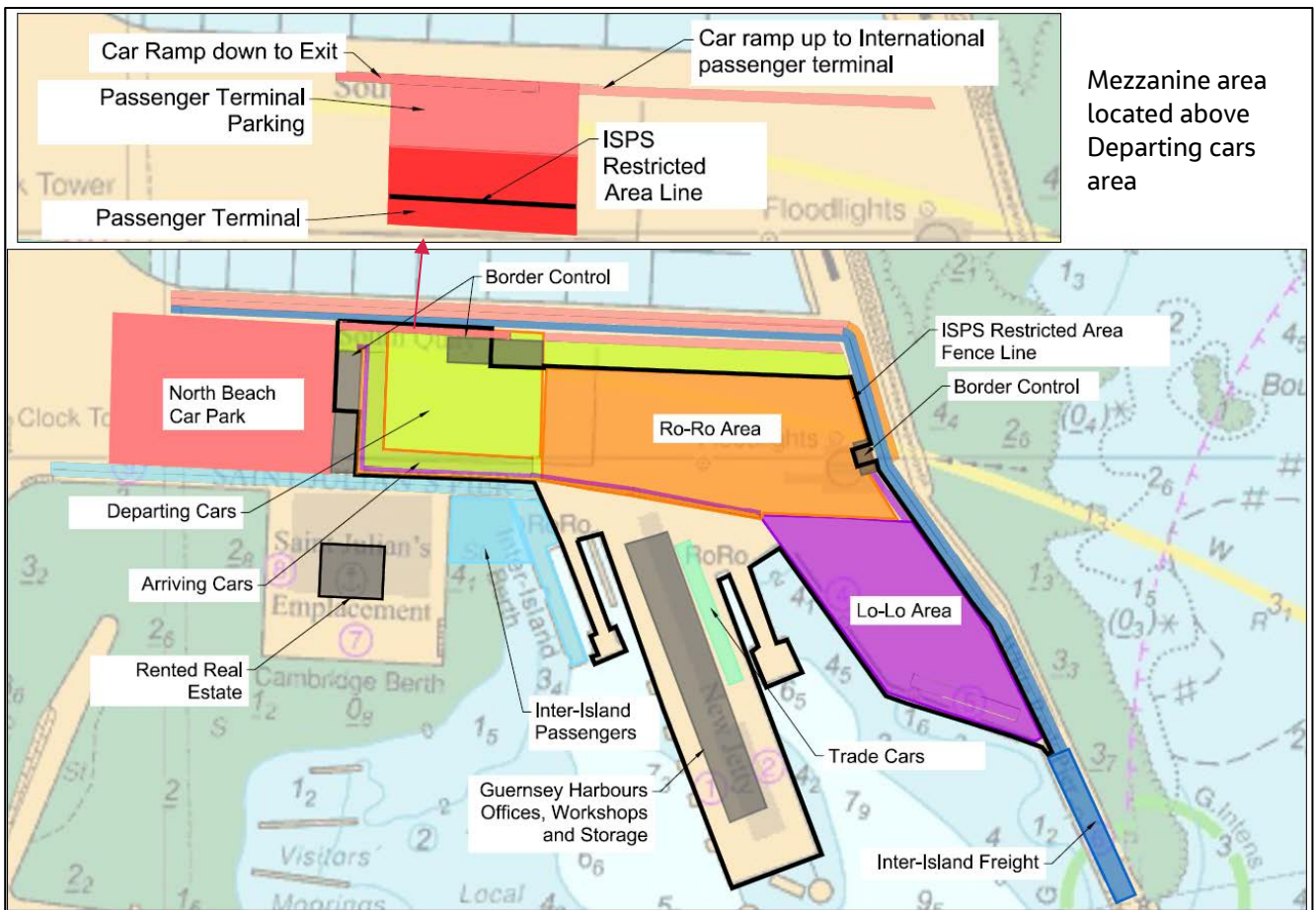


Figure 3.4: Option 1.3 layout

Key features

- Landside areas to accommodate future spatial requirements including the high demand scenario
- Demolition of existing buildings on Cambridge Berth to make space for port reconfiguration
- Provision of new buildings for international passengers' terminal (above car marshalling area), parking spaces and drop/off areas for international passengers on Cambridge berth to accommodate high scenario requirements
- Harbour Offices and maintenance facilities to be relocated on the New Jetty
- Provision of extra lanes for access roads to improve traffic circulation
- Inter-island freight and passengers' areas to remain unaltered
- LoLo and RoRo areas remain adjacent to enable fluctuation between each other and increased demand

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £32m or up to £53m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Meets all commercial demand scenarios and spatial and facilities requirements	Requires relocation of some/all (non-port) businesses currently on the New Jetty to accommodate new harbour offices moved from Cambridge Berth
Improves and simplifies ISPS boundaries and interfaces to provide one contiguous area	Requires relocation of all (non-port) businesses currently on the Cambridge Berth to a new (unidentified) location
Puts Harbour Offices inside the ISPS	North Beach car park area is reduced by 6,000m ² (~55%) to accommodate layout changes
Improves traffic circulation inside the port with potential to improve local traffic outside the port at peak periods	International passenger terminal building is built above the proposed car marshalling yard
Provides additional parking for inter-island passenger drop off	

Table 3.9: Pros and Cons for Option 1.3

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for existing commercial sectors in the Port
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Meets requirements for existing commercial sectors in the Port
Safety reliability , environment and flexibility		
Improves safety and reliability over existing facilities		Improves reliability and safety
Limited environmental footprint		Existing
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Existing can be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Mostly neutral, some space on St Julians Emplacement released for other uses
Positive impact on built environment		Higher visual impact (than other Do Minimum options)

Table 3.10: Option 1.3 compliance with assessment criteria

4. New location for commercial sectors

4.1 Scenario 2: Move St Peter Port commercial activities to new facility East of QE II marina

We have developed two options for this scenario and again assumed that bulk solids operations continue unchanged at St Sampson's Harbour. We assume that bulk liquids are accommodated through the recommendations in the Hydrocarbons Supply Programme either by provision of a multi-buoy mooring off the Longue Hougue reclamation or through conversion to unitised cargo.

4.1.1 Option 2.1: E of QE II Marina no dredging

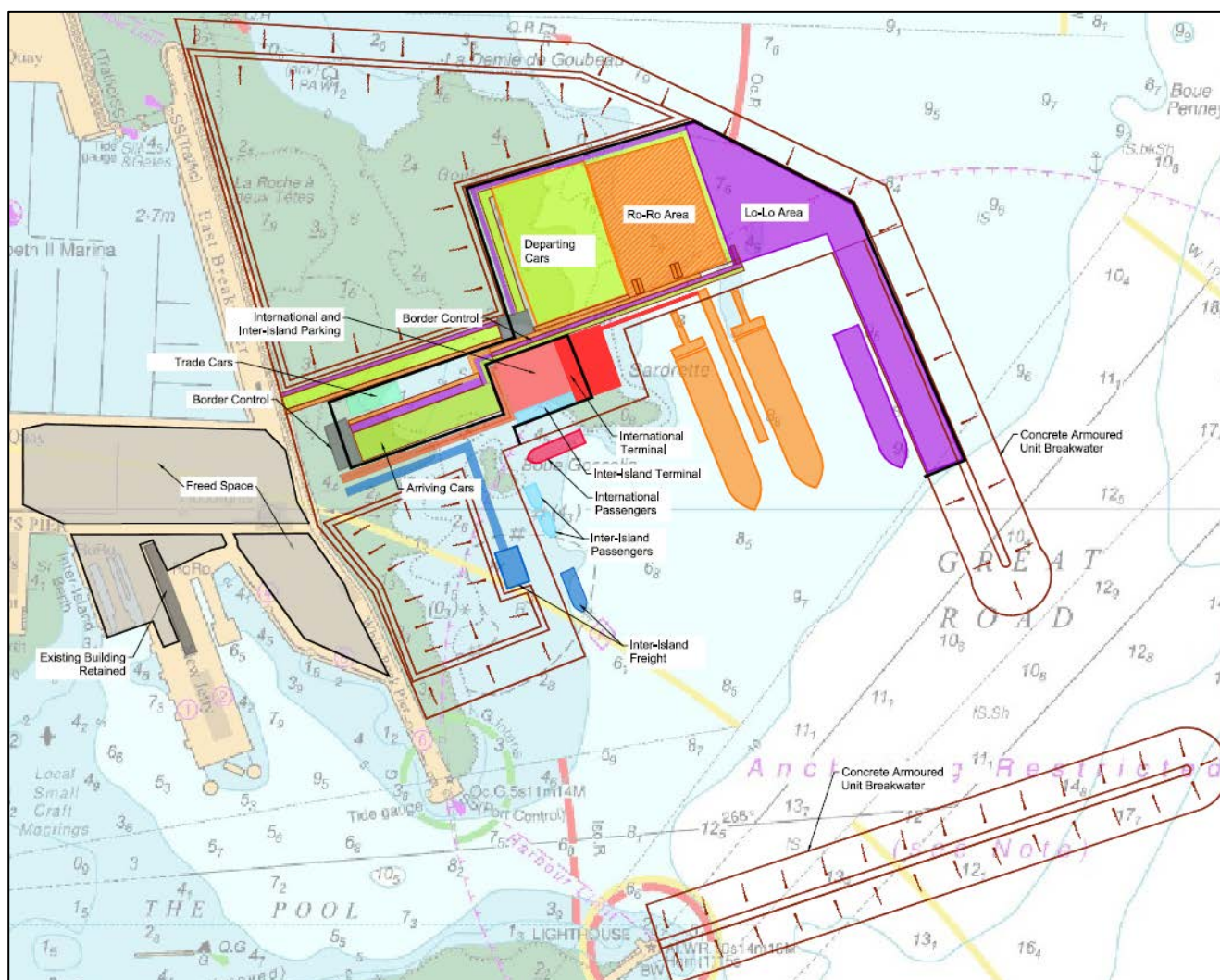


Figure 4.1: Option 2.1 layout

Key features

- Unitised cargo, international passengers, inter-island passengers and inter-island freight facilities are provided to accommodate future spatial requirements including the high demand scenario
- Customs and border control are relocated to improve efficiency
- New breakwaters are constructed to provide shelter for the new berths
- Land reclamation and breakwaters are used to avoid the need for dredging
- New quays, quay furniture, rock revetments, buildings, road accesses are provided
- Unused area of Land reclamation can be left unfilled but provides potential for inert waste
- Protected side of breakwater used for berthing

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £217m or up to £423m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Provides a new port facility designed to meet current and future needs	Requires extensive capital works
Meets all commercial demand scenarios and spatial and facilities requirements	Covers some of the existing granite faced harbour walls with a new quay
Improves and simplifies ISPS boundaries and interfaces to provide one contiguous area	Impact on built environment in terms of views including approaches to St Peter Port
Puts Harbour Offices inside the ISPS	Limited/unknown environmental data, therefore unknown environmental impact.
Improves traffic circulation inside the port with potential to improve local traffic outside the port at peak periods	Potential for a high traffic impact in main town centre during construction phase, this will require further logistics review
Frees up 30,000m ² space within the existing port for potential redevelopment	
Provides potential area for future inert waste landfill site	

Table 4.1: Pros and Cons for Option 2.1

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for selected commercial sectors
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Meets requirements for selected commercial sectors
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		Improves reliability and safety
Limited environmental footprint		Requirement for significant reclamation and breakwater construction
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Cannot easily be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		May work with proposed inert waste scheme at same location, subject to timing, will free up some space in St Peter Port Harbour
Positive impact on built environment		Will have a high visual impact, including approaches for visitors

Table 4.2: Option 2.1 compliance with assessment criteria

4.1.2 Option 2.2: E of QE II Marina most compact layout

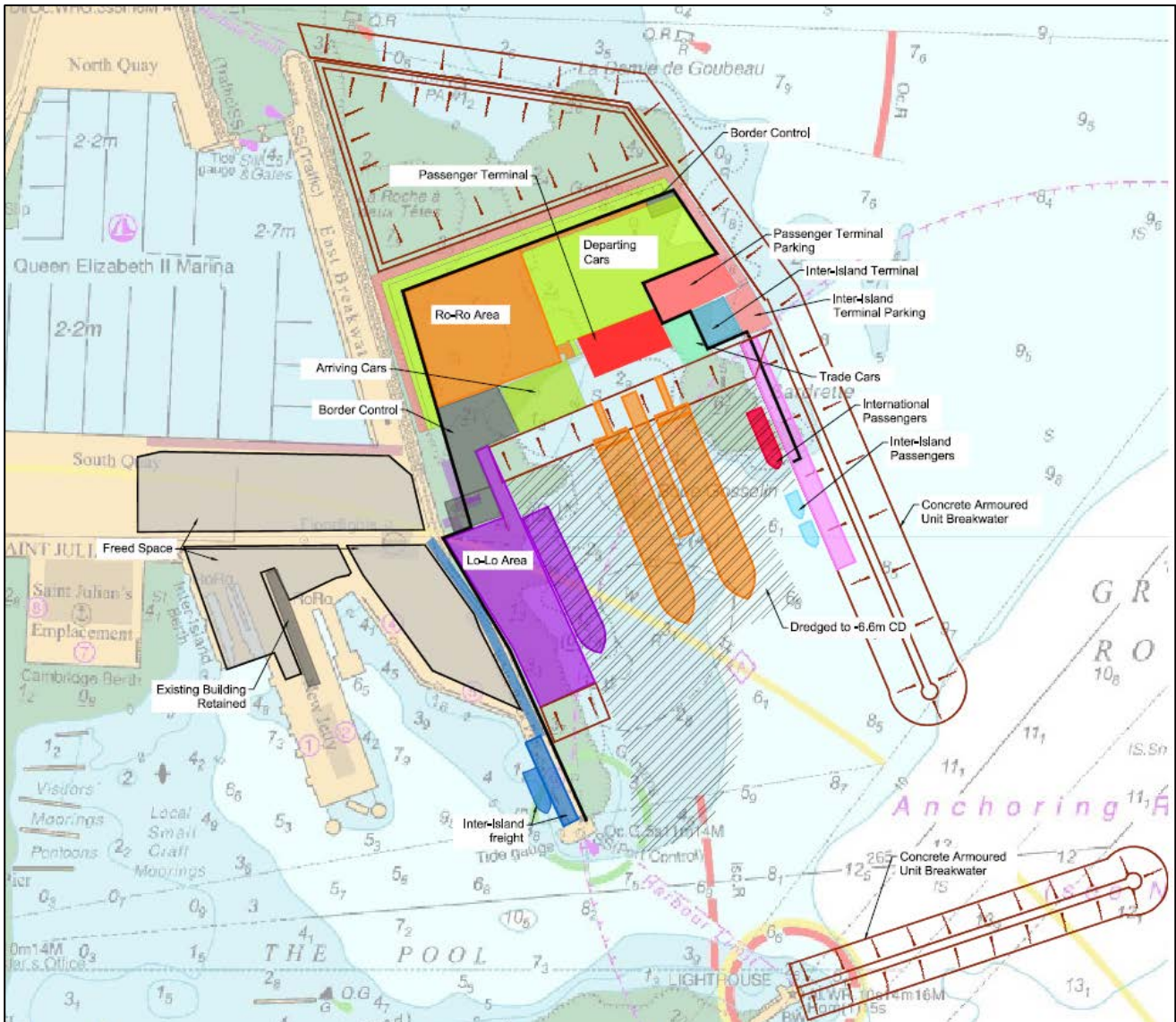


Figure 4.2: Option 2.2 layout

Key Features

- New unitised cargo, international passengers, inter-island passengers facilities are provided to accommodate future spatial requirements including the high demand scenario
- Customs and border control are relocated to improve efficiency
- New breakwaters are constructed to provide shelter for the new berths
- Rock dredging required to provide sufficient water depth
- New quays, quay furniture, rock revetments, buildings, road accesses are provided
- Unused area of land reclamation can be left unfilled but provides potential for inert waste
- Protected side of breakwater used for berthing
- Inter-island freight remains at current location

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £217m or up to £360m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Provides a new port facility designed to meet current and future needs	Requires extensive capital works and significant rock dredging
Moves commercial activities further from historic town centre and port	Covers some of the existing historic granite faced harbour walls with a new quay
Meets all commercial demand scenarios and spatial and facilities requirements	Limited/unknown environmental data, therefore unknown environmental impact
Improves and simplifies ISPS boundaries and interfaces to provide one contiguous area	Potential for a high traffic impact in main town centre during construction phase, this will require further logistics review
Puts Harbour Offices inside the ISPS	Impact on built environment in terms of views including approaches to St Peter Port
Improves traffic circulation inside the port with potential to improve local traffic outside the port at peak periods	
Frees up 30,000m ² space within the existing port for potential redevelopment	
Provides potential area for future inert waste landfill site	

Table 4.3: Pros and Cons for Option 2.2

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for selected commercial sectors
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Meets requirements for selected commercial sectors
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		Improves reliability and safety
Limited environmental footprint		Requirement for significant reclamation and breakwater construction
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Cannot easily be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		May work with proposed inert waste scheme at same location, subject to timing. Will free up some space in St Peter Port Harbour
Positive impact on built environment		Will have high visual impact, including approaches for visitors

Table 4.4: Option 2.2 compliance with assessment criteria

4.2 Scenario 3: New port for commercial sectors adjoining Longue Hougue South

These options represent the development of a new port facility adjoining the proposed Longue Hougue South inert waste reclamation site. These options could benefit from the proposed inert waste site (depending on relative development timescales) and allow the movement of some or all commercial activities out of St Peter Port and St Sampson's Harbour. In the first option, most commercial activities (LoLo, RoRo, bulk and international passengers) are moved from St Peter Port Harbour and St Sampson's Harbour, while in the second option a more limited set of sectors (LoLo and Bulk only) are provided for.

4.2.1 Option 3.1: Most commercial sectors transferred to new port adjoining Longue Hougue South

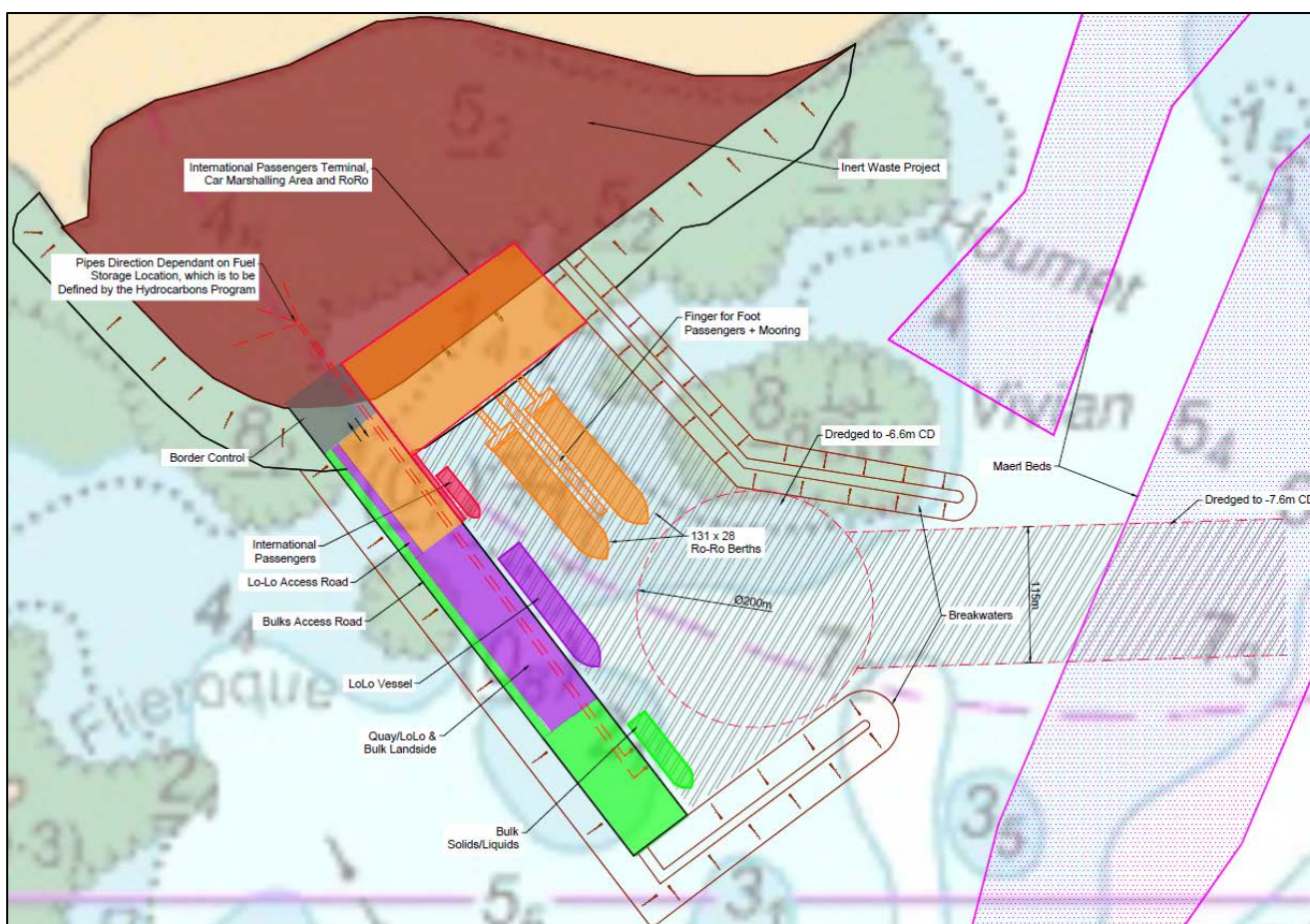


Figure 4.3: Option 3.1 layout

Key features

- New unitised cargo, international passengers, bulk solids and liquids facilities are provided adjacent Longue Hougue South to accommodate future spatial requirements including the high demand scenario
- Outline plan of proposed Inert Waste facility realigned to reduce cost of harbour infrastructure
- New breakwaters are constructed to provide shelter for the new berths
- Rock dredging required to provide sufficient water depth
- Reclamation, new quays, quay furniture, rock revetments, buildings, road accesses are provided
- New manifolds and pipelines to storage for hydrocarbons

- Protected side of breakwater used for berthing
- Inter-island freight remains at current location
- Inter-island passengers, cruise and other leisure sectors remain at St Peter Port

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £164m or up to £272m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Provides a new port facility for commercial activities designed to meet current and future needs	Requires extensive capital works, reclamation and significant rock dredging
Moves commercial activities further from historic town centre and port	Timing of Longue Hougue South inert waste fill is likely too slow to provide required reclamation area without significant rework of its planning Note: Options to use inert reclamation fill from the existing Longue Hougue site have been proposed and could be considered as part of additional studies if the Harbour Development Programme / States considers the location requires further development. This may allow for earlier relocation from St Peter Port Harbour when compared against the timeline for filling of the proposed inert waste site with new material
Meets all commercial demand scenarios and spatial and facilities requirements	Land use on Longue Hougue South subject to future planning review
Improves and simplifies ISPS boundaries and interfaces to provide one contiguous area	Environmentally sensitive area
May reduce freight traffic congestion along the seafront of Belle Grève Bay as new facility would be close to freight sheds/yards	Adverse impact on the built environment in terms of visual impact
Preferable location for hydrocarbon pipelines to existing storage, alternatives may be more expensive and/or technically challenging	Bulk liquids storage location is not addressed within this option, but there is potential to move the storage (at additional cost) to meet the Hydrocarbons programme CSF
Harbour Offices inside the ISPS	New heat traced pipe under or around St Sampson's Harbour required for HFO
Frees up 30,000m ² space within the St Peter Port Harbour and approximately 150m quay space (including removal of hydrocarbons) in St Sampson's Harbour for potential redevelopment/use	Cross currents in the area will make for a difficult approach to the port in some tidal conditions which may render the port available only at certain tidal states (tidal conditions are subject to additional research)
Provides possibilities for repurposing existing areas within the harbour to provided additional facilities for local or visiting yachts	
RoRo space allocated on proposed LHS landfill is compensated for with additional landfill on E quay	

Pros	Cons
Potentially a reduced impact of construction through the main town centre compared to other solutions	

Table 4.5: Pros and Cons for Option 3.1

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for selected commercial sectors
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Meets requirements for selected commercial sectors
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		Improves reliability and safety
Limited environmental footprint		Requires significant dredging and breakwater construction
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Cannot easily be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		May work with proposed inert waste scheme at same location, subject to timing, will free up most space in St Peter Port and St Sampson Harbours
Positive impact on built environment		Will have high visual impact

Table 4.6: Option 3.1 compliance with assessment criteria

4.2.2 Option 3.2: LoLo and bulk to new port adjoining Longue Hougue South

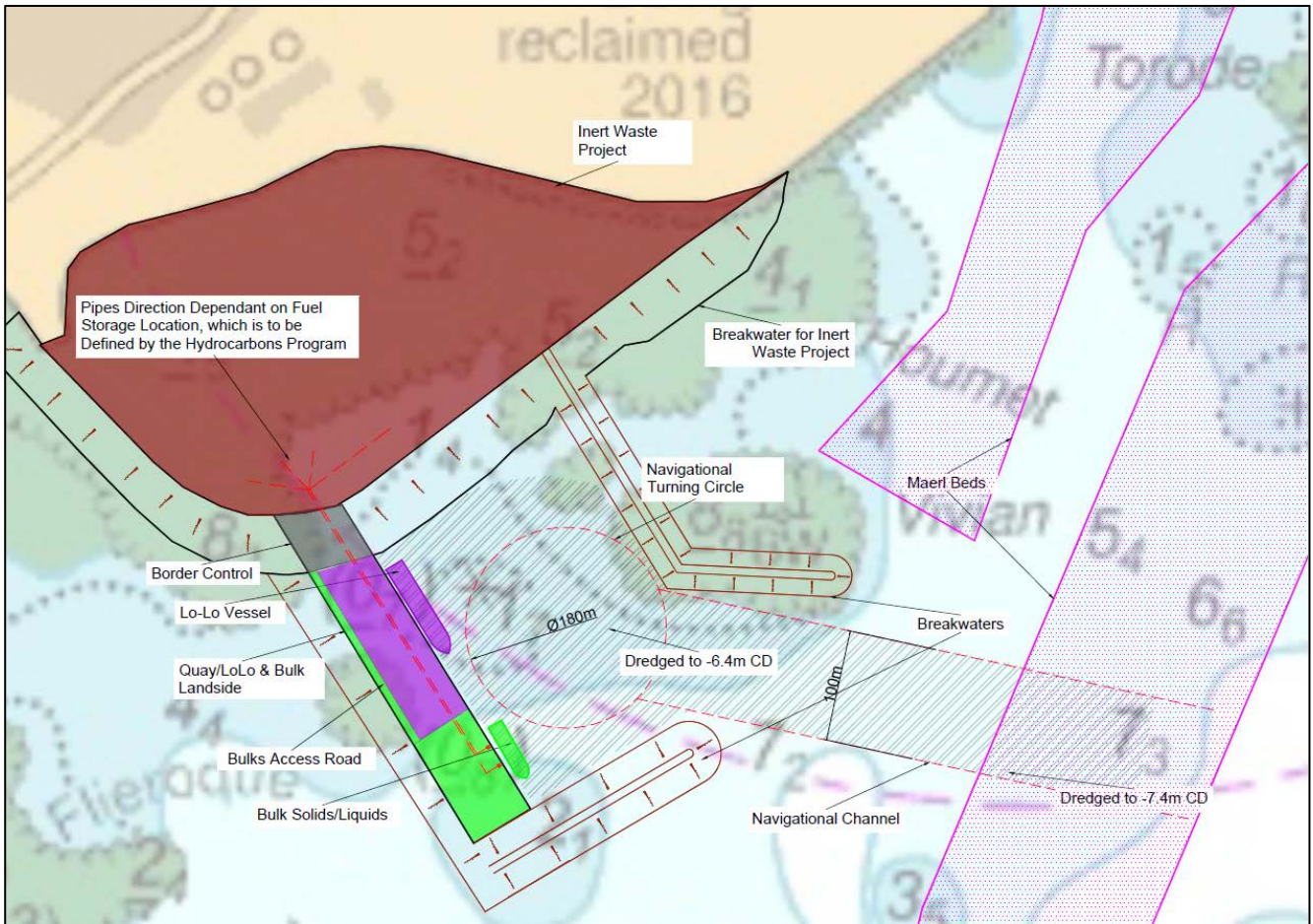


Figure 4.4: Option 3.2 layout

Key features

- New LoLo, bulk solids and bulk liquids (except HFO) facilities are provided adjacent Longue Hougue South to accommodate future spatial requirements including the high demand scenario
- Hydrocarbons delivered by unitised cargo or in bulk
- New manifolds and pipelines to storage for hydrocarbons
- New breakwaters are constructed to provide shelter for the new berths
- Rock dredging required to provide sufficient water depth
- New quays, quay furniture, rock revetments, buildings, road accesses are provided
- Protected side of breakwater used for berthing
- RoRo, international passengers, inter-island passengers, cruise and other leisure sectors remain at St Peter Port Harbour

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £121m or up to £201m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Provides a new port facility for commercial activities excluding RoRo designed to meet current and future needs	Requires extensive capital works, reclamation and significant rock dredging
Moves some commercial activities further from historic town centre and port	Timing of Longue Hougue South inert waste fill likely too slow to provide required reclamation area without significant rework of its planning Note: Options to use inert reclamation fill from the existing Longue Hougue site have been proposed and could be considered as part of additional studies if the Harbour Development Programme / States considers the location requires further development. This may allow for earlier relocation from St Peter Port Harbour when compared against the timeline for filling of the proposed Inert Waste site with new material
Meets all commercial demand scenarios and spatial and facilities requirements	Environmentally sensitive area
Improves and simplifies ISPS boundaries and interfaces to provide one contiguous area at each port (St Peter Port and new port off Longue Hougue South)	Adverse impact on the built environment in terms of visual impact
Preferable location for hydrocarbon pipelines to existing storage, alternatives may be more expensive and/or technically challenging	Requires two ISPS areas
May reduce freight traffic congestion along the seafront of Belle Grève Bay as new facility would be close to freight sheds/yards	Bulk liquids storage location is not addressed but there is potential to move the storage (at additional cost) to meet the Hydrocarbons programme CSF
Frees up 6,000m ² space within St Peter Port Harbour and approximately 150m of quay in St Sampson's Harbour for potential redevelopment/reuse	Cross currents in the area will make for a difficult approach to the port in some tidal conditions which may render the port unavailable at certain tidal states (tidal conditions are subject to additional research)
Bulk liquids could be delivered with the addition of suitable manifolds on quay and pipelines to existing or new storage	HFO import continue through St Sampson's Harbour as it cannot be supplied as unitised cargo (otherwise heat traced pipe under or around St Sampson's Harbour could be provided at additional cost)
Provides possibilities for repurposing existing areas within existing harbours to provided additional facilities for local or visiting yachts	
Only needs road access across proposed LHS inert waste site	

Table 4.7: Pros and Cons for Option 3.2

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		Meets requirements for selected commercial sectors
Meets base demand/facilities requirements by 2050 and could meet high/low demand		Meets requirements for selected commercial sectors except part of bulk liquids
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		Improves reliability and safety
Limited environmental footprint		requirement for significant dredging and breakwater construction
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Cannot easily be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		May work with proposed inert waste scheme at same location, subject to timing, will free up some space in St Peter Port and St Sampson Harbours
Positive impact on built environment		Will have high visual impact on views

Table 4.8: Option 3.2 compliance with assessment criteria

5. Improve provision for leisure sectors

This section describes options for leisure sectors to meet future demand. These could be combined in several ways with some/all options described for commercial activities.

5.1 Scenario 4: Provide new cruise facilities

One option is developed for a cruise berth under this scenario. It could be developed in conjunction with Scenario 1 options or in a modified form in conjunction with Scenario 2 options. A second option is developed to extend the cruise tender berths to meet forecast demand. Again, this could be developed with Scenario 1 or Scenario 2 options.

5.1.1 Option 4.1: Cruise berth E of QE II marina

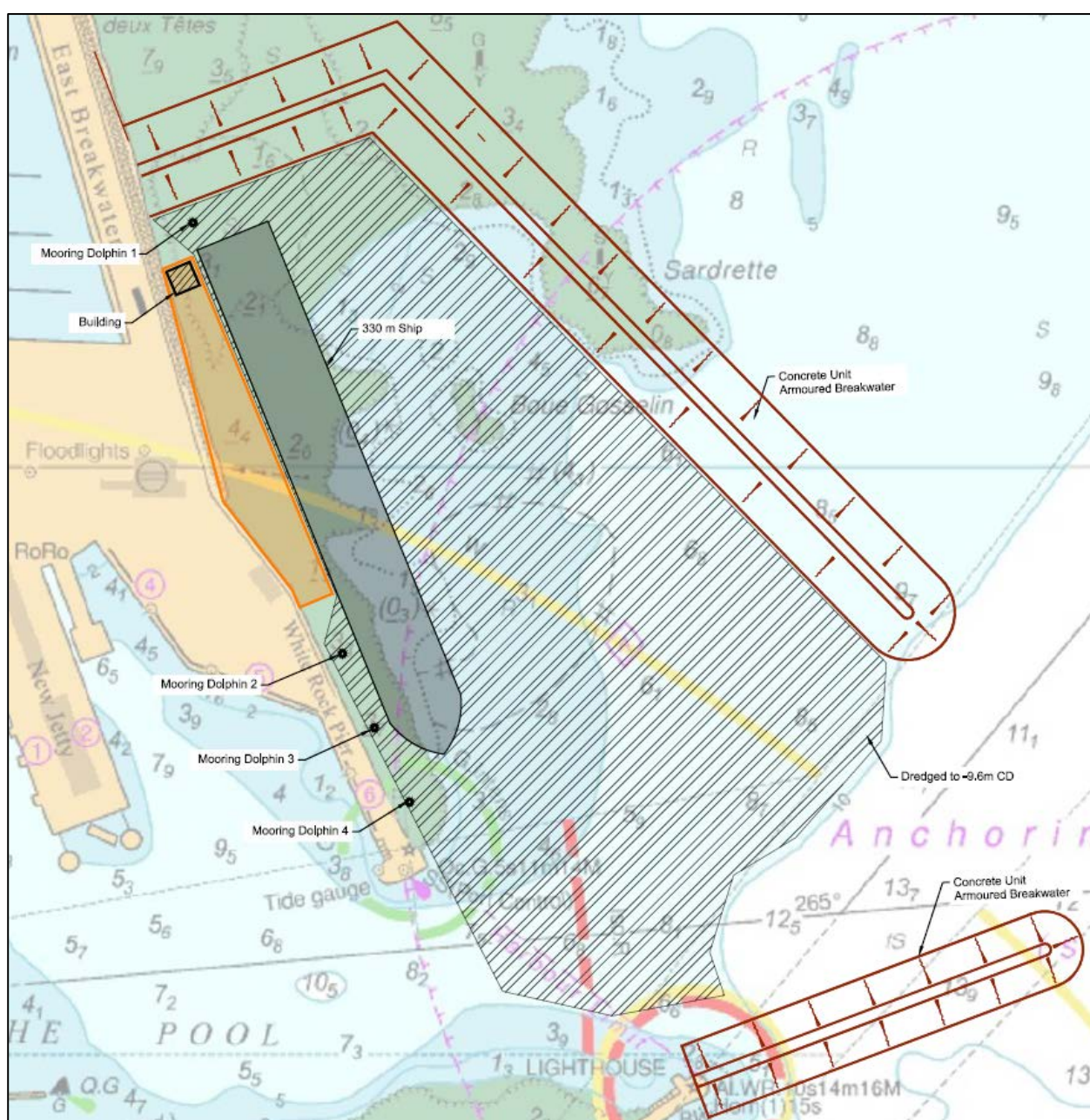


Figure 5.1: Option 4.1 layout

Key features

- Cruise berth for 330 m ship (largest identified in the demand study)
- Dredging required adjacent to existing structures to provide adequate water depth
- Breakwaters to be constructed to provide shelter
- Breakwaters alignment to take advantage of shallower areas and reduce material
- Land reclamation to provide base for new landside facilities
- Provision of quays, quay furniture, buildings and road accesses
- Provision of mooring and breasting dolphins
- Provision of accesses, parking and drop off areas

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £144m or up to £239m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Provides a new cruise facility designed to meet current and future needs	Requires extensive capital works including rock dredging and new breakwaters
Meets all cruise demand scenarios and spatial and facilities requirements	Hides some of the existing granite faced harbour walls with a new quay
Does not impact adversely on existing operations	The condition of the granite structures supporting the White Rock Walkway are known to be poor. Driving of monopiles and associated dredging to provide marine facilities is a high risk
Frees up the cruise tender berths for other activities	Potential impact on the designated SSS and ABI
Additional berth that could be used for other marine activities when not being used by cruise vessels (seasonal). Note berth will not have LoLo or RoRo infrastructure	Infrastructure use would be seasonal
	Limited/unknown environmental data, therefore unknown environmental impact
	Limited to a single alongside berth. Multiple vessels can be accommodated at existing offshore anchor points

Table 5.1: Pros and Cons for Option 4.1

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		For cruise only
Meets base demand/facilities requirements by 2050 and could meet high/low demand		For cruise only
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		For cruise only
Limited environmental footprint		requirement for significant dredging and breakwater construction
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Cannot easily be developed in stages
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Will support tourism strategy only
Positive impact on built environment		Will have high visual impact on views

Table 5.2: Option 4.1 compliance with assessment criteria

5.1.2 Option 4.2: Additional cruise tender berth

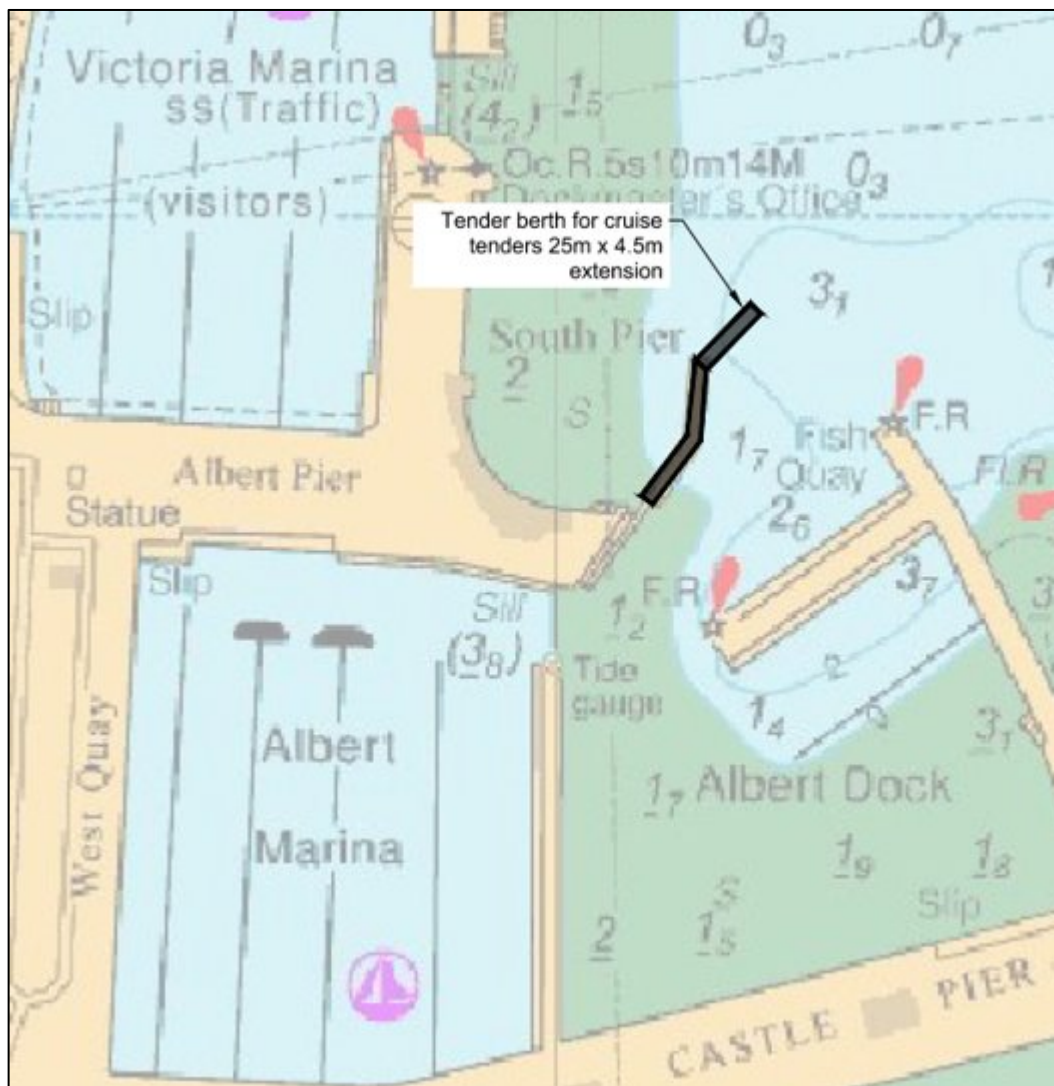


Figure 5.2: Option 4.2 layout

Key features

- Provision of an additional 25 m tender berth in Albert Pier for future growth
- Increase pontoon width to 4.5 m to improve circulation space and allow double sided use
- 50 m long access bridge increased in width to 3 m to improve access

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £1.4m or up to £2.3m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and Cons

Pros	Cons
Provides a new cruise tender berths designed to meet current and future needs	May make access to Albert dock and Albert Marina more congested
Meets all cruise tender berth demand scenarios and spatial and facilities requirements	Increase in pedestrians along Albert Pier. May require additional traffic management when cruise vessels are alongside
Does not impact adversely on existing operations	

Table 5.3: Pros and Cons for Option 4.2

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		For cruise tenders only
Meets base demand/facilities requirements by 2050 and could meet high/low demand		For cruise tenders only
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		For cruise tenders only
Limited environmental footprint		Small scale development
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Small scale development
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Supports tourism strategy
Positive impact on built environment		Neutral

Table 5.4: Option 4.2 compliance with assessment criteria

5.2 Scenario 5: Address future requirements for leisure facilities

This section describes options to meet future demand for leisure activities. These could be combined in several ways with the options described for commercial activities. They are all based on reconfiguring or enhancing facilities within St Peter Port or St Sampson's.

5.2.1 Option 5.1: New St Peter Port Harbour breakwater and marina with extended St Sampson's marina



Figure 5.3: Option 5.1 layout in St Peter Port Harbour

Key features

This option could be adopted in conjunction with Scenario 1, or Scenario 2, with or without Scenario 4. Option 5.1 requires facilities development in both St Peter Port Harbour and St Sampson's Harbour comprising:

- Additional marina space and moorings for local yachts to meet the high demand scenario
- Provision of pontoons, services and moorings, for a marina located at the Careening Hard and an extended marina in St Sampson's Harbour
- No change to facilities or allocation for visiting yachts
- Fishing fleet and charter boats facilities remain unchanged
- Provision of berth and fuelling facility for super yachts
- Breakwater construction to shelter Victoria Marina and provide super yacht berth

- Dredging for access around the new breakwater

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £60m or up to £100m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Retains facilities for fishing fleet and charter vessels	Extended marina at St Sampson's Harbour restricts manoeuvring area for bulk liquid and bulk solids vessels using St Sampson's Harbour
Additional local yacht demand exceeds high demand forecast with diversified locations to appeal to different local demands	Current uses of the Careening Hard no longer provided for
Breakwater inside St Peter Port Harbour provides space for additional larger (>20m) yacht berths in addition to other features	Breakwater inside St Peter Port Harbour may make access to Berth 2 more challenging for larger vessels and it removes a grounding option in the event of emergency /loss of navigational control
Provides additional shelter for Victoria Marina	

Table 5.5: Pros and Cons for Option 5.1

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		For local and super yachts only
Meets base demand/facilities requirements by 2050 and could meet high/low demand		For local and super yachts only
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		For local and super yachts only
Limited environmental footprint		Requires some breakwater construction and dredging but within existing harbours
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Yes
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral
Positive impact on built environment		Minimal visual impact

Table 5.6: Option 5.1 compliance with assessment criteria

5.2.2 Option 5.2: New breakwater, fishing quay and marinas in St Peter Port Harbour

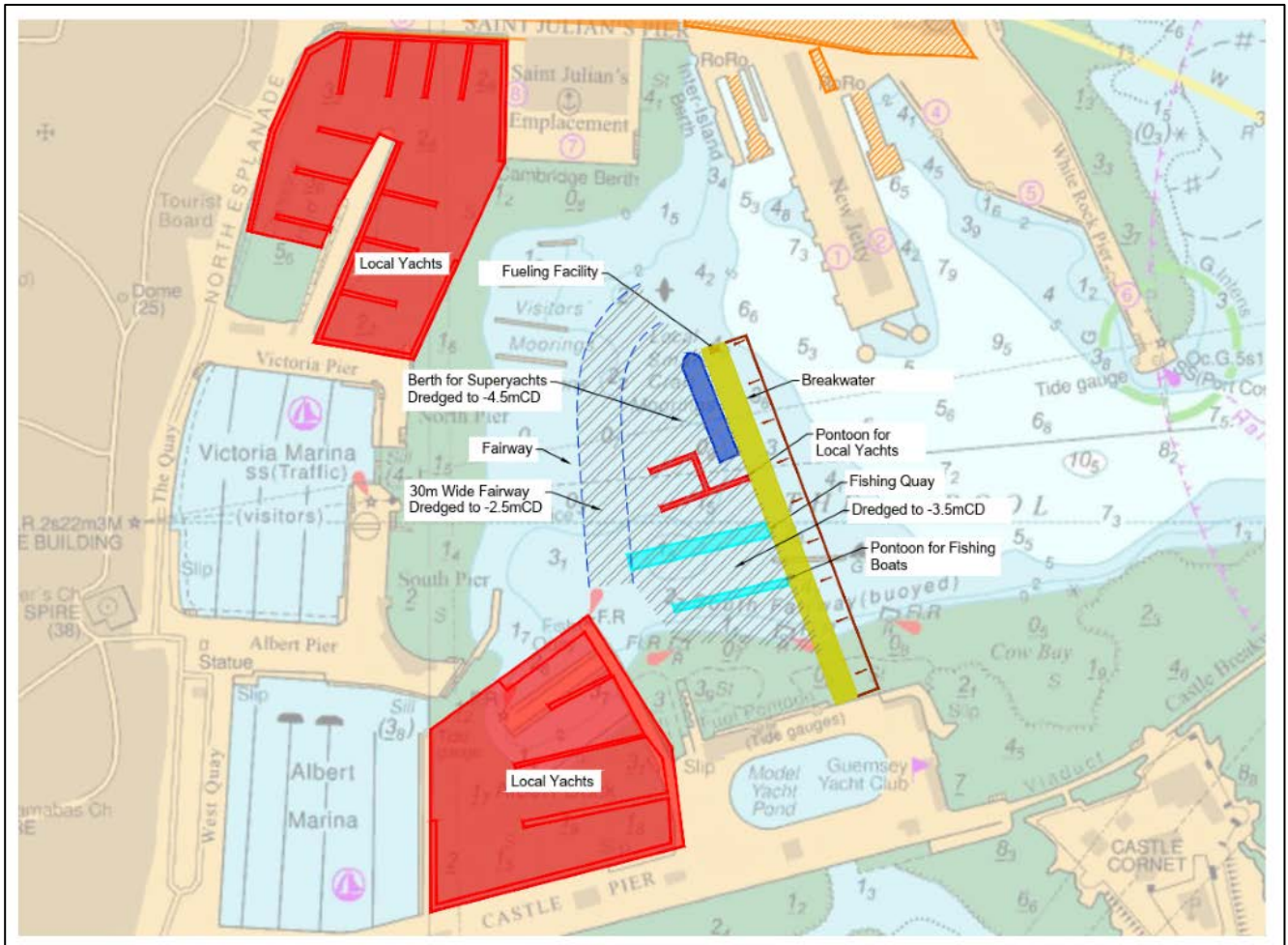


Figure 5.4: Option 5.2

Key features

This option requires facilities development only in St Peter Port Harbour. Key features are:

- Can be adopted in conjunction with Scenario 1 or Scenario 2 with or without Scenario 4
- Additional marina space and moorings for local yachts to meet the high demand scenario
- Provision of pontoons, services and moorings, for a marina located at the Careening Hard and in Albert Dock
- No change to facilities or allocation for visiting yachts
- Fishing fleet and charter boats moved to a new location within the harbour
- Provision of berth and fuelling facility for super yachts
- Breakwater construction to provide new sheltered area for fishing fleet and charter boats, provide additional protection to Victoria Marina and provide super yacht berth
- Dredging for access around the new breakwater and for the fishing fleet berths

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £70m or up to £115m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
New facilities for fishing fleet and charter vessels with additional berths beyond forecast high demand	Access to new breakwaters may impact on Guernsey yacht club slipway
Additional local yacht demand exceeds future high demand forecast with facilities in prime town centre location	Current uses of the Careening Hard no longer provided for
Breakwater inside St Peter Port Harbour provides space for additional larger (>20m) yacht berths in addition to other features	Breakwater inside St Peter Port Harbour may make access to Berth 2 more challenging for larger vessels and it removes a grounding option in the event of emergency /loss of navigational control
Provides additional shelter for Victoria Marina	More extensive construction activities than Option 5.1

Table 5.7: Pros and Cons for Option 5.2

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		For fishing sector, local and super yachts only
Meets base demand/facilities requirements by 2050 and could meet high/low demand		For fishing sector local and super yachts only
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		For fishing sector local and super yachts only
Limited environmental footprint		Requires some breakwater construction and dredging but within existing harbours
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Yes
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral
Positive impact on built environment		Minimal visual impact

Table 5.8: Option 5.2 compliance with assessment criteria

5.2.3 Option 5.3: New breakwaters and marinas in St Peter Port Harbour with repurposed commercial berths

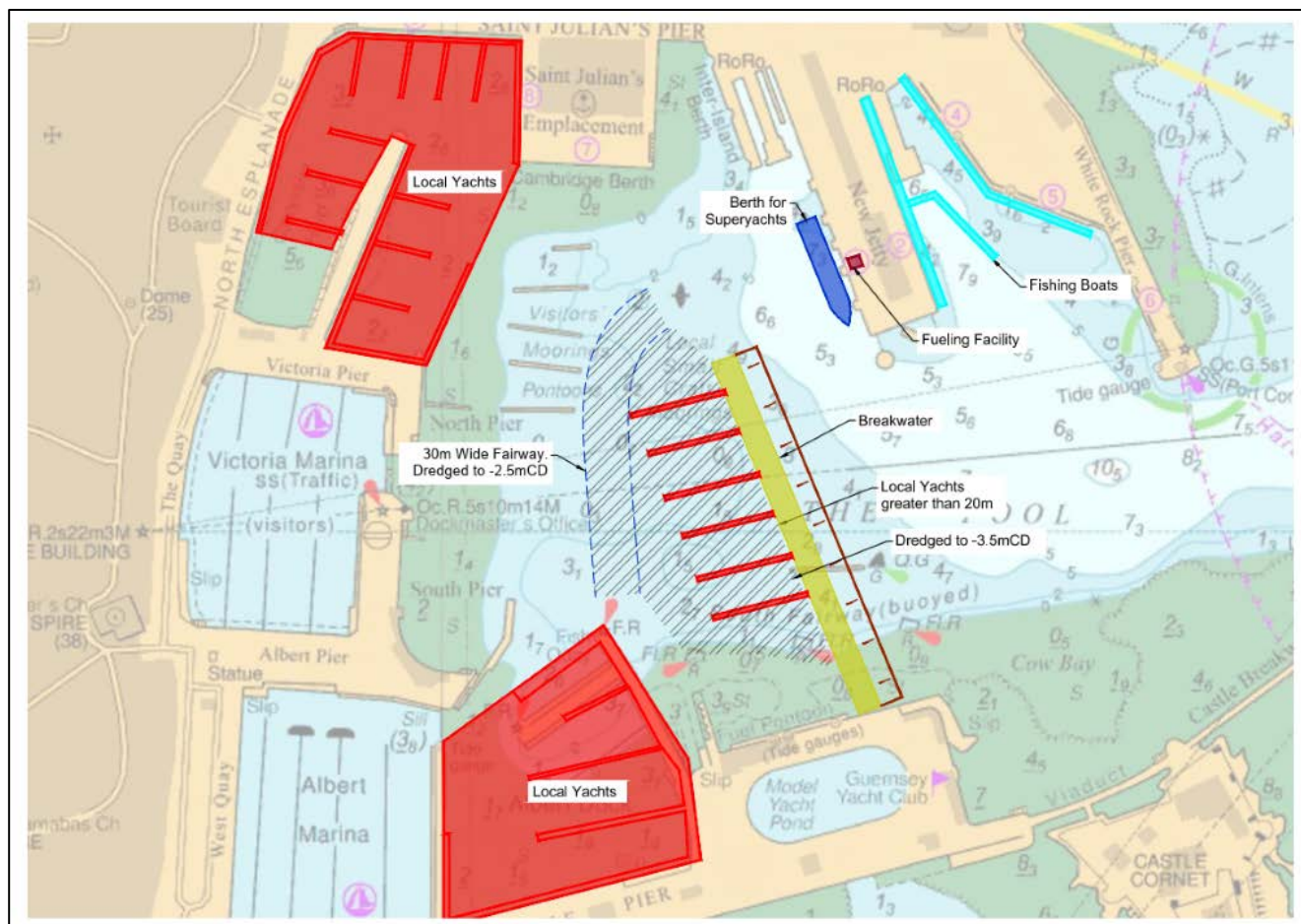


Figure 5.5: Option 5.3

Key features

- Can be adopted only in conjunction with Scenario 2, with or without Scenario 4
- Additional marina space and moorings for local yachts to meet the high demand scenario
- Provision of pontoons, services and moorings, for a marina located at the Careening Hard and in Albert Dock
- No change to facilities or allocation for visiting yachts
- Fishing fleet and charter boats moved to a new location within the harbour
- Provision of berth and fuelling facility for super yachts
- Breakwater construction to provides additional protection to Victoria Marina and provides new berths for yachts greater than 20m length
- Dredging for access around the new breakwater

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £65m or up to £105m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
New facilities for fishing fleet and charter vessels with additional berths beyond forecast high demand	Only works with Scenario 2 where commercial activities are moved to a new harbour east of QE II marina or Longue Hougue South
Additional local yacht demand met with facilities in excess of future high demand estimate, in prime town centre location	Current uses of the Careening Hard no longer provided for
Breakwater inside St Peter Port Harbour provides space for additional larger (>20m) yacht berths in addition to other features	
Provides additional shelter for Victoria Marina	

Table 5.9: Pros and Cons for Option 5.3

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		For fishing sector, local and super yachts only
Meets base demand/facilities requirements by 2050 and could meet high/low demand		For fishing sector local and super yachts only
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		For fishing sector local and super yachts only
Limited environmental footprint		Requires some breakwater construction and dredging but within existing harbours
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Yes
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral
Positive impact on built environment		Minimal visual impact

Table 5.10: Option 5.3 compliance with assessment criteria

5.3 Scenario 6: Repurpose Havelet Bay

Havelet Bay is an attractive location to provide additional space for leisure facilities, given its proximity to St Peter Port Harbour and its semi enclosed nature. The option developed here allows some leisure sectors to be moved out of St Peter Port Harbour, potentially reducing congestion or freeing up space for other activities.

5.3.1 Option 6.1: Havelet Bay Marina

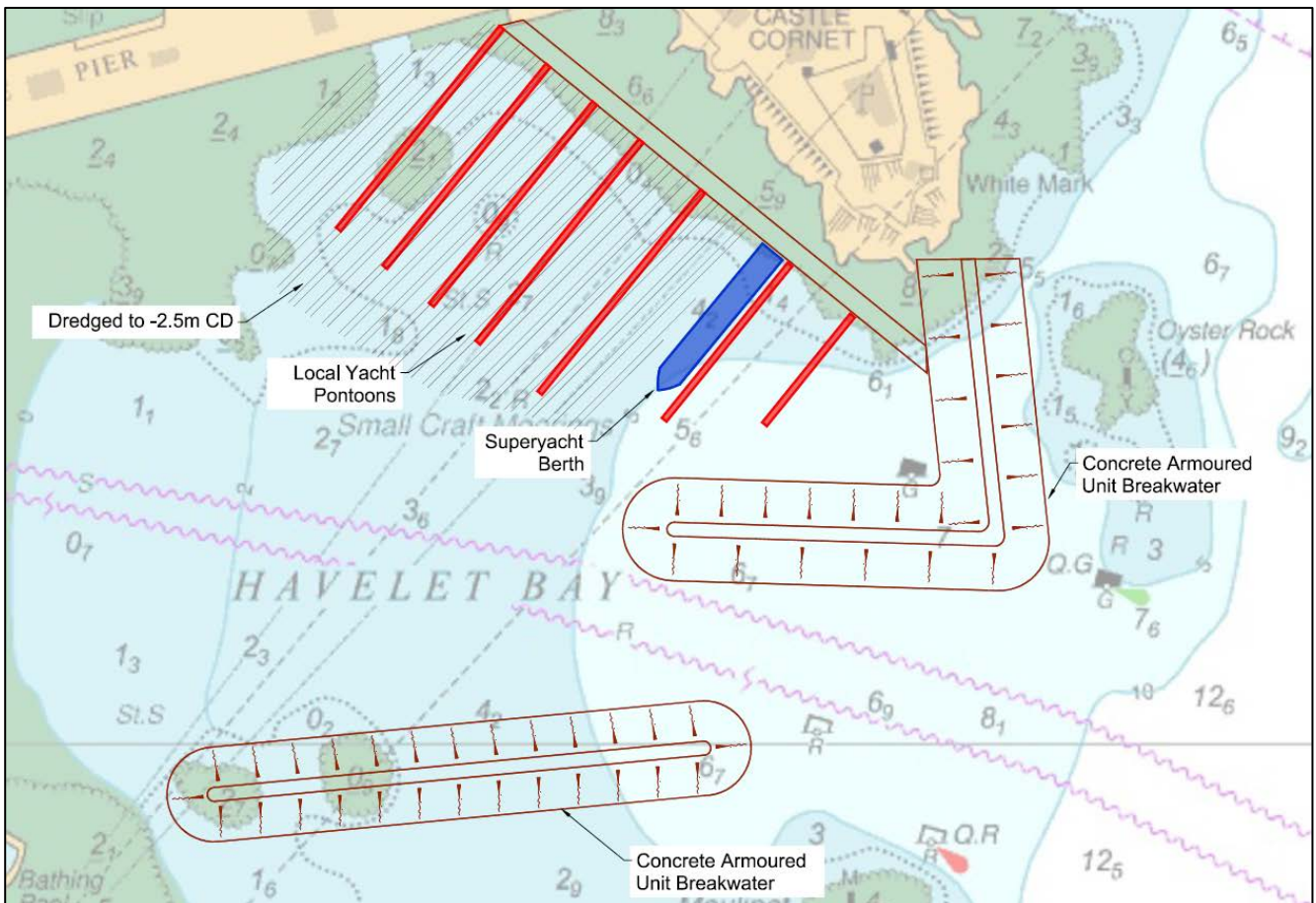


Figure 5.6: Option 6.1 Layout

Key features

- Additional marina space and moorings for local yachts and visiting yachts to exceed the high demand scenario
- Dedicated super yacht berth(s) could be developed
- Fishing fleet and charter boats potentially have more space or move to a new location within the harbour
- Breakwater construction to provide large sheltered area with variable water depth which could be developed in stages for a variety of leisure activities
- Dredging not necessarily required

Cost estimate

The estimated capital cost (excluding maintenance of existing and new facilities) is £55m or up to £95m including the Green Book recommended 66% optimism bias for this stage of concept definition.

Pros and cons

Pros	Cons
Large new flexible sheltered water space which could be developed in stages (after initial breakwater construction) for various uses	Requires extensive breakwater construction
Additional local yacht demand could be exceeded with facilities in excess of future high demand estimate for local and visiting yachts, in prime location close to town centre	High risk of environmental/planning problems due to landfall of main electricity connector within the bay, environmental designations on the south coast of the bay, and the need to join the northern breakwater to Castle Cornet
Breakwaters provide potential for super yacht berth(s) if additional quay/pontoon access can be provided in sufficient water depth	Depending on final location, wave reflections from southern breakwater may have an adverse impact on La Vallette bathing pools
Fishing sector might be accommodated if location for a solid quay and vehicular access to deep enough berths could be provided without adverse impact on the historic sea walls, castle or designated SSS	
Frees up space in St Peter Port Harbour	

Table 5.11: Pros and Cons for Option 6.1

Compliance with assessment criteria

Demand, spatial and facilities	RAG	Notes
Meets base demand/facilities study requirements in 2030		For local and super yachts only
Meets base demand/facilities requirements by 2050 and could meet high/low demand		For local and super yachts only
Safety reliability, environment and flexibility		
Improves safety and reliability over existing facilities		For local and super yachts only
Limited environmental footprint		Requires extensive breakwater construction and some dredging
Can be delivered in stages within the life of the demand study with flexibility to assist financial management		Needs major breakwater construction in one phase
Synergy with SoG Programmes & Planning		
Synergy with other SoG infrastructure programmes / provides additional (non-Harbours) benefits to the Island		Neutral
Positive impact on built environment		Will have high visual impact on views and Castle Cornet

Table 5.12: Option 6.1 compliance with assessment criteria

6. Conclusions

All scenarios and their options are summarised in the table below.

Scenario / option	Meets relevant spatial and facilities requirements	Meets assessment criteria	Estimated capital cost range* (GBP) million
Scenario 0: Do Nothing			
Option 0.1: Do Nothing at St Peter Port Harbour	Partly	Partly	0
Option 0.2: Do Nothing at St Sampson's Harbour	Partly	Partly	0
Scenario 1: Do Minimum at St Peter Port Harbour for commercial activities			
Option 1.1: Minimum changes at St Peter Port Harbour to meet requirements	Mostly	Yes	21 to 35
Option 1.2: Optimised St Peter Port Harbour layout to meet requirements and improve efficiency and security	Yes	Yes	27 to 45
Option 1.3: Alternative St Peter Port Harbour layout to meet requirements and improve efficiency and security	Yes	Yes	32 to 53
Scenario 2: Move St Peter Port Harbour commercial activities to new facility East of QE II marina			
Option 2.1: E of QE II Marina no dredging	Yes	Partly	255 to 423
Option 2.2: E of QE II Marina most compact layout	Yes	Partly	217 to 360
Scenario 3: New Port for commercial sectors adjoining Longue Hougue South			
Option 3.1: Most commercial sectors to new port adjoining Longue Hougue South	Yes	Partly	164 to 272
Option 3.2: LoLo and bulk to new port adjoining Longue Hougue South	Yes, for selected sectors	Partly	121 to 201
Scenario 4: Provide new cruise facilities			
Option 4.1: Cruise berth E of QE II marina	Yes	Partly	144 to 239
Option 4.2: Additional cruise tender berth	Yes	Yes	1.4 to 2.3
Scenario 5: Address future requirements for leisure facilities			
Option 5.1: New St Peter Port Harbour breakwater and marina with extended St Sampson's marina	Yes	Yes	60 to 100
Option 5.2: New breakwater, fishing quay and marinas in St Peter Port Harbour	Yes	Yes	70 to 115
Option 5.3: New breakwaters and marinas in St Peter Port Harbour with repurposed commercial berths	Yes	Yes	65 to 105
Scenario 6: Repurpose Havelet Bay			
Option 6.1: Havelet Bay Marina	Yes	Partly	55 to 95

Table 6.1: Summary of scenario compliance and cost

* Capital costs presented include Green Book recommended 66% optimism bias for high values and excludes any bias for low values.

This table summarises the option's overall compliance with spatial and facilities requirements and the project's assessment criteria. Where the option is designed to cover only some sectors, compliance with the spatial and facilities requirements and assessment criteria is presented only in relation to these sectors. The table also provides the capital cost estimate associated with each option.

While no one option provides a solution for all commercial and leisure sectors, options could be combined to address this. For example, all spatial and facilities requirements and the assessment criteria would be met if the following options were combined:

- Option 1.2: Optimised St Peter Port Harbour layout
- Option 5.1: New St Peter Port Harbour breakwater and marina with extended St Sampson's marina
- Option 4.2: Additional cruise tender berth

These options would not provide a dedicated cruise ship berth, but that could be provided by replacing *Option 4.2* with *Option 4.1: Cruise berth E of QE II marina*.

This example combination would fully satisfy all current and future spatial and facilities requirements up to the year 2050, including the high demand scenario and would meet all assessment criteria.

Other combinations could be selected to achieve similar benefits, though at differing costs.

No assessment of the value/benefit to Guernsey of the space that could be freed up within St Peter Port Harbour or St Sampson's Harbour where scenarios involving relocation of commercial activities from the existing ports are considered. This assessment is beyond the scope of this Future Harbour Requirements project and should be considered as part of other projects either within the Harbour Development Programme or Seafront Enhancement Area (SEA) programme.

Appendix A. Additional Information

Option 0.1 - Do Nothing at St Peter Port Harbour – Compliance with spatial and facilities requirements

	Commercial sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.1 compliance	Notes on existing facilities
LoLo			
Berth	1 no. 120 m long berth with a depth of 6.4 m	×	2 berths 93m and 82m - 1.4mCD and -1.6mCD
Landside space	8700 m ² for 87 Twenty-Foot Ground Slots (TGS)	×	81 TGS
Facilities	Two dockside mobile harbour cranes Utilities: Potable water, fire water and area lighting Safety equipment: Bollards and fenders Safety equipment: Ladders, safety ropes and chains and lifesaving equipment	✓	
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓	
Location requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓	
RoRo			
Berth	2 No. 155 m long berths with a depth of 6.6 m	×	1x155 m @ -4.8 mCD and 1x115 m @ -4.2 mCD
Landside space	4,900 m ² for 110 trailer spaces 9,070 m ² for private and small commercial vehicles	×	6,200m ² for 90 trailer spaces 4,200m ²

	Commercial sectors	Option 0.1 compliance	Notes on existing facilities
	Spatial requirements identified for peak 2020-2050 high demand		
	53 m ² for car imports and exports	✓	
Facilities	<p>RoRo storage yard and private and small commercial vehicles:</p> <p>Utilities: Potable water, fire water and area lighting</p> <p>Safety equipment: Bollards and fenders</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment</p> <p>No specific facilities required for car imports and exports</p>	✓	
Access and ISPS	<p>Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint</p> <p>Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report</p> <p>Landside access is required to the trailer storage area and to the local road network</p> <p>Landside access is required to the marshalling yard and from the Border Control / Customs building for cars and small commercial vehicles</p> <p>The landside access route should be outside the ISPS Zone. The Border Control / Customs Building should be located on the edge of the ISPS Zone such that the ISPS Zone effectively runs through the point when vehicles have been cleared</p> <p>The area for storing imported and exported cars needs to be located in close proximity to the RoRo ramps and within the ISPS Zone</p>	<p>✓</p> <p>×</p> <p>✓</p> <p>✓</p> <p>×</p> <p>✓</p>	<p>Turning area inside port protected waters <2x LOA of largest RoRo. (PIANC Concept Design recommendation, can be less with Nav Sims)</p> <p>Landside access is complex and crosses the ISPS Zone in several places</p>
Location requirements	<p>The RoRo storage yard should be located within the ISPS area of the port and in close proximity to the RoRo berths</p> <p>The car and small commercial vehicle facility need to be at the same location as the foot</p>	✓	

	Commercial sectors	Option 0.1 compliance	Notes on existing facilities
	Spatial requirements identified for peak 2020-2050 high demand		
	passenger facility as the vehicles and foot passengers arrive on the same vessels		
	Landside access is required to and from the car storage area		
International passengers and vehicular traffic			
Berth	2 No. 155 m long berths with a depth of 6.6 m (RoRo freight) 1 No. 50 m long berth with a depth of 3.3 m	×	1x155 m @ -4.8 mCD and 1x115 m @ -4.2 mCD and 1x50m @ -3.3mCD
Landside space	2,600m ² for the passenger terminal 2,000m ² for parking spaces and drop-off areas	×	1,700m ² passenger terminal +1,000m ² parking and drop off
Facilities	Passenger areas should include welfare facilities, retail areas and a café/restaurant area(s)	✓	
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report	×	See above for RoRo
	Landside access is required to the passenger terminal for buses, taxis, private cars and foot passengers. The landside access route should not enter the ISPS port security area	×	Access crossed ISPS
	The departure area of the terminal needs to be within the ISPS zone and the public area needs to be outside the ISPS Zone. Therefore, the terminal needs to be as close to the boundary of the ISPS Zone as possible	✓	
Location requirements	The terminal for day passengers should be located within walking distance of St Peter Port commercial area. For other passengers being located close to St Peter Port commercial area is not critical	✓	

	Commercial sectors	Option 0.1 compliance	Notes on existing facilities
	Spatial requirements identified for peak 2020-2050 high demand		
Inter-island passengers			
Berth	1 No. 80 m long berth with a depth of 3.4 m	✓	
Landside space	340 m ²	✓	
Facilities	Utilities: Potable water, fire water and area lighting Safety equipment: Bollards and fenders Safety equipment: Ladders, safety ropes and chains and lifesaving	✓	
Access and ISPS	All tide access for inter-island charter vessels with maximum draught of 2.1 m Landside access to the berth for foot passengers with adequate day parking nearby, the landside access route should not enter the ISPS Zone	✓	
Location requirements	located in St Peter Port Harbour in close proximity to the town centre	✓	
Inter-island freight			
Berth	1 No. 40 m long berth with a depth of 4 m	×	1 no. 85 m length, -1.2 mCD
Landside space	400 m ² for storage	✓	
Facilities	Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓	
Access and ISPS	All tide access where possible or as a minimum, sufficient depth at MLWS is required for inter-	✓	

	Commercial sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.1 compliance	Notes on existing facilities
	island freight vessels which currently have a maximum draught of 3.05m Landside access must be provided for vehicles, including mobile cranes and container lorries		
Location requirements	no specific location requirements	✓	

	Leisure sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.1 compliance	Notes on existing facilities
Local yachts			
Berth	2,110 berths 158,366m ² marina area	×	Including St Sampson's Harbour 1,767 berths 125,880 m ² marina area
Landside space	Pontoons should be connected to the shore by access ramps with suitable gradients	×	Partial – some access ramps steeper than guidelines
Facilities	Toilet and shower facilities	×	Partial – additional toilet and shower facilities are recommended to meet current and future requirements
	Water supply	✓	
	Electric hook up on some berths	✓	
Access and ISPS	All tide access is a preference for local yachts	×	Partial – depends on location and vessel
Location requirements	Berths for local yachts should be located in sheltered water	✓	
Visiting yachts			
Berth	25,000m ²	✓	

	Leisure sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.1 compliance	Notes on existing facilities
Landside space	2 x 35 m² for shower and toilet blocks	✓	Victoria Marina
Facilities	Toilet and shower facilities	✓	Victoria Marina
	Water supply	✓	
	Electric hook up on some berths	✓	
	Refuse disposal	✓	
	Wi-Fi	✓	
Access and ISPS	All tide access for a proportion of the visiting yachts	✓	
	Pontoons connected to the shore by access ramps with suitable gradients		
Location requirements	Located in sheltered water	✓	
	Close to the town centre, restaurants, shops and other amenities		
Super yachts			
Berth	1 No. 90 m long berth with a depth of 4.5 m	×	None specifically provided
Landside space	90m² fuelling area	×	None specifically provided
Facilities	Fuelling facility	×	None specifically provided
	Water supply facility		
	Electric hook up		
	Waste disposal facilities		
Access and ISPS	All tide access is required for super yachts, noting that super yachts deeper than 4 m draught can use the commercial berths if required	×	None specifically provided
	Landside access for crew, tankers and to restock vessel stores		

	Leisure sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.1 compliance	Notes on existing facilities
	Pontoons should be connected to the shore by access ramps with suitable gradients		
Location requirements	Close to the town centre, restaurants, shops and other amenities	×	None specifically provided
Fishing			
Berth	Berths 149 Marine area 17,064 m ²	×	Berths 135 Marine area 15,410 m ²
Landside space	150m ² for 20 units indoor storage 200m ² for 20 units outdoor storage	✓	
Facilities	Fresh water Electricity Lighting Toilet facilities Hoist for loading and unloading Outside and inside storage areas	✓	
Access and ISPS	Berth locations should be accessible by vehicles All tide access is required for commercial fishing vessels Pontoons should be connected to the shore by access ramps with suitable gradients	✓	
Location requirements	Berths in clean seawater	✓	
Cruise ship tenders			
Berth	1 no. 75m length	×	1 no. 50m length

	Leisure sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.1 compliance	Notes on existing facilities
Landside space	2,500m ²	✓	
Facilities	None	✓	
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint	✓	
	Landside access must be provided for cars, taxis and foot passengers	✓	
	Security control to berth	✓	
Location requirements	Within walking distance of the town centre If the cruise tender berth is remote from the town centre, then additional buses will be required together with a suitably located bus terminal in St Peter Port Harbour	✓	
Cruise ship berth			
Berth	1 no. 375 m length 9.6 m depth	×	Not provided
Landside space	5,500m ²	×	Not provided
Facilities	Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint	×	Not provided
	Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report		
Access and ISPS	Security control to vessel	×	Not provided
Location requirements	Within walking distance of the town centre	×	Not provided
	If the cruise berth is remote from the town centre, then additional buses will be required together with a suitably located bus terminal in St Peter Port Harbour	×	

Option 0.2 Do Nothing at St Sampson's Harbour

	Commercial sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.2 compliance	Notes on existing facilities
Bulk solids			
Berth	1 no. 110 m length 5.5 m depth	×	1 no. 140 m length +4.3 mCD depth 1 no. 170 m length +3.4mCD depth
Landside space	2,000m ²	✓	
Facilities	Crane for loading / offloading	✓	
Access and ISPS	Landside access is required to the local road network All tide or near all tide access for vessels Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report	✓ × ×	Vessels restricted to high tide access only Approach and turning areas do not meet best practice
Location requirements	No specific requirements for berth, but vessel and lorry access must be available in order to transfer the cargoes Silos for cement storage must be located in close proximity to the cement berth to allow self-discharge of the vessel	✓ ✓	Berth access is tidally restricted
Bulk liquids (compliance assessed against the requirements identified in the Hydrocarbons Supply Programme)			
Berth	To accommodate design vessel range adopted Upper range 147m LOA, 21.4m beam, 8.3m draught Berth pocket: length 206m, width 32m, depth 9.8m	×	1 no. 140 m length +4.3 mCD depth 1 no. 170 m length +3.4mCD depth
Landside space	Pipeline corridor leading to storage	✓	

	Commercial sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.2 compliance	Notes on existing facilities
	Approximately 18,000 m ³ storage	×	Existing storage capacity and area scaled to smaller vessels
	Estimated 9,500m ² facility area	×	
Facilities	Manifolds for upload to pipeline and storage	✓	
Access and ISPS	Marine access to berth at MSL and above	×	
Location requirements	Close to storage facilities	✓	Storage in St Sampson's Harbour
	Away from centres of population and occupied buildings	×	

	Leisure sectors Spatial requirements identified for peak 2020-2050 high demand	Option 0.1 compliance	Notes on existing facilities
Local yachts			
Berth	2,110 berths and 158,366m ² marina area		Including St Peter Port Harbour 1,767 berths 125,880 m ² marina area
Landside space	Pontoons should be connected to the shore by access ramps with suitable gradients	✓	
Facilities	Toilet and shower facilities.	✓	
	Water supply	✓	
	Electric hook up on some berths	✓	
Access and ISPS	All tide access is a preference for local yachts	×	Tidal restrictions for all but the shallowest draft vessels
Location requirements	Berths for local yachts should be located in sheltered water	✓	

Appendix B. Technical Notes



Future Harbour Requirements Study 2020

Option 1.1 - Technical Note

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08 October 2020

States of Guernsey

-

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1. Introduction

The shortlist identifies that all commercial sectors (with the exception of bulk liquids) can be provided by a Do Minimum option. This demonstrates that for most sectors there is no harbour specific requirement to relocate services outside of the current harbours or to expand current berth areas. However, future spatial requirements do require a modification to the landside area to meet base or high demand.

Our spatial requirements and demand study of the operations in St Peter Port revealed the need to increase the land area for the commercial sectors and the reorganisation/provision of the landside facilities considering the public and the security areas to optimize traffic routes and security controls within the port.

The option we consider in this technical note consists of the reconfiguration of the existing St Peter Port Harbour to provide facilities to better suit current commercial needs and meet forecast commercial (high scenario) requirements. Note that leisure sectors are considered separately in another note. This is the Do Minimum Option 1.1 for St Peter Port Harbour commercial sectors.

The key considerations used in the development of the option are :

1. Minimise construction of marine infrastructure and use existing landside areas as far as reasonably practical, minimising loss of public access areas.
2. Improve traffic flows within conflict areas, and segregate inbound and outbound traffic.
3. Increase freight marshalling areas.
4. Increase all traffic queuing room (inbound and outbound) to accommodate forecast requirements.
5. Maintain foot passenger access to the Cambridge Berth, Inter-island berth and New Jetty passenger terminal.
6. Maintain the LoLo berth and yard, RoRo berth and yard, departure area of the international passengers and car import and export area within the ISPS Zone.

2. Harbour layout

Option 1.1 considers the reconfiguration of the existing landside space, keeping the existing marine facilities as per the current arrangement for the commercial activities .

The proposed layout is as shown in Figure 1.

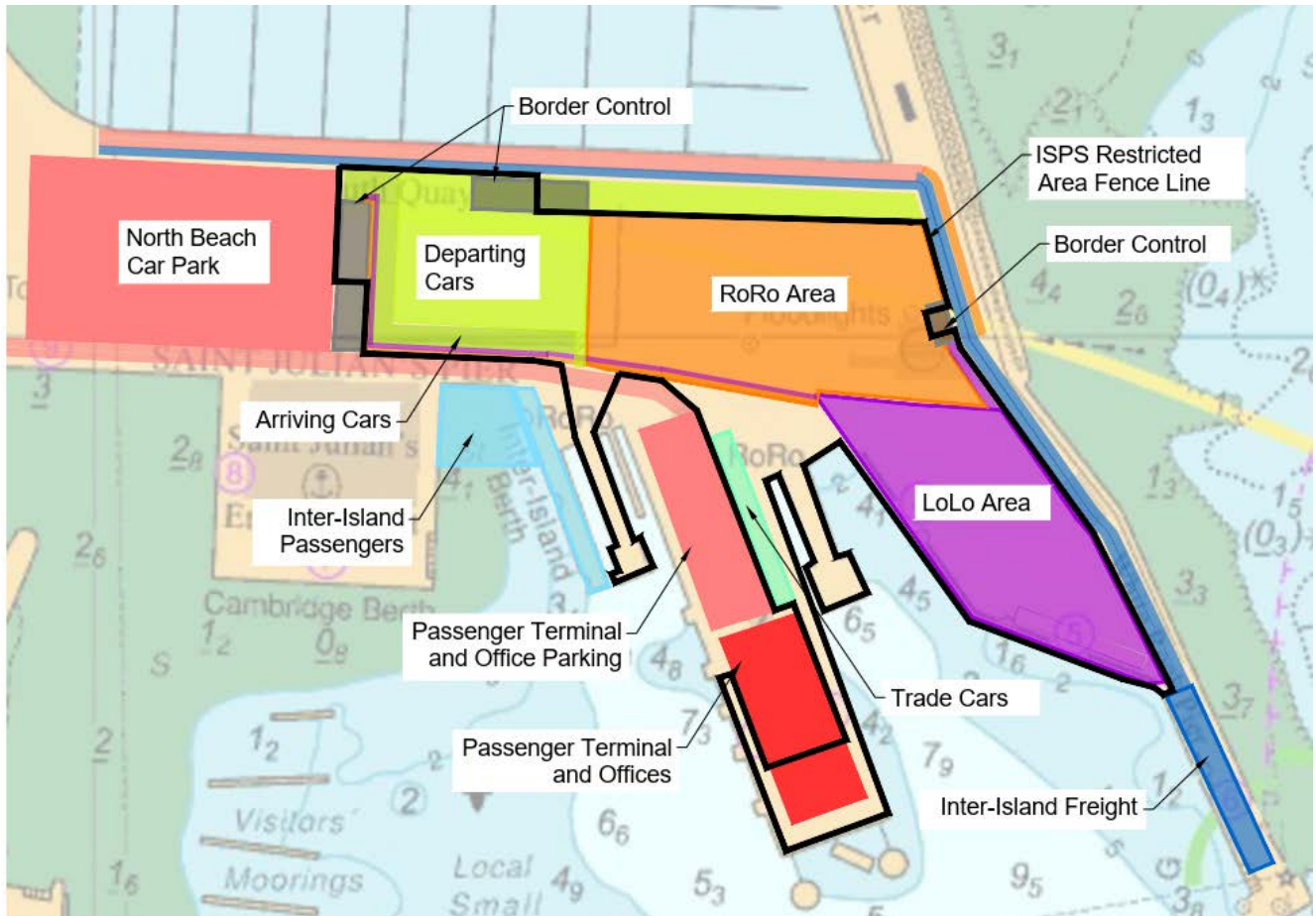


Figure 1: Layout for reconfiguration of the existing landside areas – Option 1.1

The terminal has been reconfigured to improve traffic paths by reducing conflict areas and segregating traffic flows. Figure 1 shows the proposed traffic routes for the different sectors.

Private vehicles enter the Harbour along the north side of the South Quay access road, check-in and then queue west to east in the marshalling area. Inbound cars pass through the Customs building (to the west) prior to exiting the harbour via St Julian's Pier. International freight traffic enters the Harbour along the South Quay access road and checks-in through the ISPS gate at the north eastern entrance. The international freight traffic remains within the ISPS until it exits the port via St Julian's Pier. Inter-island freight traffic enters and exits the port along the south quay and remains outside of the ISPS boundary throughout.

Private vehicles and foot passengers accessing the international passengers area enter and exit the port via St Julian's Pier.

Private vehicles and foot passengers access the inter-island passengers berth following the pedestrian designated paths along St Julian's Pier.

3. Option description

Option 1.1 considers the reconfiguration of the existing landside for the RoRo, LoLo and International passengers areas. The remaining areas of the Port are to remain as per the current arrangement.

3.1 Berths

Existing berths in general are not required to be modified for Option 1.1.

3.2 Landside space

The following subsections describe the landside modifications Option 1.1 considers for the different sectors.

3.2.1 LoLo

The existing LoLo and RoRo areas are designed to enable fluctuation of demand for space between LoLo and RoRo. The LoLo yard currently has 81 Twenty-foot Ground Slots (TGS). The high scenario forecasts a future requirement of 87 TGS. This is provided in two different areas within the designated LoLo landside. The main ground slots area for the containers provides space for 70 containers and a smaller area for 17 containers will be used for stripping and stuffing. As the forecast demand for RoRo is that it will reduce post 2030, the LoLo yard could take a greater part of the designated area. Option 1.1 would provide an easy transition for required space between RoRo and LoLo to cater for any potential demand changes.

3.2.2 RoRo

The spatial requirements showed that the number of trailer spaces required within the RoRo yard to accommodate the inbound and outbound unaccompanied trailers for the 2050 high scenario is 120 trailer spaces. However, the number of available trailer spaces is currently 90. Therefore, to accommodate the increase in the trailer spaces, it is necessary to extend the RoRo storage yard to the existing car marshalling area and North Beach Car Park, to the West. Trailers are recommended to be orientated at 45° to minimise the required draw forward distance and manoeuvring area between rows of trailers. The trailer rows aligned north to south, provide the most compact solution and are better for the loading and unloading operations.

The current area used for car marshalling has 4,200 m². To meet future requirements, an area of 5,975 m² is required. As the RoRo yard is to expand and use part of the existing car marshalling area, the new car marshalling area should be located to the west of the RoRo storage yard, in close proximity to a proposed new/relocated Customs and Immigration facility.

The area dedicated to car imports and exports is to remain unaltered.

3.2.3 International passengers

The international passenger terminal is to remain on the New Jetty. However, the existing terminal has an area of approximately 1,700 m², and the forecast requires a 2600 m² terminal to suit future needs. Option 1.1 considers demolishing the existing international passenger terminal and adjacent offices to build a larger terminal building in the same location. This should be able to accommodate international passengers on the ground floor, inside the ISPS area, and office staff from the Blue Economy building within the first floor, outside of the ISPS area.

3.2.4 Inter-island freight

The inter-island freight landside area is to remain unaltered.

3.2.5 Inter-island passengers

The inter-island passengers landside area is to be increased. An area of approximately 500 m² in between the inter-island and Cambridge berths is proposed to be reclaimed and filled, to create additional drop off areas for inter-island passengers.

3.3 Facilities

The existing Customs and Immigration office is located to the east of the RoRo yard. To improve traffic flow, it is recommended to demolish this building, replacing it with a larger Customs and Immigration office towards the West of the RoRo yard with two small offices at the north and north east of the site at the entrances designated for private cars and for international freight, respectively.

Within the International passengers area, landside facilities are required to provide sufficient parking spaces and drop off areas for international passengers. Option 1.1 considers the demolition of the offices within the New Jetty and use of the freed space for parking spaces and drop off areas.

The North Beach Car Park, outside of the Port area, is reduced and is outside Guernsey Harbours requirements. If the car park space is required to be re-established additional car parking could be provided by creating two levels to accommodate the same number of vehicles as existing. An estimation of the additional land required from the North Beach Car Park to meet the high scenario forecast has been made. A total of 5,000 m² are likely to be required.

3.4 Access and ISPS fence

The following subsections describe the access, traffic routes (see Figure 1) and ISPS limitations for each sector.

The South Quay has currently two lanes (one inbound and one outbound). An additional inbound lane is required to accommodate the traffic entering the Port and accessing the Eastern Arm, and no additional lanes are required to accommodate the traffic exiting the Port, North Beach Car Park and Eastern Arm.

St Julian's Pier currently has two outbound lanes, which are sufficient to accommodate the traffic exiting the Port. An inbound lane is also required to provide access to the New Jetty. To accommodate this, parking spaces to the south of the North Beach Car Park could potentially be used.

Three lanes should be available at the northern port entrance, one to provide access (inbound) to the LoLo and RoRo yard and two (inbound and outbound) to provide access to the inter-island freight area. There are currently two lanes (one inbound and one outbound) and therefore, an extra lane(inbound) should be created.

The RoRo, LoLo and departures zone of the passenger terminal are within the ISPS boundary. Inter-island freight and passengers, parking spaces/drop off areas and the arrivals area of the international passenger terminal are outside of the ISPS area.

3.4.1 LoLo freight

LoLo freight vehicles access the Port along the north side of the South Quay road access using the north eastern entrance. LoLo traffic exits the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.2 RoRo freight

RoRo freight vehicles access the Port along the South Quay road access, using the north eastern entrance. RoRo traffic exits the Port along St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.3 Private cars

Private cars access the Port along the South Quay access road, using the north entrance (only for private cars). Cars exit the Port along St Julian's Pier access road prior to enter the Weighbridge Roundabout.

3.4.4 International passengers

The landside access/exit for international passengers is along St Julian's Pier access road. To avoid conflict with the ISPS boundary it is proposed that a ramp is provided to go over the access and egress point of RoRo Ramp 1. It is recognised that this is not ideal as this still requires crossing the ISPS boundary even though it will be at a different level.

3.4.5 Inter-island freight

Inter-island freight vehicles are to access the Port along the South Quay access road, using the north eastern entrance. These vehicles will exit the port following the same route as they are outside of the ISPS boundary.

3.4.6 Inter-island passengers

Inter-island passengers (pedestrians and potential personal/ drop off vehicles) are to access the Inter-island berth along St Julian's Pier access road. An existing drop off area is located in close proximity to the berth.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 1.1.

	Spatial requirements identified for peak 2020-2050 high demand	Option 1.1
LoLo		
Berth	1 no. 120 m long berth with a depth of 6.4 m	✓*
Landside space	8,700 m ² should be provided for 87 Twenty-foot Ground Slots	✓
Facilities	Two mobile cranes should be provided Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓
Location Requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓
RoRo		
Berth	2 No. 155 m long berths with a depth of 6.6 m	✓*
Landside space	8,400 m ² should be provided for 120 trailer spaces 5,975 m ² should be provided for private and small commercial vehicles 576 m ² should be provided for car imports and exports	✓
Facilities	RoRo storage yard and private and small commercial vehicles – Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided No specific facilities required for car imports and exports	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the trailer storage area and to the local road network Landside access is required to the marshalling yard and from the Border Control / Customs building for cars and small commercial vehicles. The landside access route should be outside the ISPS Zone. The Border Control / Customs Building should be located on the edge of the ISPS Zone such that the ISPS Zone effectively runs through the point when vehicles have been cleared	✓

	Spatial requirements identified for peak 2020-2050 high demand	Option 1.1
	The area for storing imported and exported cars needs to be located in close proximity to the RoRo ramps and within the ISPS Zone	
Location requirements	<p>The RoRo storage yard should be located within the ISPS area of the port and in close proximity to the RoRo berths</p> <p>The car and small commercial vehicle facility need to be at the same location as the foot passenger facility as the vehicles and foot passengers arrive on the same vessels</p> <p>Landside access is required to and from the car storage area</p>	✓
International passengers and vehicular traffic		
Berth	<p>2 No. 155 m long berths with a depth of 6.6 m (RoRo freight)</p> <p>1 No. 50 m long berth with a -3.3 mCD depth</p>	✓*
Landside space	<p>2600 m² should be provided for the passenger terminal</p> <p>2000 m² should be provided for parking spaces and drop off areas</p>	✓
Facilities	Passenger areas should include welfare facilities, retail areas and a café/restaurant area(s).	✓
Access and ISPS	<p>Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report. Landside access is required to the passenger terminal for buses, taxis, private cars and foot passengers. The landside access route should not enter the ISPS port security area</p> <p>The departure area of the terminal needs to be within the ISPS zone and the public area needs to be outside the ISPS Zone. Therefore, the terminal needs to be as close to the boundary of the ISPS Zone as possible</p>	✓
Location requirements	The terminal for day passengers should be located within walking distance of St Peter Port Harbour commercial area. For other passengers being located close to St Peter Port Harbour commercial area is not critical	✓
Inter-island passengers		
Berth	1 No. 80 m long berth with -3.4 mCD depth	✓
Landside space	Based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space, the required area is approximately 340 m ² , assuming all vessels are leaving at similar times and are fully booked	✓
Facilities	<p>Utilities: Potable water, fire water and area lighting should be provided</p> <p>Safety equipment: Bollards and fenders should be provided</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided</p>	✓
Access and ISPS	<p>All tide access is required for inter-island charter vessels which have a maximum draught of 2.1 m</p> <p>Landside access is required to the berth for foot passengers with adequate day parking nearby, the landside access route should not enter the ISPS Zone</p>	✓

	Spatial requirements identified for peak 2020-2050 high demand	Option 1.1
Location requirements	Inter-island passenger services need to be located in St Peter Port in close proximity to the town centre	✓
Inter-island freight		
Berth	1 No. 40 m long berth with a depth of 4 m	✓*
Landside space	400 m ² should be provided for storage	✓
Facilities	Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	All tide access where possible or as a minimum, sufficient depth at MLWS is required for inter-island freight vessels which currently have a maximum draught of 3.05m Landside access must be provided for vehicles, including mobile cranes and container lorries	✓
Location requirements	There are no specific location requirements for inter-island freight	✓

Table 1: Comparison of Option 1.1, Do Minimum, with spatial requirements

5. Assumptions

- It has been assumed that demolition of existing buildings is possible subject to reinstatement of these within the Port area
- It is assumed that the new jetty is structural sufficient to withstand the additional loading of a two storey passenger terminal building
- It is assumed that the RoRo and LoLo area will remain shared and can be flexible in accordance with demand
- A standard car parking space has been assumed as 4.8 m x 2.4 m, equal to 11.52 m²
- The total number of Twenty-foot ground slots (TGS) required has been estimated based on the number of Twenty-foot Equivalent Units per annum, the dwell time, peak factor (1.3 in accordance with the FHRS (Halcrow, 2010)), the operational days per annum (assuming 312 days which is equivalent to 6 days per week) and the stack height
- The total number of trailers has been estimated based on the number of trailers per annum, the peak factor (1.5 in accordance with the FHRS (Halcrow, 2010)), dwell time and the number of service days (assuming 365 days). The spatial requirements for the waiting area is based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space
- Sufficient space is provided for private cars to queue prior to access and after accessing the car marshalling area, assuming each vehicle takes up to 6.25 m

6. Costs

The implementation cost is between £ 21 and £35 million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

The cost of the car park is not included in the total cost. If additional parking spaces cannot be provided elsewhere, a double deck or an underground car park would be required, with a cost of £14 and £25 million, respectively.

Guernsey Future Harbour Requirements 2020

Jacobs

Activity and Location:			Date:		Job Number:	
St Peter Port, Guernsey			06/07/2020		B238 2200	
Sheet Title:			Estimated By:		ILE	
Option 1.1 Cost Summary			Jacobs			
			Status of Design:			
			Concept/Planning			
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost	
Preliminaries					£ 2,848,500.0	
General Conditions and Mod/Demob	20%	-	-	£ 2,848,500.00		
Pavement					£ 1,595,000.0	
Concrete pavement	29,000	EA	£ 55.0	£ 1,595,000.00		
Buildings					£ 12,647,700.0	
Customs/offices	1,500	Sq.m	£ 1,192.00	£ 1,788,000.00		
Blue Economy building	1,600	Sq.m	£ 2,516.00	£ 4,025,600.00		
Passengers terminal International	2,600	Sq.m	£ 2,516.00	£ 6,541,600.00		
Building dismantling	2,500	Sq.m	£ 117.00	£ 292,500.00		
Access Bridges					£ 2,113,336.0	
Double deck linkspan including piled foundations for vehicle access	1,200	Sq.m	£ 1,275.00	£ 1,530,000.00		
Fixed bridge tunnel for pedestrian access	60	m	£ 8,055.60	£ 483,336.00		
Steps and lifts	1	EA	£ 100,000.00	£ 100,000.00		
Reclamation (Inter-island passengers)					£ 289,800.0	
Supply and fill material	4,000	Cu.m	£ 69.00	£ 276,000.00		
Ground Improvement	1	EA	£ 13,800.00	£ 13,800.00		
Revetment (Inter-island passengers)					£ 230,800.0	
Rock Armor	1,000	Cu.m	£ 74.00	£ 74,000.00		
Underlayer	400	Cu.m	£ 72.00	£ 28,800.00		
Core Rock	2,000	Cu.m	£ 64.00	£ 128,000.00		
Infrastructure Subtotal					£ 19,725,136.0	
Planning, Design, Permits, and Construction Support					7% £ 1,381,000.00	
Infrastructure Construction Total					£ 21,000,000.00	
Optimism Bias					66% £ 14,000,000.00	
Total Project Cost					£ 35,000,000.00	
* Percentages used for Design and Permits only consider infrastructure cost and excludes cost of equipment.						

Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.



Future Harbour Requirements Study 2020

Option 1.2 - Technical Note

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1. Introduction

The shortlist identifies that all commercial sectors (with the exception of bulk liquids) can be provided by a Do Minimum option. This demonstrates that for most sectors there is no harbour specific requirement to relocate services outside of the current harbours or to expand current berth areas. However, future spatial requirements do require a modification to the landside area to meet base or high demand.

Our spatial requirements and demand study of the operations in St. Peter Port Harbour revealed the need of increasing the land and berth space for the commercial sectors and the reorganisation/provision of the landside facilities considering the public and the security areas to optimize traffic routes and security controls within the port.

The option we consider in this technical note consists of the reconfiguration of the existing St Peter Port Harbour to provide facilities to better suit current commercial needs and meet commercial forecast (high scenario) requirements. Note that leisure sectors are considered separately in another technical note.

This report considers the Do Minimum Option 1.2 for St Peter Port Harbour commercial sectors. The main difference with Option 1.1 are the location of the international passenger terminal, car parking spaces/drop off areas and the Blue Economy building in Cambridge berth, and the Harbour offices in the New Jetty. The key considerations used in the development of the option are listed below:

1. Minimise construction of marine infrastructure and use existing landside areas as far as reasonably practical, minimising loss of public access areas.
2. Improve traffic flows within conflict areas, and segregate inbound and outbound traffic.
3. Increase freight marshalling
4. Increase all traffic queuing room (inbound and outbound) to accommodate forecast requirements.
5. Maintain foot passenger access to the Cambridge Berth, Inter-island berth and New Jetty passenger terminal.
6. Maintain the LoLo berth and yard, RoRo berth and yard, departure area of the international passengers and car imports and exports area within the ISPS Zone.

2. Harbour layout

Option 1.2 considers the reconfiguration of the existing landside space, keeping the existing marine facilities as per the current arrangement for the commercial activities.

The proposed layout is as shown in Figure 1.

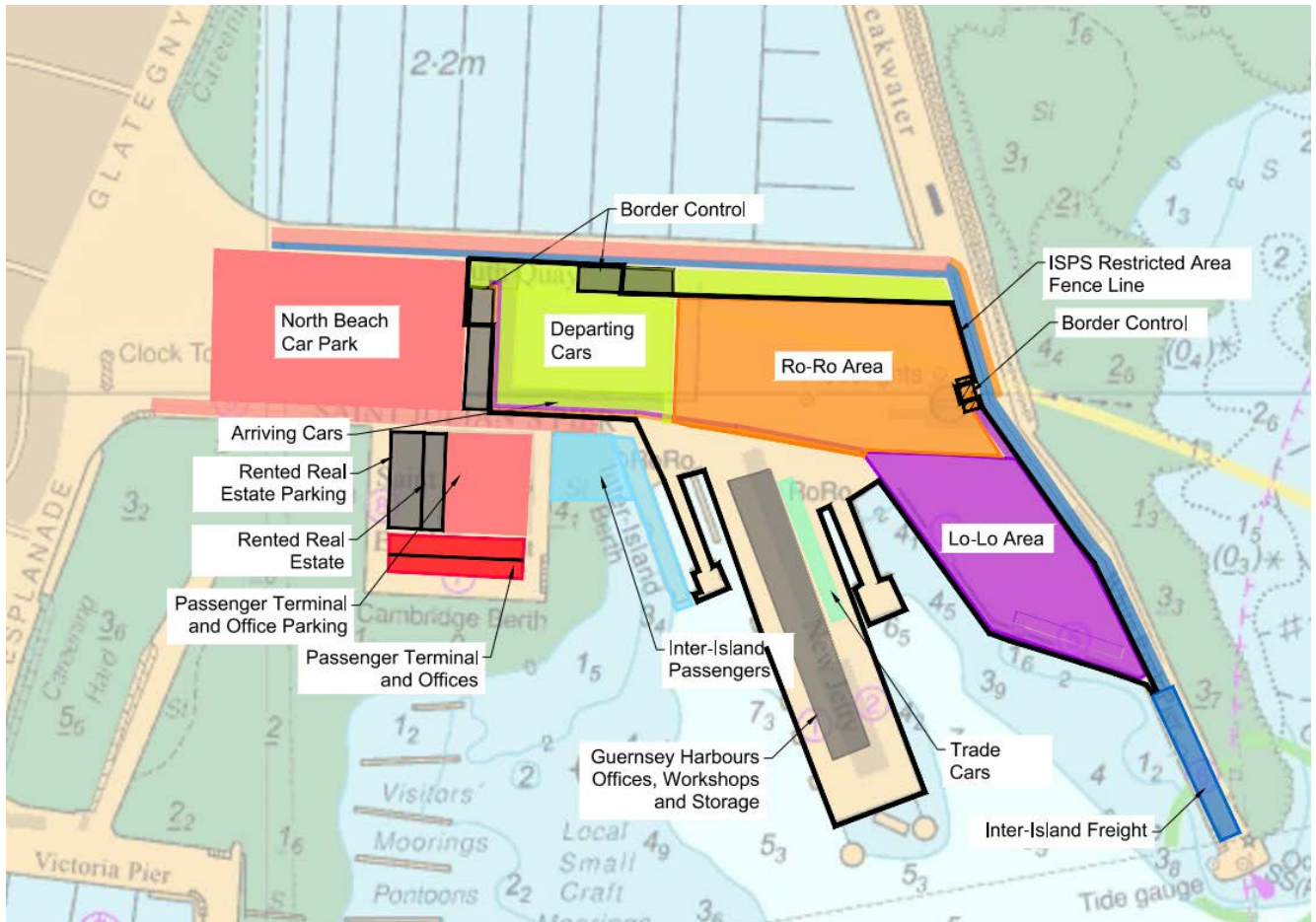


Figure 1: Layout for reconfiguration of the existing landside areas – Option 1.2

Option 1.2 does not provide sufficient space for the Blue Economy Building [non office]. To suit this spatial requirement, Option 1.2a presents a solution which consists on the extension of Cambridge berth to provide sufficient space to accommodate the Blue Economy Building [non office]. The remainder of the proposed areas remain the same as for Option 1.2. The proposed layout for Option 1.2a is shown in Figure 2.

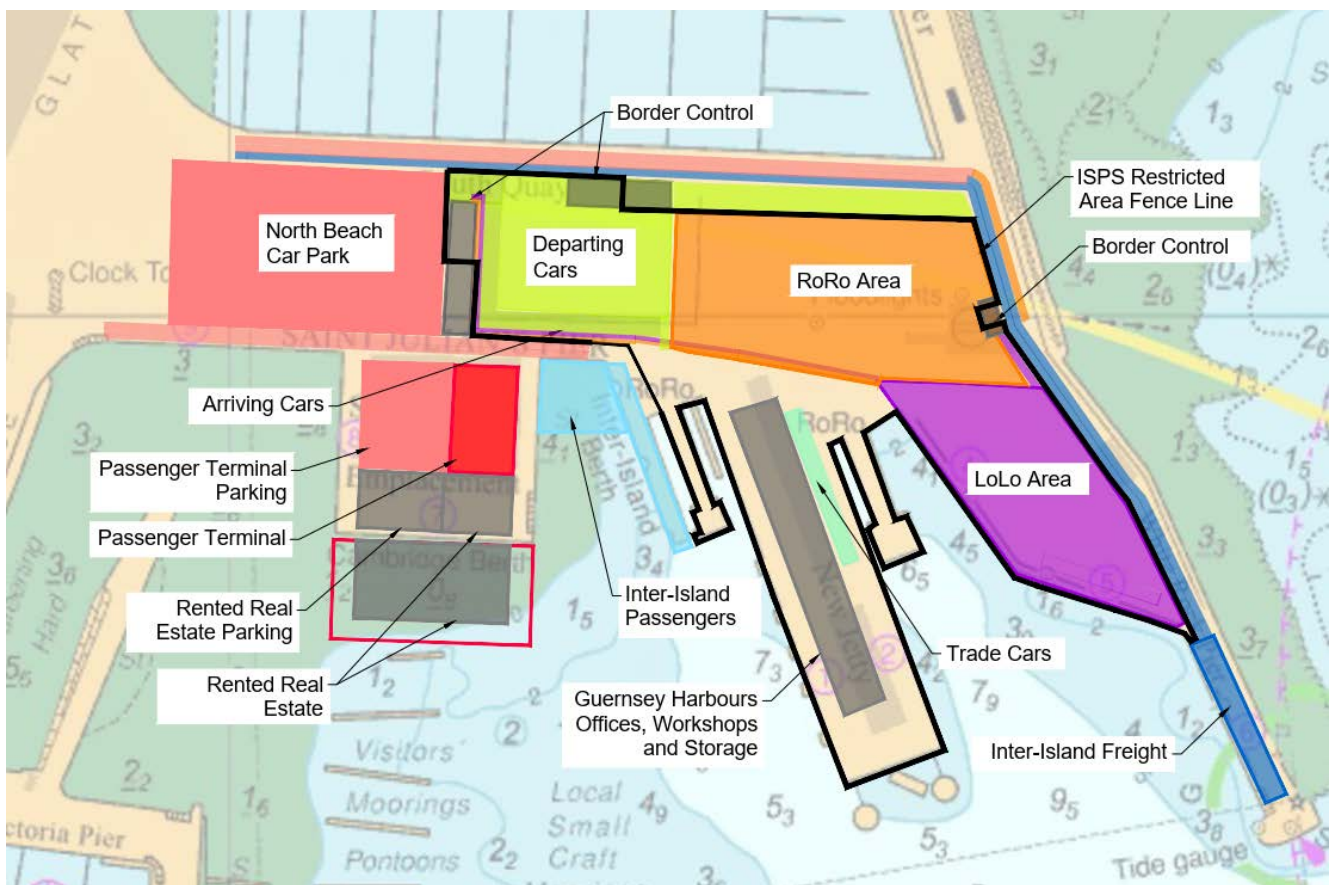


Figure 2: Layout for reconfiguration of the existing landside areas considering Cambridge berth extension – Option 1.2a

The terminal has been reconfigured to improve traffic paths by reducing conflict areas and segregating traffic flows. Figure 1 shows the proposed traffic routes for the different sectors.

Private vehicles enter the Harbour along the north side of the South Quay access road, check-in and then queue west to east in the marshalling area. Inbound cars pass through the Customs building (to the west) prior to exiting the harbour via St Julian's Pier. International freight traffic enters the Harbour along the South Quay access road and checks-in through the ISPS gate at the north eastern entrance. The international freight traffic remains within the ISPS until it exits the port via St Julian's Pier. Inter-island freight traffic enters and exits the port along the South Quay and remains outside of the ISPS boundary throughout.

Private vehicles and foot passengers accessing the international passengers area enter and exit the port along St Julian's Pier access road.

Foot passengers and vehicles access the inter-island passengers berth following the pedestrian designated paths along St Julian's Pier.

3. Option description

Option 1.2 considers the reconfiguration of the existing landside for the RoRo, LoLo and International passengers areas. The remaining areas of the Port are to remain as per the current arrangement.

3.1 Berths

Existing berths in general are not required to be modified for Option 1.2.

3.2 Landside space

The following subsections describe the landside modifications Option 1.2 considers for the different sectors.

3.2.1 LoLo

The existing LoLo and RoRo areas are designed to enable fluctuation of demand for space between LoLo and RoRo. The LoLo yard currently has 81 Twenty-foot Ground Slots (TGS). The high scenario forecasts a future requirement of 87 TGS. This is provided in two different areas within the designated LoLo landside. The main ground slots area for the containers provides space for 70 containers and a smaller area for 17 containers will be used for stripping and stuffing. As the forecast demand for RoRo is that it will reduce post 2030, the LoLo yard could take a greater part of the designated area. Option 1.2 would provide an easy transition for required space between RoRo and LoLo to cater for any potential demand changes.

3.2.2 RoRo

The spatial requirements showed that the number of trailer spaces required within the RoRo yard to accommodate the inbound and outbound unaccompanied trailers for the 2050 high scenario is 120 trailer spaces. However, the number of available trailer spaces is currently 90. Therefore, to accommodate the increase in the trailer spaces required, it is necessary to extend the RoRo storage yard to the existing car marshalling area and North Beach Car Park, to the West. Trailers are recommended to be orientated at 45° to minimise the required draw forward distance and manoeuvring area between rows of trailers. The trailer rows aligned north to south, provide the most compact solution and are better for the loading and unloading operations.

The current area used for car marshalling has 4,200 m². To meet future requirements, an area of 5,975 m² is required. As the RoRo yard is to expand and use part of the existing car marshalling area, the new car marshalling area shall be located to the west of the RoRo storage yard, in close proximity to a proposed new/relocated Customs and Immigration facility.

The area dedicated to car imports and exports is to remain unaltered.

3.2.3 International passengers

The international passenger terminal and the Blue Economy buildings are to be located on Cambridge berth and the existing Harbour Offices, currently located within Cambridge berth, are to be demolished. These are to be reinstated on the New Jetty, after demolishing the existing offices and passenger terminal.

The departures area of the terminal shall be located within the ISPS boundary and passengers are to be transferred by bus. An alternative enclosed passenger access structure could be created at an additional cost to avoid transfer by bus if this is deemed undesirable.

3.2.4 Inter-island freight

The inter-island freight landside area is to remain unaltered.

3.2.5 Inter-island passengers

The inter-island passengers landside area is to be increased. An area of approximately 500 m² in between the inter-island and Cambridge berths is proposed to be reclaimed and filled, to create additional drop off areas for inter-island passengers.

3.3 Facilities

The existing Customs and Immigration office is located to the east of the RoRo yard. To improve traffic flow, it is recommended to demolish this building, replacing it with a larger Customs and Immigration office towards the West of the RoRo yard with two small offices at the north and north east of the site at the entrances designated for private cars and for international freight, respectively.

Within the International passengers area, landside facilities are required to provide sufficient parking spaces and drop off areas for international passengers. As the offices within Cambridge berth are proposed to be demolished, car park and drop off areas can be accommodated within Cambridge berth too, as well as the Blue Economy Building, which is also proposed to be demolished from the New Jetty.

The North Beach Car Park, outside of the Port area, is reduced and is outside Guernsey Harbours requirements. If the car park space is required to be re-established additional car parking could be provided by creating two levels to accommodate the same number of vehicles as existing. An estimation of the additional land required from the North Beach Car Park to meet the high scenario forecast has been made. A total of 5,000 m² are likely to be required.

3.4 Access and ISPS fence

The following subsections describe the access, traffic routes (see Figure 1) and ISPS limitations for each sector.

The South Quay has currently two lanes (one inbound and one outbound). An additional lane is required to accommodate the traffic entering the Port and accessing the Eastern Arm, and no additional lanes are required to accommodate the traffic exiting the Port, North Beach Car Park and Eastern Arm.

St Julian's Pier currently has two outbound lanes, which are sufficient to accommodate the traffic exiting the Port. An inbound lane is yet required to provide access to the New Jetty. To accommodate this, parking spaces to the south of the North Beach Car Park could potentially be used.

Three lanes should be available at the northern port entrance, one to provide access (inbound) to the LoLo and RoRo yard and two (inbound and outbound) to provide access to the inter-island freight area. There are currently two lanes (one inbound and one outbound) and therefore, an extra lane(inbound) should be created.

The RoRo, LoLo and departures zone of the passenger terminal are within the ISPS boundary. Inter-island freight and passengers, parking spaces/dropoff areas and the arrivals area of the international passenger terminal are outside of the ISPS area.

3.4.1 LoLo freight

LoLo freight vehicles access the Port along the north side of the South Quay road access using the north eastern entrance. LoLo traffic exits the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.2 RoRo freight

RoRo freight vehicles access the Port along the South Quay road access, using the north eastern entrance. RoRo traffic exits the Port along St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.3 Private cars

Private cars access the Port along the South Quay access road, using the north entrance (only for private cars). Cars exit the Port along St Julian's Pier access road prior to enter the Weighbridge Roundabout.

3.4.4 International passengers

The landside access/exit for international passengers is along St Julian's Pier access road.

3.4.5 Inter-island freight

Inter-island freight vehicles are to access the Port along the South Quay access road, using the north eastern entrance. These vehicles will exit the port following the same route as they are outside of the ISPS boundary.

3.4.6 Inter-island passengers

Inter-island passengers (pedestrians and potential personal/ drop off vehicles) are to access the Inter-island berth along St Julian's Pier access road. An existing drop off area is located in close proximity to the berth.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 1.2.

	Spatial requirements identified	Option 1.2
LoLo		
Berth	1 no. 120 m long berth with a depth of 6.4 m	✓*
Landside space	8,700 m ² should be provided for Twenty-foot Ground Slots	✓
Facilities	Two mobile cranes should be provided Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided.	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓
Location requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓
RoRo		
Berth	2 No. 155 m long berths with a depth of 6.6 m	✓*
Landside space	8,400 m ² should be provided for 120 trailer spaces 5,975 m ² should be provided for private and small commercial vehicles 576 m ² should be provided for car imports and exports	✓
Facilities	RoRo storage yard and private and small commercial vehicles- Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided No specific facilities required for car imports and exports	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the trailer storage area and to the local road network Landside access is required to the marshalling yard and from the Border Control / Customs building for cars and small commercial vehicles. The	✓

	Spatial requirements identified	Option 1.2
	<p>landside access route should be outside the ISPS Zone. The Border Control / Customs Building should be located on the edge of the ISPS Zone such that the ISPS Zone effectively runs through the point when vehicles have been cleared</p> <p>The area for storing imported and exported cars needs to be located in close proximity to the RoRo ramps and within the ISPS Zone</p>	
Location requirements	<p>The RoRo storage yard should be located within the ISPS area of the port and in close proximity to the RoRo berths</p> <p>The car and small commercial vehicle facility need to be at the same location as the foot passenger facility as the vehicles and foot passengers arrive on the same vessels</p> <p>Landside access is required to and from the car storage area</p>	✓
International passengers and vehicular traffic		
Berth	<p>2 No. 155 m long berths with a depth of 6.6 m (RoRo freight)</p> <p>1 No. 50 m long berth with a depth of -3.3 mCD</p>	✓*
Landside space	<p>2600 m² should be provided for the passenger terminal</p> <p>2000 m² should be provided for parking spaces and drop off areas</p>	✓
Facilities	Passenger areas should include welfare facilities, retail areas and a café/restaurant area(s)	✓
Access and ISPS	<p>Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report</p> <p>Landside access is required to the passenger terminal for buses, taxis, private cars and foot passengers. The landside access route should not enter the ISPS port security area</p> <p>The departure area of the terminal needs to be within the ISPS zone and the public area needs to be outside the ISPS Zone. Therefore, the terminal needs to be as close to the boundary of the ISPS Zone as possible</p>	✓
Location requirements	The terminal for day passengers should be located within walking distance of St Peter Port Harbour commercial area. For other passengers being located close to St Peter Port Harbour commercial area is not critical	✓
Inter-island passengers		
Berth	1 No. 80 m long berth with a depth of -3.4 mCD depth	✓
Landside space	Based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space, the required area is approximately 340 m ² , assuming all vessels are leaving at similar times and are fully booked	✓
Facilities	<p>Utilities: Potable water, fire water and area lighting should be provided</p> <p>Safety equipment: Bollards and fenders should be provided</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided</p>	✓

	Spatial requirements identified	Option 1.2
Access and ISPS	<p>All tide access is required for inter-island charter vessels which have a maximum draught of 2.1 m</p> <p>Landside access is required to the berth for foot passengers with adequate day parking nearby, the landside access route should not enter the ISPS Zone</p>	✓
Location requirements	Inter-island passenger services need to be located in St Peter Port in close proximity to the town centre	✓
Inter-island freight		
Berth	1 No. 40 m long berth with a depth of 4 m	✓*
Landside space	400 m ² should be provided for storage	✓
Facilities	<p>Utilities: Potable water, fire water and area lighting should be provided</p> <p>Safety equipment: Bollards and fenders should be provided</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided</p>	✓
Access and ISPS	<p>All tide access where possible or as a minimum, sufficient depth at MLWS is required for inter-island freight vessels which currently have a maximum draught of 3.05m</p> <p>Landside access must be provided for vehicles, including mobile cranes and container lorries</p>	✓
Location requirements	There are no specific location requirements for inter-island freight	✓

Table 1: Comparison of Option 1.2, Do Minimum, with spatial requirements.

5. Assumptions

- It has been assumed that demolition of existing buildings is possible subject to reinstatement of these within the Port area
- It is assumed that the RoRo and LoLo area will remain shared and can be flexible in accordance with demand
- A standard car parking space has been assumed as 4.8 m x 2.4 m, equal to 11.52m²
- The total number of Twenty-foot ground slots (TGS) required has been estimated based on the number of Twenty-foot Equivalent Units per annum, the dwell time, peak factor (1.3 in accordance with the FHRS (Halcrow, 2010)), the operational days per annum (assuming 312 days which is equivalent to 6 days per week) and the stack height
- The total number of trailers has been estimated based on the number of trailers per annum, the peak factor (1.5 in accordance with the FHRS (Halcrow, 2010)), dwell time and the number of service days (assuming 365 days). The spatial requirements for the waiting area is based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space
- Sufficient space is provided for private cars to queue prior to access and after accessing the car marshalling area, assuming each vehicle takes up to 6.25 m

6. Costs

The implementation cost for Option 1.2 is between £ 27 and £45 million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

The cost of the car park is not included in the total cost. If additional parking spaces cannot be provided elsewhere, a double deck or an underground car park would be required, with a cost of £14 and £25 million, respectively.

Guernsey Future Harbour Requirements 2020

Jacobs

Activity and Location:			Date:		Job Number:	
St Peter Port, Guernsey			06/07/2020		B2382200	
Sheet Title:			Estimated By:		ILE	
Option 1.2 Cost Summary			Jacobs			
			Status of Design:			
			Concept/Planning			
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost	
Preliminaries					£ 3,920,700.0	
General Conditions and Mod/Demob	20%	-	-	£ 3,920,700.00		
Pavement					£ 1,540,000.0	
Concrete pavement	28,000	EA	£ 55.	£ 1,540,000.00		
Buildings					£ 18,063,600.0	
Customs/Harbour Offices	5,700	Sq.m	£ 1,192.0	£ 6,794,400.00		
Blue Economy building	1,600	Sq.m	£ 2,516.0	£ 4,025,600.00		
Passenger's terminal International	2,600	Sq.m	£ 2,516.0	£ 6,541,600.00		
Building dismantling	6,000	Sq.m	£ 117.	£ 702,000.00		
Reclamation (Inter-island passengers)					£ 289,800.	
Supply and fill material	4,000	Cu.m	£ 69.	£ 276,000.00		
Ground Improvement	1	EA	£ 13,800.0	£ 13,800.00		
Revetment (Inter-island passengers)					£ 230,800.	
Rock Armor	1,000	Cu.m	£ 74.	£ 74,000.00		
Underlayer	400	Cu.m	£ 72.	£ 28,800.00		
Core Rock	2,000	Cu.m	£ 64.	£ 128,000.00		
Access bridge					£ 1,000,000.0	
Fixed bridge tunnel for pedestrian access	110	m	£ 8,055.60	£ 886,116.00		
Steps and lifts	1	EA	£ 100,000.00	£ 100,000.00		
Infrastructure Subtotal					£ 25,044,900.0	
Planning, Design, Permits, and Construction Support					7% £ 1,753,000.0	
Infrastructure Construction Total					£ 27,000,000.0	
Optimism Bias					66% £ 18,000,000.0	
Total Project Cost					£ 45,000,000.0	
* Percentages used for Design and Permits only consider infrastructure cost and excludes cost of equipment.						

Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

If Option 1.2a is implemented, i.e., Cambridge berth is extended to allow for the construction of the Blue Economy Building [Non Office], the implementation cost is between £ 47 and £78 million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020

Jacobs

Activity and Location:			Date:		Job Number:	
St Peter Port, Guernsey			06/07/2020		B2382200	
Sheet Title:			Estimated By:		ILE	
Option 1.2b Cost Summary			Jacobs			
			Status of Design:			
			Concept/Planning			
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost	
Preliminaries					£ 5,254,200.00	
General Conditions and Mod/Demob	20%	-	-	£ 5,254,200.00		
Pavement					£ 1,540,000.00	
Concrete pavement	28,000	EA	£ 55.00	£ 1,540,000.00		
Buildings					£ 24,731,000.00	
Customs/Harbour Offices	5,700	Sq.m	£ 1,192.00	£ 6,794,400.00		
Blue Economy building [Office]	1,600	Sq.m	£ 2,516.00	£ 4,025,600.00		
Passengers terminal International	2,600	Sq.m	£ 2,516.00	£ 6,541,600.00		
Blue Economy building [Non Office]	2,650	Sq.m	£ 2,516.00	£ 6,667,400.00		
Building dismantling	6,000	Sq.m	£ 117.00	£ 702,000.00		
Reclamation (Inter-island passengers)					£ 289,800.00	
Supply and fill material	4,000	Cu.m	£ 69.00	£ 276,000.00		
Ground Improvement	1	EA	£ 13,800.00	£ 13,800.00		
Reclamation (Cambridge berth)					£ 3,115,400.00	
Supply and fill material	43,000	Cu.m	£ 69.00	£ 2,967,000.00		
Ground Improvement	1	EA	£ 148,350.00	£ 148,400.00		
Revetment (Inter-island passengers)					£ 230,800.00	
Rock Armor	1,000	Cu.m	£ 74.00	£ 74,000.00		
Underlayer	400	Cu.m	£ 72.00	£ 28,800.00		
Core Rock	2,000	Cu.m	£ 64.00	£ 128,000.00		
Quay					£ 8,179,500.00	
Blockwork Quay Wall	190	Lin m	£ 41,000.00	£ 7,790,000.00		
Quay Furniture	1	EA	£ 389,500.00	£ 389,500.00		
Access bridge					£ 1,000,000.00	
Fixed bridge tunnel for pedestrian access	110	m	£ 8,055.600	£ 886,116.000		
Steps and lifts	1	EA	£ 100,000.000	£ 100,000.000		
Infrastructure Subtotal					£	44,340,700.00
Planning, Design, Permits, and Construction Support					7%	£ 3,104,000.00
Infrastructure Construction Total					£	47,000,000.00
Optimism Bias					66%	£ 31,000,000.00
Total Project Cost					£	78,000,000.00
*Percentages used for Design and Permits only consider infrastructure cost and excludes cost of equipment.						



Future Harbour Requirements Study 2020

Option 1.3 - Technical Note

B2382200-JAC-02-XX-TN-C-0004 | P02

08 October 2020

States of Guernsey

-

Document history and status

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P01	28/08/20	ISSUE	IV	MSS	MSS	MSS
P02	08/10/20	Final	IV	MSS	HB	MSS

Future Harbour Requirements Study 2020

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1. Introduction

The FHR 2020 study identifies that all commercial sectors (with the exception of bulk liquids) can be provided by a Do Minimum option. This demonstrates that for most sectors there is no harbour specific requirement to relocate services outside of the current harbours or to expand current berth areas. However, future spatial requirements do require a modification to the landside area to meet base or high demand.

Our spatial requirements and demand study of the operations in St. Peter Port Harbour revealed the need of increasing the land and berth space for the commercial sectors and the reorganisation/provision of the landside facilities considering the public and the security areas to optimize traffic routes and security controls within the port.

The option we consider in this technical note consists of the reconfiguration of the existing St Peter Port Harbour to provide facilities to better suit current commercial needs and meet commercial forecast (high scenario) requirements. Note that leisure sectors are considered separately in another technical note.

This report considers the Do Minimum Option 1.3 for St Peter Port Harbour commercial sectors. The main difference with Option 1.1 and Option 1.2 is the location of the international passenger terminal and car parking spaces/drop off areas above the proposed car marshalling yard and the refurbishment of the offices in Cambridge berth to accommodate the Blue Economy building, and Guernsey Harbour offices on the New Jetty.

The key considerations used in the development of the option are:

1. Minimise construction of marine infrastructure and use existing landside areas as far as reasonably practical, minimising loss of public access areas.
2. Improve traffic flows within conflict areas, and segregate inbound and outbound traffic.
3. Increase freight marshalling.
4. Increase all traffic queuing room (inbound and outbound) to accommodate forecast requirements.
5. Maintain foot passenger access to the Cambridge Berth, Inter-island berth and New Jetty passenger terminal.
6. Maintain the LoLo berth and yard, RoRo berth and yard, departure area of the international passengers and car imports and exports area within the ISPS Zone.

2. Harbour layout

Option 1.3 considers the reconfiguration of the existing landside space, keeping the existing marine facilities as per the current arrangement for the commercial activities.

The proposed layout is as shown in Figure 1.

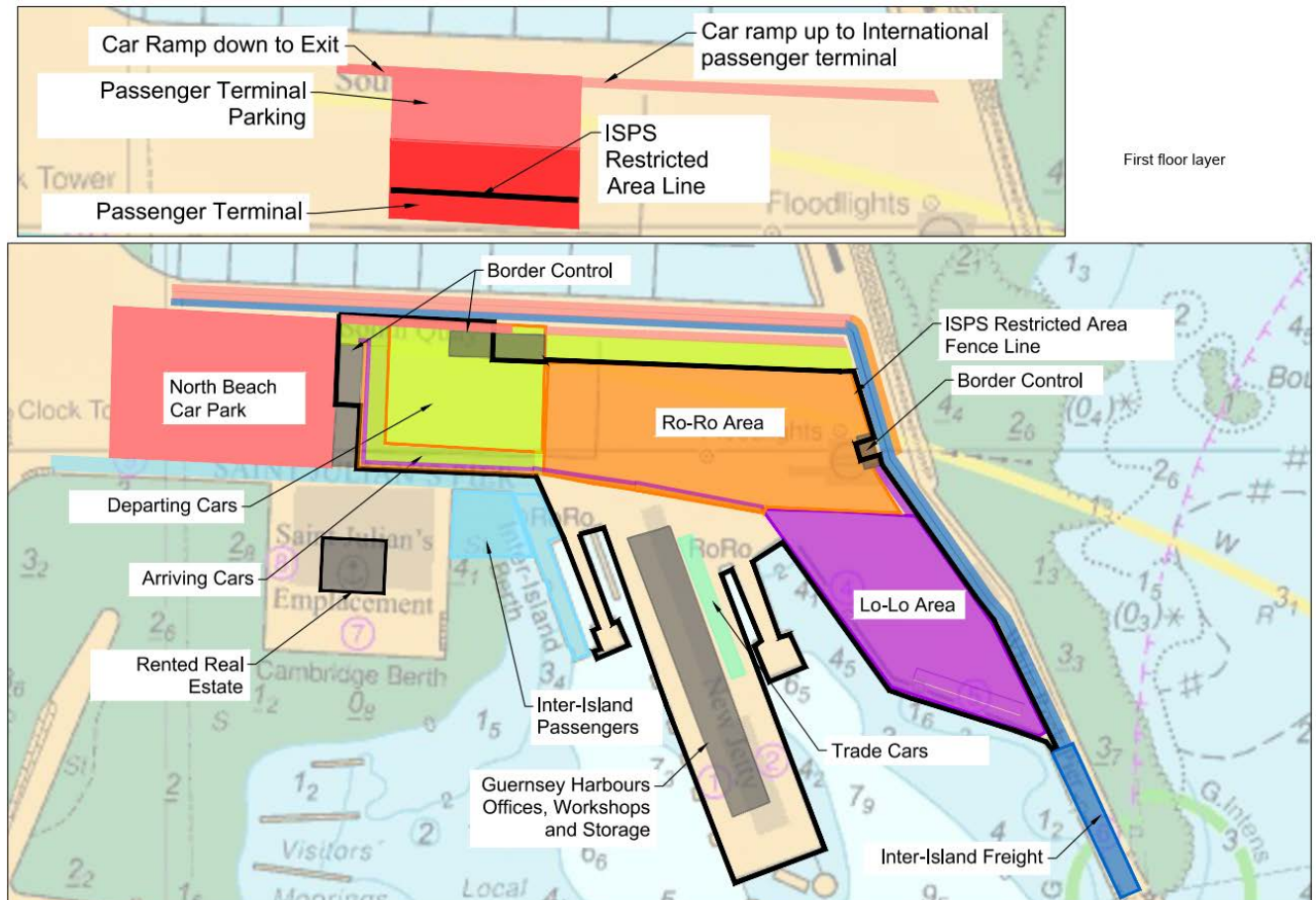


Figure 1: Layout for reconfiguration of the existing landside areas – Option 1.3

The terminal has been reconfigured to improve traffic paths by reducing conflict areas and segregating traffic flows. Figure 1 shows the proposed traffic routes for the different sectors.

Private vehicles enter the Harbour along the north side of the South Quay access road, check-in and then queue west to east in the marshalling area. Inbound cars pass through the Customs building (to the west) prior to exiting the harbour via St Julian's Pier. International freight traffic enters the Harbour along the South Quay access road and checks-in through the ISPS gate at the north eastern entrance. The international freight traffic remains within the ISPS until it exits the port via St Julian's Pier. Inter-island freight traffic enters and exits the port along the South Quay and remains outside of the ISPS boundary throughout.

Private vehicles and foot passengers accessing the international passengers area, created above the marshalling area, enter and exit the port along the ramps on the South Quay access road.

Foot passengers and vehicles access the inter-island passengers berth following the pedestrian designated paths along St Julian's Pier.

3. Option description

Option 1.3 considers the reconfiguration of the existing landside for the RoRo, LoLo and International passengers areas. The remaining areas of the Port are to remain as per the current arrangement.

3.1 Berths

Existing berths in general are not required to be modified for Option 1.3.

3.2 Landside space

The following subsections describe the landside modifications Option 1.3 considers for the different sectors.

3.2.1 LoLo

The existing LoLo and RoRo areas are designed to enable fluctuation of demand for space between LoLo and RoRo. The LoLo yard currently has 81 Twenty-foot Ground Slots (TGS). The high scenario forecasts a future requirement of 87 TGS. This is provided in two different areas within the designated LoLo landside. The main ground slots area for the containers provides space for 70 containers and a smaller area for 17 containers will be used for stripping and stuffing. As the forecast demand for RoRo post 2030 is that it will reduce, the LoLo yard could take a greater part of the designated area. Option 1.3 would provide an easy transition for required space between RoRo and LoLo to cater for any potential demand changes.

3.2.2 RoRo

The data analysis showed that the number of trailer spaces required within the RoRo yard to accommodate the inbound and outbound unaccompanied trailers is 120 for the 2050 high scenario. However, the number of available trailer spaces is currently 90. Therefore, to accommodate the increase in the trailer spaces required, it is necessary to extend the RoRo storage yard to the existing car marshalling area and North Beach Car Park, to the West. Trailers are recommended to be orientated at 45° to minimise the required draw forward distance and manoeuvring area between rows of trailers. The trailer rows aligned north to south, provide the most compact solution, and are better for the loading and unloading operations.

The current area used for car marshalling has 4,200 m². To meet future requirements, an area of 5,975 m² is required. As the RoRo yard is to expand and use part of the existing car marshalling area, the new car marshalling area should be located to the west of the RoRo storage yard, in close proximity to a proposed new/relocated Customs and Immigration facility.

The area dedicated to car imports and exports is to be kept on its current location, however its size is to be increased to accommodate the high scenario forecast demand, which requires 576 m².

3.2.3 International passengers

The international passenger terminal, car park and drop off areas are to be located above the proposed car marshalling yard. The existing passenger terminal on the New Jetty is to be demolished and Guernsey Harbour offices are to be built on this space. The existing offices on Cambridge berth are to be refurbished to accommodate the Blue Economy building spatial requirements.

The departures area of the terminal shall be located within the ISPS boundary and passengers will access the ferry through a pedestrian bridge that will connect with the finger located in the New Jetty.

3.2.4 Inter-island freight

The inter-island freight landside area is to remain unaltered.

3.2.5 Inter-island passengers

The inter-island passengers landside area is to be increased. An area of approximately 500 m² between the inter-island and Cambridge berths is proposed to be reclaimed and filled, to create additional drop off areas for inter-island passengers.

3.3 Facilities

The existing Customs and Immigration office is located to the east of the RoRo yard. To improve traffic flow, it is recommended that this building is demolished and a larger Customs and Immigration office is built towards the west of the RoRo yard with two small offices at the north and north east of the site, at the entrances designated for private cars and for international freight, respectively.

Within the International passengers area, landside facilities are required to provide sufficient parking spaces and drop off areas for international passengers.

The North Beach Car Park, outside of the Port area, is proposed to have two levels to accommodate the same number of vehicles as the existing capacity, as the area had to be reduced to accommodate the RoRo yard requirements. An estimation of the additional land required from the North Beach Car Park to meet the high scenario forecast has been made. A total of 6,000 m² is likely to be required.

3.4 Access and ISPS fence

The following subsections describe the access, traffic routes (see Figure 1) and ISPS limitations for each sector.

The South Quay has currently two lanes (one inbound and one outbound). An additional lane is required to accommodate the traffic entering the Port and accessing the Eastern Arm, and no additional lanes are required to accommodate the traffic exiting the Port, North Beach Car Park and Eastern Arm.

St Julian's Pier currently has two outbound lanes, which are sufficient to accommodate the traffic exiting the Port. An inbound lane is yet required to provide access to the New Jetty. To accommodate this, parking spaces to the south of the North Beach Car Park could potentially be used.

Three lanes should be available at the northern port entrance, one to provide access (inbound) to the LoLo and RoRo yard and two (inbound and outbound) to provide access to the inter-island freight area. There are currently two lanes (one inbound and one outbound) and therefore, an extra lane(inbound) should be created.

The RoRo, LoLo and departures zone of the passenger terminal are within the ISPS boundary. Inter-island freight and passengers, parking spaces/drop off areas and the arrivals area of the international passenger terminal are outside of the ISPS area.

3.4.1 LoLo freight

LoLo freight vehicles access the Port along the north side of the South Quay road access using the north eastern entrance. LoLo traffic exits the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.2 RoRo freight

RoRo freight vehicles access the Port along the South Quay road access, using the north eastern entrance. RoRo traffic exits the Port along St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.3 Private cars

Private cars access the Port along the South Quay access road, using the north entrance (only for private cars). Cars exit the Port along St Julian's Pier access road prior to enter the Weighbridge Roundabout. High-sided vehicles access the Port along the South Quay access road, using the north eastern entrance instead, as RoRo freight vehicles.

3.4.4 International passengers

Private vehicles and foot passengers accessing the international passengers area enter and exit the port along the ramps on the South Quay access road .

3.4.5 Inter-island freight

Inter-island freight vehicles are to access the Port along the South Quay access road, using the north eastern entrance. These vehicles will exit the port following the same route as they are outside of the ISPS boundary.

3.4.6 Inter-island passengers

Inter-island passengers (pedestrians and potential personal/ drop off vehicles) are to access the Inter-island berth along St Julian's Pier access road. An existing drop off area is located in close proximity to the berth.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 1.3.

	Spatial requirements identified	Option 1.3
LoLo		
Berth	1 no. 120 m long berth with a depth of 6.4 m	✓*
Landside space	8,700 m ² should be provided for Twenty-foot Ground Slots	✓
Facilities	Two mobile cranes should be provided Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓
Location requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓
RoRo		
Berth	2 No. 155 m long berths with a depth of 6.6 m	✓*
Landside space	8,400 m ² should be provided for 120 trailer spaces 5,975 m ² should be provided for private and small commercial vehicles 576 m ² should be provided for car imports and exports	✓
Facilities	RoRo storage yard and private and small commercial vehicles- Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided No specific facilities required for car imports and exports	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the trailer storage area and to the local road network Landside access is required to the marshalling yard and from the Border Control / Customs building for cars and small commercial vehicles. The	✓

	Spatial requirements identified	Option 1.3
	<p>landside access route should be outside the ISPS Zone. The Border Control / Customs Building should be located on the edge of the ISPS Zone such that the ISPS Zone effectively runs through the point when vehicles have been cleared</p> <p>The area for storing imported and exported cars needs to be located in close proximity to the RoRo ramps and within the ISPS Zone</p>	
Location requirements	<p>The RoRo storage yard should be located within the ISPS area of the port and in close proximity to the RoRo berths</p> <p>The car and small commercial vehicle facility need to be at the same location as the foot passenger facility as the vehicles and foot passengers arrive on the same vessels</p> <p>Landside access is required to and from the car storage area</p>	✓
International passengers and vehicular traffic		
Berth	<p>2 No. 155 m long berths with a depth of 6.6 m (RoRo freight)</p> <p>1 No. 50 m long berth with a depth of -3.3 mCD</p>	✓*
Landside space	<p>2,600 m² should be provided for the passenger terminal</p> <p>2,000 m² should be provided for parking spaces and drop off areas</p>	✓
Facilities	Passenger areas should include welfare facilities, retail areas and a café/restaurant area(s).	✓
Access and ISPS	<p>Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report</p> <p>Landside access is required to the passenger terminal for buses, taxis, private cars and foot passengers. The landside access route should not enter the ISPS port security area</p> <p>The departure area of the terminal needs to be within the ISPS zone and the public area needs to be outside the ISPS Zone. Therefore, the terminal needs to be as close to the boundary of the ISPS Zone as possible</p>	✓
Location requirements	The terminal for day passengers should be located within walking distance of St Peter Port commercial area. For other passengers being located close to St Peter Port commercial area is not critical	✓
Inter-island passengers		
Berth	1 No. 80 m long berth with a depth of 3.4 m	✓
Landside space	Based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space, the required area is approximately 340 m ² , assuming all vessels are leaving at similar times and are fully booked	✓
Facilities	<p>Utilities: Potable water, fire water and area lighting should be provided</p> <p>Safety equipment: Bollards and fenders should be provided</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided</p>	✓

	Spatial requirements identified	Option 1.3
Access and ISPS	<p>All tide access is required for inter-island charter vessels which have a maximum draught of 2.1 m</p> <p>Landside access is required to the berth for foot passengers with adequate day parking nearby, the landside access route should not enter the ISPS Zone</p>	✓
Location requirements	Inter-island passenger services need to be located in St Peter Port Harbour in close proximity to the town centre	✓
Inter-island freight		
Berth	1 No. 40 m long berth with a depth of 4 m	✓*
Landside space	400 m ² should be provided for storage	✓
Facilities	<p>Utilities: Potable water, fire water and area lighting should be provided</p> <p>Safety equipment: Bollards and fenders should be provided</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided</p>	✓
Access and ISPS	<p>All tide access where possible or as a minimum, sufficient depth at MLWS is required for inter-island freight vessels which currently have a maximum draught of 3.05m</p> <p>Landside access must be provided for vehicles, including mobile cranes and container lorries</p>	✓
Location requirements	There are no specific location requirements for inter-island freight	✓

Table 1: Comparison of Option 1.3, Do Minimum, with spatial requirements.

5. Assumptions

- It has been assumed that demolition of existing buildings is possible subject to reinstatement of these within the Port area
- It is assumed that the RoRo and LoLo area will remain shared and can be flexible in accordance with demand
- A standard car parking space has been assumed as 4.8 m x 2.4 m, equal to 11.52m²
- The total number of Twenty-foot ground slots (TGS) required has been estimated based on the number of Twenty-foot Equivalent Units per annum, the dwell time, peak factor (1.3 in accordance with the FHRS (Halcrow, 2010)), the operational days per annum (assuming 312 days which is equivalent to 6 days per week) and the stack height
- The total number of trailers has been estimated based on the number of trailers per annum, the peak factor (1.5 in accordance with the FHRS (Halcrow, 2010)), dwell time and the number of service days (assuming 365 days). The spatial requirements for the waiting area are based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space
- Sufficient space is provided for private cars to queue prior to access and after accessing the car marshalling area, assuming each vehicle takes up to 6.25 m

6. Costs

The implementation cost is between £ 32 and 53 million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020

Jacobs

Activity and Location:			Date:		Job Number:	
St Peter Port, Guernsey			18/08/2020		B238 2200	
Sheet Title:			Estimated By:		ILE	
Option 1.3 Cost Summary			Jacobs			
			Status of Design:			
			Concept/Planning			
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost	
Preliminaries					£ 3,871,000.0	
General Conditions and Mod/Demob	20%	-	-	£ 3,871,000.00		
Pavement					£ 1,265,000.0	
Concrete pavement	23,000	EA	£ 55.	£ 1,265,000.00		
Buildings					£ 18,090,000.0	
Customs/Harbour Offices	5,700	Sq.m	£ 1,192.0	£ 6,794,400.00		
Blue Economy building (office)	1,750	Sq.m	£ 2,516.0	£ 4,403,000.00		
Passengers terminal International	2,600	Sq.m	£ 2,516.0	£ 6,541,600.00		
Building dismantling	3,000	Sq.m	£ 117.	£ 351,000.00		
Reclamation (Inter-island passengers)					£ 289,800.	
Supply and fill material	4,000	Cu.m	£ 69.	£ 276,000.00		
Ground Improvement	1	EA	£ 13,800.0	£ 13,800.00		
Revetment (Inter-island passengers)					£ 230,800.	
Rock Armor	1,000	Cu.m	£ 74.	£ 74,000.00		
Underlayer	400	Cu.m	£ 72.	£ 28,800.00		
Core Rock	2,000	Cu.m	£ 64.	£ 128,000.00		
Car marshalling area structure					£ 5,250,000.0	
Building	10,000	Cu.m	£ 525.	£ 5,250,000.00		
Access bridge					£ 600,000.	
Fixed bridge tunnel for pedestrian access	65	m	£ 8,055.60	£ 523,614.00		
Steps and lifts	1	EA	£ 100,000.00	£ 100,000.00		
				Infrastructure Subtotal	£ 29,596,600.0	
Planning, Design, Permits, and Construction Support				7%	£ 2,072,000.0	
Infrastructure Construction Total					£ 32,000,000.0	
Optimism Bias				66%	£ 21,000,000.0	
				Total Project Cost	£ 53,000,000.0	
* Percentages used for Design and Permits only consider infrastructure cost and excludes cost of equipment.						

The cost of the car park is not included in any of the total costs. If additional parking spaces cannot be provided elsewhere, a double deck or an underground car park would be required, with a cost of £14 and £25 m respectively.



Future Harbour Requirements Study 2020

Option 2.1 - Technical Note

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08 October 2020

States of Guernsey

-

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1. Introduction

The FHR 2020 study identifies that all commercial sectors (with the exception of bulk liquids) can be provided by a Do Minimum option. These Options are provided in Option 1.1 -1.3. As part of the requête, options outside the Harbours are also being considered. The Options Development Report identified that a new harbour facility located East of QEII Marina provides a suitable location for commercial activities.

The option presented in this technical note consists of relocating commercial activities currently located in St Peter Port Harbour to East of QEII Marina. The new harbour will need to suit current commercial needs and meet commercial forecast (high scenario) requirements. Note that leisure sectors are considered separately in another technical note.

The spatial requirements and demand study identified that it will be necessary to increase the land and berth space for the commercial sectors as well as to reorganize the facilities, public and secure areas, and to optimize traffic routes and security controls within St Peter Port Harbour. Layout presented as Option 2.1 in this note provides a solution where no dredging is required.

The key considerations used in the development of Option 2.1 are:

1. Minimise/eliminate dredging requirements for the construction of a new harbour.
2. Provide improved berth facilities: increased depths and lengths suitable for full tidal conditions.
3. Incorporate potential for inert waste requirements.
4. Remove commercial activities from St Peter Port Harbour and free landside space within the existing harbour.
5. Maintain the LoLo berth and yard, RoRo berth and yard, departure area of the international passengers and car imports and exports area within the ISPS Zone.

3. Option description

Option 2.1 consists of moving all commercial activities outside St Peter Port Harbour.

3.1 Berths

The following subsections describe the berth provisions Option 2.1 considers for the different sectors.

3.1.1 LoLo

One LoLo berth is provided at the sheltered side of the new eastern breakwater. A quay will be provided in this side to accommodate the cranes and equipment needed for undertaking safe, secure and productive operations.

The berth requirement for the LoLo vessels expected is -6.4 mCD and the access depth requirement is -7.4 mCD. This is achieved without any dredging and providing all tide access and berthing. The length available for the LoLo berth in Option 2.1 is 150 m.

3.1.2 RoRo

Two RoRo berths are provided. The vessels will connect to the land with linkspans for the vehicles access and a finger between the ships to provide access for foot passengers. The berth requirement for the RoRo vessels expected is -6.6 mCD and the access depth requirement is -7.6 mCD. This is achieved without any dredging and providing all tide access and berthing.

The distance between berths has been considered according to recommendations in the Port's Designer Handbook (Thoresen, 2014). These state that the distance between the berths should be at least two times the beam of the widest vessel plus 30 meters. The biggest vessel (RoRo) has a beam of 28 meters, so the distance between berths should be at least 86 meters.

3.1.3 International passengers

There are three International Passengers berths, two of them are the RoRo berths and the third is a ferry berth located in a quay provided at the west of the RoRo berths.

The berth requirement for the international passengers ferries is -3.3 mCD and the access depth requirement is -4.3 mCD. This is achieved without any dredging and providing all tide access and berthing. The length available for the international passengers berth is 70 m.

3.1.4 Inter-island freight

At the most inner part of the new harbour a quay is provided for the Inter-Island traffic. The Inter-island Freight berth, with 52 m length, is located at the south of the Inter-island passengers berth.

The berth requirement for the Inter-island vessels expected is -4 mCD and the access depth requirement is -5 mCD. This is achieved without any dredging and providing all tide access and berthing.

3.1.5 Inter-island passengers

At the northern end of the quay an 80 m long berth is provided for Inter-Island passengers vessels.

The berth requirement for the Inter-island vessels expected is -3.1 mCD and the access depth requirement is -4.1 mCD. This is achieved without any dredging and providing all tide access and berthing.

3.2 Landside space

The new facilities are to be accommodated within the reclaimed area and distributed such that the different sectors are clearly delimited, keeping passengers separate from freight.

The following subsections describe the landside space provisions for Option 2.1 considers for the different sectors.

3.2.1 LoLo

LoLo landside area extends from the quay where the berth is located to the upper right corner of the land reclamation. Containers ground slots will be placed in this triangle shaped corner whilst the area by the quay will be used for loading/unloading operations and cranes traffic. The storage area needs to be sufficiently extent to accommodate 87 Twenty-foot Ground Slots. This is provided in two different areas within the designated LoLo landside. The main ground slots area for the containers provides space for 70 containers and a smaller area for 17 containers will be used for stripping and stuffing.

3.2.2 RoRo

The spatial requirements showed that the number of trailer spaces required within the RoRo yard to accommodate the inbound and outbound unaccompanied trailers for the 2050 high scenario is 120 trailer spaces.

Option 2.1 provides enough space to accommodate the area required for the trailer spaces. Trailers are recommended to be orientated at 45° to minimise the required draw forward distance and manoeuvring area between rows of trailers. The trailer rows aligned north to south, provide the most compact solution and are better for the loading and unloading operations.

The car marshalling needs an area of 5,975 m² to meet the requirements, and this is provided in Option 2.1. Both RoRo and car marshalling areas are together to optimise the border control and boarding operations (see Figure 1).

An area of 600 m² dedicated for car imports and exports (Trade cars in Figure 1) is provided right by the outbound customs and border controls.

3.2.3 International passengers

The International Passengers forecast requires a 2,600 m² terminal to meet future needs. This area is provided in Option 2.1.

As shown in Figure 1, the International Passengers terminal is located between the RoRo berths and the International Passengers ferry berth to enable access for foot passengers to both berths.

3.2.4 Inter-island freight

The land areas provided by the quay used by the Inter-island traffic is sufficiently extent to accommodate facilities and road accesses for the berths.

Inter-island freight demand forecast requires a landside area of at least 400 m² for the high scenario in 2050. Option 2.1. provides this space and regards the possibility of increasing this area if land reclamation is filled in entirely (see Figure 1).

3.2.5 Inter-island passengers

Inter-island passengers sector requires a small terminal independent from the International passengers terminal as inter-island passengers do not need to go through customs or passport control. This small terminal needs to be at least 340 m².

Option 2.1 provides this next to the International Passengers terminal. Having both terminals together makes the foot passengers access from outside the port and into the terminals easier as a drop off and parking area is provided for both terminals.

3.3 Facilities

Two customs and border control areas are provided in Option 2.1, one will be used for inbound access and the second will be used for outbound traffic.

In the area between the RoRo linkspans and the outbound customs area, enough space is provided for vehicle waiting lanes. Cars will queue in these lanes once they get out of the vessel and wait for their turn to go through passport controls.

Between the two RoRo berths, a finger for foot passengers is provided to access the vessels; vehicle access to the vessels is via the Linkspan. To avoid mixing vehicles and foot passengers a footbridge linking the finger and the International Passengers terminal is provided for foot passengers.

Within the foot passengers area, landside facilities are required to provide sufficient parking spaces and drop off areas. The required space for this area is 2,000 m² and is destined to foot passengers getting into the port either using taxis or hired cars and private cars. Option 2.1 provides this area between both passengers terminals as shown in Figure 1.

3.4 Access and ISPS fence

The distribution of the areas and accesses is designed to clearly and tidily separate public areas from security areas within the port. The ISPS line will go around the perimeter of the LoLo and RoRo landside areas and through the customs building. The Drop off and passenger parking area remains outside the security area and the ISPS line splits the passenger terminal between international and inter-island passengers.

The layout of Option 2.1 presented in Figure 1 identifies the access lanes and the ISPS line as the thick black line separating international and inter-island activities.

The following subsections describe the access provisions for Option 2.1 considers for the different sectors.

3.4.1 LoLo

LoLo freight vehicles access the Port along the north side of the South Quay road access using the north eastern entrance. The vehicles access the LoLo landside area by driving round the northern perimeter of the new port facilities. To get out of the port, two lanes are provided to queue before the outbound customs and border control. LoLo traffic exits the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.2 RoRo freight

RoRo freight vehicles access the Port along the north side of the South Quay road access. The vehicles access the RoRo landside area by driving round the northern perimeter of the new port facilities. To get out of the port, one lane is provided to queue before the outbound customs and border control. RoRo traffic exits the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.3 Private cars

Private cars access the Port along the north side of the South Quay road access. The vehicles access the car marshalling area by driving round the northern perimeter of the new port facilities, where two lanes are provided only for private cars. To get out of the port, seven lanes are provided to queue before the outbound customs and border control. Cars exit the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.4 International passengers

International passengers access the Port along the north side of the South Quay road access. Taxis and private cars driving into the drop off area access the port using in and out lanes located at the south of the RoRo, LoLo and departing cars exit lanes.

International passengers do not need to go through customs or border control areas as vehicles do. These controls are provided inside the international passengers terminal.

3.4.5 Inter-island freight

Inter-island freight vehicles access the Port along the north side of the South Quay road access. In and out lanes are provided directly to the south part of the quay and into the inter-island freight area.

3.4.6 Inter-island passengers

Inter-island passengers access the Port along the north side of the South Quay road access. Taxis and private cars driving into the drop off area access the port using the same lanes as the international passengers.

Inter-island passengers do not need to go through customs or border control areas, they go straight into the inter-island passengers terminal and onto the ships.

3.5 Free space

By relocating commercial activities from St Peter Port harbour to the new harbour East of QEII, some existing space in St Peter Port harbour will become free. This space is approximately 30,000 m² and could potentially be repurposed.

Option 2.1 benefits from a considerably extent reclaimed area (152,000 m² approximately) and can easily accommodate the landside facilities of all commercial activities. Of this area, approximately 68,000 m² will probably be unused for the landside space required for the commercial activities within the port. The unused area has been left unfilled in the cost estimate in order to try to reduce the initial investment needed.

4. Spatial and location requirements

Table 1 shows a checklist of the facilities and landside areas distribution proposed for Option 2.1 which analyses if the spatial and location requirements identified in the Spatial requirements study are met.

	Spatial requirements identified	Option 2.1
LoLo		
Berth	1 no. 120 m long berth with a depth of 6.4 m	✓
Landside space	8,700 m ² should be provided for 87 Twenty-foot Ground Slots	✓
Facilities	Two mobile cranes should be provided Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓
Location requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓
RoRo		
Berth	2 No. 155 m long berths with a depth of 6.6 m	✓
Landside space	8,400 m ² should be provided for 120 trailer spaces 5,975 m ² should be provided for private and small commercial vehicles 576 m ² should be provided for car imports and exports	✓
Facilities	RoRo storage yard and private and small commercial vehicles- Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided No specific facilities required for car imports and exports	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the trailer storage area and to the local road network	✓

	Spatial requirements identified	Option 2.1
	<p>Landside access is required to the marshalling yard and from the Border Control / Customs building for cars and small commercial vehicles. The landside access route should be outside the ISPS Zone. The Border Control / Customs Building should be located on the edge of the ISPS Zone such that the ISPS Zone effectively runs through the point when vehicles have been cleared</p> <p>The area for storing imported and exported cars needs to be located in close proximity to the RoRo ramps and within the ISPS Zone</p>	
Location requirements	<p>The RoRo storage yard should be located within the ISPS area of the port and in close proximity to the RoRo berths</p> <p>The car and small commercial vehicle facility need to be at the same location as the foot passenger facility as the vehicles and foot passengers arrive on the same vessels</p> <p>Landside access is required to and from the car storage area</p>	✓
International passengers and vehicular traffic		
Berth	<p>2 No. 155 m long berths with a depth of 6.6 m (RoRo freight)</p> <p>1 No. 50 m long berth with a -3.3 mCD depth</p>	✓
Landside space	<p>2600 m² should be provided for the passenger terminal</p> <p>2000 m² should be provided for parking spaces and drop off areas</p>	✓
Facilities	Passenger areas should include welfare facilities, retail areas and a café/restaurant area(s)	✓
Access and ISPS	<p>Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report</p> <p>Landside access is required to the passenger terminal for buses, taxis, private cars and foot passengers. The landside access route should not enter the ISPS port security area</p> <p>The departure area of the terminal needs to be within the ISPS zone and the public area needs to be outside the ISPS Zone. Therefore, the terminal needs to be as close to the boundary of the ISPS Zone as possible</p>	✓
Location requirements	The terminal for day passengers should be located within walking distance of St Peter Port Harbour commercial area. For other passengers being located close to St Peter Port Harbour commercial area is not critical	✓
Inter-island passengers		
Berth	1 No. 80 m long berth with -3.4 mCD depth	✓
Landside space	Based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space, the required area is approximately 340 m ² , assuming all vessels are leaving at similar times and are fully booked	✓
Facilities	<p>Utilities: Potable water, fire water and area lighting should be provided</p> <p>Safety equipment: Bollards and fenders should be provided</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided</p>	✓

	Spatial requirements identified	Option 2.1
Access and ISPS	All tide access is required for inter-island charter vessels which have a maximum draught of 2.1 m Landside access is required to the berth for foot passengers with adequate day parking nearby, the landside access route should not enter the ISPS Zone	✓
Location requirements	Inter-island passenger services need to be located in St Peter Port in close proximity to the town centre	✓
Inter-island freight		
Berth	1 No. 40 m long berth with a depth of 4 m	✓
Landside space	400 m ² should be provided for storage	✓
Facilities	Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	All tide access where possible or as a minimum, sufficient depth at MLWS is required for inter-island freight vessels which currently have a maximum draught of 3.05m Landside access must be provided for vehicles, including mobile cranes and container lorries	✓
Location requirements	There are no specific location requirements for inter-island freight	✓

Table 1: Comparison of Option 2.1, new harbour East of QEII, with spatial requirements


5. Assumptions

- Considering all commercial activities going out of the port and into the new facility, the leisure facilities could be moved around according to the sector's necessities. This is presented in Options 5.1, 5.2 and 5.3
- Additionally, the berths provided in the new harbour, if available, could be potentially used for cruise mooring if the depth allows for it
- The land reclamation proposed might not be used entirely, therefore once a final design of the distribution of the landside areas accounting for traffic routes and other operations, part of the remaining landside area can be left unfilled and potentially used for inert waste material
- If Option 2.1 is selected for further development, a navigation simulation model would be necessary to ensure that there are no manoeuvring constraints at the berths

6. Costs

The implementation cost is between **£255** and **£423** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

In the cost estimate, the unused area of the land reclamation has been considered as unfilled, allowing to save approximately £20 million in land reclamation filling material.

Guernsey Future Harbour Requirements 2020					
Activity and Location:			Date:	Job Number:	
St Peter Port, Guernsey			04/08/2020	B2382200	
Sheet Title:			Estimated By:	IV	
Option 2.1 Cost Estimate Summary			Jacobs	Status of Design:	
			Concept/Planning		
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries					£ 39,598,200.00
General Conditions and Mod/Demob	20%	-	-	£ 39,598,200.00	
Breakwater East					£ 22,818,100.00
Armour Units (CoreLoc/Xbloc)	64,313	Cu.m	£ 158.00	£ 10,161,400.00	
Underlayer	38,588	Cu.m	£ 72.00	£ 2,778,300.00	
Core Rock	154,350	Cu.m	£ 64.00	£ 9,878,400.00	
Breakwater South					£ 36,995,500.00
Armour Units (CoreLoc/Xbloc)	104,271	Cu.m	£ 158.00	£ 16,474,900.00	
Underlayer	62,563	Cu.m	£ 72.00	£ 4,504,500.00	
Core Rock	250,252	Cu.m	£ 64.00	£ 16,016,100.00	
Revetment (Exposed)					£ 12,794,600.00
Armour Units (CoreLoc/Xbloc)	36,061	Cu.m	£ 158.00	£ 5,697,700.00	
Underlayer	21,637	Cu.m	£ 72.00	£ 1,557,900.00	
Core Rock	86,547	Cu.m	£ 64.00	£ 5,539,000.00	
Revetment (Sheltered)					£ 11,435,800.00
Rock Armor	42,230	Cu.m	£ 74.00	£ 3,125,000.00	
Underlayer	25,338	Cu.m	£ 72.00	£ 1,824,300.00	
Core Rock	101,351	Cu.m	£ 64.00	£ 6,486,500.00	
Revetment (South of Inter Island quay)					£ 1,744,700.00
Rock Armor	6,443	Cu.m	£ 74.00	£ 476,800.00	
Underlayer	3,866	Cu.m	£ 72.00	£ 278,300.00	
Core Rock	15,462	Cu.m	£ 64.00	£ 989,600.00	
Inner slope unfilled areas					£ 1,582,300.00
Underlayer material	21,977	Cu.m	£ 72.00	£ 1,582,300.00	
Quay					£ 15,153,600.00
Blockwork Quay Wall	352	Lin m	£ 41,000.00	£ 14,432,000.00	
Quay Furniture	1	EA	£ 721,600.00	£ 721,600.00	
Port Facilities					£ 11,300,000.00
Ro-Ro Linkspan	2	EA	£ 3,500,000.00	£ 7,000,000.00	
Linkspan removal	1	EA	£ 300,000.00	£ 300,000.00	
Finger Jetty	100	Lin m	£ 40,000.00	£ 4,000,000.00	
Reclamation					£ 67,857,700.00
Supply and fill material	936,614	Cu.m	£ 69.00	£ 64,626,400.00	
Ground Improvement	1	EA	£ 3,231,320.00	£ 3,231,300.00	
Pavement					£ 8,080,050.00
Concrete pavement	73,455	Sq.m	£ 110.00	£ 8,080,050.00	
Buildings					£ 8,228,790.00
Customs/offices	1,280	Sq.m	£ 1,192.00	£ 1,525,760.00	
Passengers terminal International	2,100	Sq.m	£ 2,516.00	£ 5,283,600.00	
Passengers terminal Inter Island	440	Sq.m	£ 2,516.00	£ 1,107,040.00	
Building dismantling	2,670	Sq.m	£ 117.00	£ 312,390.00	
Infrastructure Subtotal					£ 238,000,000.00
Planning, Design, Permits, and Construction Support				7%	£ 16,660,000.00
Infrastructure Construction Total					£ 255,000,000.00
Optimism bias				66%	£ 168,000,000.00
Total Project Cost					£ 423,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 2.2 - Technical Note

B2382200-JAC-02-XX-TN-C-0006 | P02

08 October 2020

States of Guernsey

-

Document history and status

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P02	08/10/20	Final	IV	MSS	HB	MSS

Future Harbour Requirements Study 2020

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1. Introduction

The FHR 2020 study identifies that all commercial sectors (with the exception of bulk liquids) can be provided by a Do Minimum option. These Options are provided in Option 1.1 - 1.3. As part of the requête, options outside the Harbours are also being considered. The Options Development Report identified that a new harbour facility located East of QEII Marina provides a suitable location for commercial activities.

The option presented in this technical note consists of relocating commercial activities currently located in St Peter Port Harbour to East of QEII Marina. The new harbour will need to suit current commercial needs and meet commercial forecast (high scenario) requirements. Note that leisure sectors are considered separately in another technical note.

The spatial requirements and demand study identified that it will be necessary to increase the land and berth space for the commercial sectors as well as to reorganise the facilities, public and secure areas, and to optimize traffic routes and security controls within St Peter Port Harbour.

After presenting Option 2.1 as an option which avoided all dredging, and considering the land reclamation extent needed for achieving, this Option 2.2 considers an alternative which does include dredging but reduces significantly the land reclamation extent.

The key considerations used in the development of Option 2.2 are:

1. Minimise land reclamation for the construction of a new harbour.
2. Provide improved berth facilities: increased depths and lengths suitable for full tidal conditions.
4. Remove commercial activities from St Peter Port Harbour and free landside space within the existing harbour.
5. Maintain the LoLo berth and yard, RoRo berth and yard, departure area of the international passengers and car imports and exports area within the ISPS Zone.

2. Harbour layout

Option 2.2 has been developed as a new harbour layout and considers land reclamation and breakwaters construction in conjunction with dredging to achieve the required berth depth.

The entrance of the harbour is located towards the south east, with a southern and eastern breakwater protecting the berths from the south and south-eastern waves. The eastern breakwater will be extended along the perimeter of the land reclamation to protect and support the infilling process.

The proposed layout for Option 2.2 is shown in Figure 1.

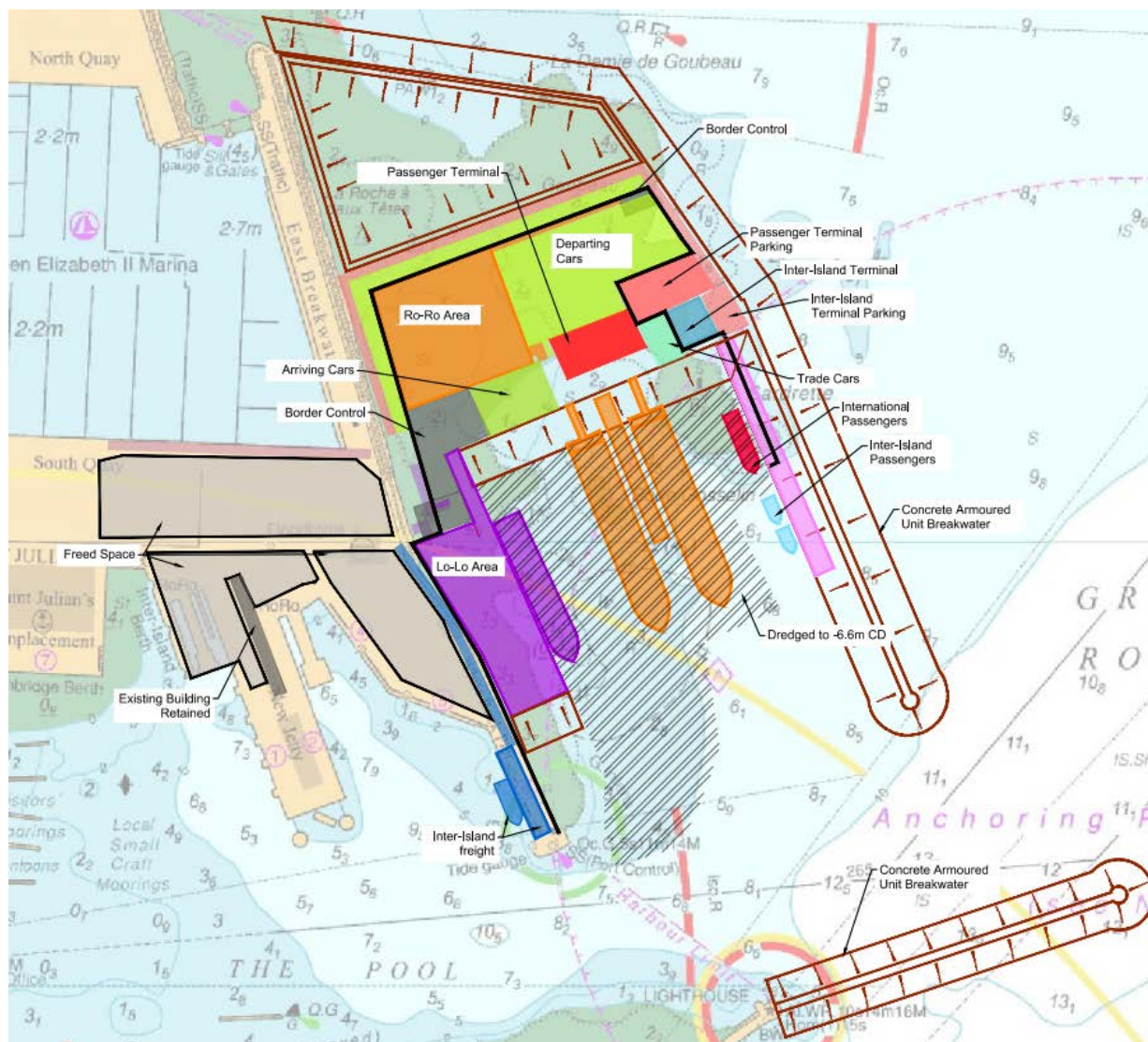


Figure 1: Layout of new Harbour East QEII – Option 2.2

3. Option description

For Option 2.2 all the St Peter Port harbour commercial activities are to be moved into the new harbour.

3.1 Berths

3.1.1 LoLo

One LoLo berth is provided at the inner side of the new harbour (see Figure 1). A quay will be provided in this side to accommodate the cranes and equipment needed for undertaking safe, secure and productive operations.

The berth requirement for the LoLo vessels expected is -6.4 mCD and the access depth requirement is -7.4 mCD. This is achieved through rock dredging to provide all tide access and berthing. The length available for the LoLo berth in Option 2.2 is 150 m.

3.1.2 RoRo

Two RoRo berths are provided. The vessels will connect to the land with linkspans for vehicles access and a finger between the ships to provide access for foot passengers. The berth requirement for the RoRo vessels expected is -6.6 mCD and the access depth requirement is -7.6 mCD. This is achieved through rock dredging to provide all tide access and berthing.

The distance between berths has been considered according to recommendations in the Port's Designer Handbook (Thoresen, 2014). These state that the distance between the berths should be at least two times the beam of the widest vessel plus 30 meters. The biggest vessel (RoRo) has a beam of 28 meters, so the distance between berths should be at least 86 meters.

3.1.3 International passengers

There are three International Passengers berths, two of them are the RoRo berths and the third is a ferry berth located in a quay provided at the east of the RoRo berths, at the sheltered side of the breakwater, where a quay will be provided (see Figure 1).

The berth requirement for the international passengers ferries is -3.3 mCD and the access depth requirement is -4.3 mCD. This is achieved through dredging to provide all tide access and berthing. The length available for the international passengers berth is 70 m.

3.1.4 Inter-island freight

Inter-island freight berth remains where it currently is.

3.1.5 Inter-island passengers

Inter-island passengers berth is located at the south end of the quay where international passengers are (see Figure 1).

The berth requirement for the Inter-island vessels expected is -3.1 mCD and the access depth requirement is -4.1 mCD. This is achieved without any dredging and providing all tide access and berthing.

3.2 Landside space

The new facilities are to be accommodated within the reclaimed area and distributed such that the different sectors are clearly delimited, keeping passengers separate from freight.

The following subsections describe the landside space provisions for Option 2.2 considering each sector.

3.2.1 LoLo

LoLo landside area extends from the quay where the berth is located to the back of the land reclamation (White Rock Pier). Containers ground slots will be placed in this triangle shaped corner whilst the area by the quay will be used for loading/unloading operations and cranes traffic. The storage area needs to be sufficiently extent to accommodate 87 Twenty-foot Ground Slots. This is provided in two different areas within the designated LoLo landside. The main ground slots area for the containers provides space for 70 containers and a smaller area for 17 containers will be used for stripping and stuffing.

3.2.2 RoRo

The spatial requirements showed that the number of trailer spaces required within the RoRo yard to accommodate the inbound and outbound unaccompanied trailers for the 2050 high scenario is 120 trailer spaces.

Option 2.2 provides enough space to accommodate the area required for the trailer spaces. Trailers are recommended to be orientated at 45° to minimise the required draw forward distance and manoeuvring area between rows of trailers. The trailer rows aligned north to south, provide the most compact solution and are better for the loading and unloading operations.

The car marshalling needs an area of 5,975 m² to meet the requirements, and this is provided in Option 2.2. Both RoRo and car marshalling areas are together to optimise the border control and boarding operations (see Figure 1).

An area of 600 m² dedicated for car imports and exports (Trade cars in Figure 1) is provided.

3.2.3 International passengers

The International Passengers forecast requires a 2,600 m² terminal to meet future needs. This area is provided in Option 2.2.

As shown in Figure 1, the International Passengers terminal is located opposite the RoRo berths and the to enable access for foot passengers.

3.2.4 Inter-island freight

Inter-island freight landside area remains where it currently is.

3.2.5 Inter-island passengers

Inter-island passengers sector requires a small terminal independent from the International passengers terminal as inter-island passengers do not need to go through customs or passport control. This small terminal needs to be at least 340 m².

Option 2.2 provides this close to the International Passengers terminal. Having both terminals close to each other makes the foot passengers access from outside the port and into the terminals easier as a drop off and parking area is provided for both terminals.

3.3 Facilities

Two customs and border control buildings are provided at the entrance of the RoRo and LoLo landside areas. Customs for inbound vehicles and trailers for RoRo will be located at the East North corner of the port landside layout. Customs for inbound container trucks and outbound of both containers and RoRo vehicles is located at the entrance to the new land reclamation area.

In the area between the RoRo linkspans and the outbound customs area, enough space is provided for vehicle waiting lanes. Cars will queue in these lanes once they get out of the vessel and wait for their turn to go through passport controls.

Between the two RoRo berths, a finger for foot passengers is provided to access the vessels; vehicle access to the vessels is via Linkspan. To avoid mixing vehicles and foot passengers a footbridge linking the finger and the International Passengers terminal is provided for foot passengers.

Within the foot passengers area, landside facilities are required to provide sufficient parking spaces and drop off areas. The required space for this area is 2,000 m² and is destined to foot passengers getting into the port either using taxis or hired cars and private cars. Option 2.2 provides this area between both passengers terminals as shown in Figure 1.

3.4 Access and ISPS fence

The distribution of the areas and accesses is designed to clearly and tidily separate public areas from security areas within the port.

The ISPS line starts at the south of the facilities, separating the LoLo and Inter-island freight facilities, continuing towards the North through the customs building and going around the RoRo landside facilities, separating the access road for passengers and the RoRo landside area. All international LoLo and RoRo operations and storage area will remain inside the restricted area. The International drop off and parking area for passengers will be outside the security area. The Inter-island passenger terminal remains outside the restricted area, while the ISPS line splits the International passengers' terminal in two halves, one for passengers that arrive to the terminal and the other for passengers who have passed the relevant passport controls. The ISPS line separates the International and Inter-island quay areas.

The layout of Option 2.2 presented in Figure 1 identifies the access lanes and the ISPS line as the thick black line separating international and inter-island activities.

The following subsections describe the accesses provisions Option 2.2 considers for the different sectors.

3.4.1 LoLo

LoLo freight vehicles access the Port along the north side of the South Quay road access using the north eastern entrance. The vehicles access the LoLo landside area by driving to the south, going through the customs area and into the LoLo landside. LoLo traffic exits the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.2 RoRo freight

RoRo freight vehicles access the Port along the north side of the South Quay road access. The vehicles access the RoRo landside area by driving round the northern perimeter of the new port facilities. To get out of the port, one lane is provided to queue before the outbound customs and border control. RoRo traffic exits the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.3 Private cars

Private cars access the Port along the north side of the South Quay road access. The vehicles access the car marshalling area by driving round the northern perimeter of the new port facilities, where two lanes are provided only for private cars. To get out of the port, ten lanes are provided to queue before the outbound customs and border control. Cars exit the Port along the south aide of St Julian's Pier access road, prior to enter the Weighbridge Roundabout.

3.4.4 International passengers

International passengers access the Port along the north side of the South Quay road access. Taxis and private cars driving into the drop off area access the area by driving round the northern perimeter of the new port facilities. International passengers do not need to go through customs or border control areas as vehicles do. These controls are provided inside the international passengers terminal.

3.4.5 Inter-island freight

Inter-island freight accesses remain as they currently are.

3.4.6 Inter-island passengers

Inter-island passengers access the Port along the north side of the South Quay road access. Taxis and private cars driving into the drop off area access the port using the same lanes as the international passengers.

Inter-island passengers do not need to go through customs or border control areas, they go straight into the inter-island passengers terminal and onto the ships.

3.5 Freed space

By relocating commercial activities from St Peter Port harbour to the new harbour East of QEII, some existing space in St. Peter Port harbour will become free. This space is approximately 20,000 m² and could potentially be repurposed.

The proposed area of land reclamation, with 86,600 m², provides enough room to comfortably accommodate the landside facilities of all commercial activities. Of this area approximately 23,500 m² will probably be unused for the landside space required for the commercial activities within the port. This unused area has been left unfilled in the cost estimate in order to try to reduce the initial investment needed.

4. Spatial and location requirements

Table 1 shows a checklist of the facilities and landside areas distribution proposed for Option 2.2 which analyses if the spatial and location requirements identified in the Spatial requirements study are met.

	Spatial requirements identified	Option 2.2
LoLo		
Berth	1 no. 120 m long berth with a depth of 6.4 m	✓
Landside space	8,700 m ² should be provided for 87 Twenty-foot Ground Slots	✓
Facilities	Two mobile cranes should be provided Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓
Location requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓
RoRo		
Berth	2 No. 155 m long berths with a depth of 6.6 m	✓
Landside space	8,400 m ² should be provided for 120 trailer spaces 5,975 m ² should be provided for private and small commercial vehicles 576 m ² should be provided for car imports and exports	✓
Facilities	RoRo storage yard and private and small commercial vehicles- Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided No specific facilities required for car imports and exports	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the trailer storage area and to the local road network Landside access is required to the marshalling yard and from the Border Control / Customs building for cars and small commercial vehicles. The landside access	✓

	Spatial requirements identified	Option 2.2
	<p>route should be outside the ISPS Zone. The Border Control / Customs Building should be located on the edge of the ISPS Zone such that the ISPS Zone effectively runs through the point when vehicles have been cleared</p> <p>The area for storing imported and exported cars needs to be located in close proximity to the RoRo ramps and within the ISPS Zone</p>	
Location requirements	<p>The RoRo storage yard should be located within the ISPS area of the port and in close proximity to the RoRo berths</p> <p>The car and small commercial vehicle facility need to be at the same location as the foot passenger facility as the vehicles and foot passengers arrive on the same vessels</p> <p>Landside access is required to and from the car storage area</p>	✓
International passengers and vehicular traffic		
Berth	<p>2 No. 155 m long berths with a depth of 6.6 m (RoRo freight)</p> <p>1 No. 50 m long berth with a -3.3 mCD depth</p>	✓
Landside space	<p>2600 m² should be provided for the passenger terminal</p> <p>2000 m² should be provided for parking spaces and drop off areas</p>	✓
Facilities	<p>Passenger areas should include welfare facilities, retail areas and a café/restaurant area(s)</p>	✓
Access and ISPS	<p>Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report</p> <p>Landside access is required to the passenger terminal for buses, taxis, private cars and foot passengers. The landside access route should not enter the ISPS port security area</p> <p>The departure area of the terminal needs to be within the ISPS zone and the public area needs to be outside the ISPS Zone. Therefore, the terminal needs to be as close to the boundary of the ISPS Zone as possible</p>	✓
Location requirements	<p>The terminal for day passengers should be located within walking distance of St Peter Port Harbour commercial area. For other passengers being located close to St Peter Port Harbour commercial area is not critical</p>	✓
Inter-island passengers		
Berth	<p>1 No. 80 m long berth with -3.4 mCD depth</p>	✓
Landside space	<p>Based on the assumption of 2 people standing per square metre, which leaves enough room between passengers for luggage and personal space, the required area is approximately 340 m², assuming all vessels are leaving at similar times and are fully booked</p>	✓
Facilities	<p>Utilities: Potable water, fire water and area lighting should be provided</p> <p>Safety equipment: Bollards and fenders should be provided</p> <p>Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided</p>	✓
Access and ISPS	<p>All tide access is required for inter-island charter vessels which have a maximum draught of 2.1 m</p>	✓

	Spatial requirements identified	Option 2.2
	Landside access is required to the berth for foot passengers with adequate day parking nearby, the landside access route should not enter the ISPS Zone	
Location requirements	Inter-island passenger services need to be located in St Peter Port in close proximity to the town centre	✓
Inter-island freight		
Berth	1 No. 40 m long berth with a depth of 4 m	✓ ¹
Landside space	400 m ² should be provided for storage	✓
Facilities	Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	All tide access where possible or as a minimum, sufficient depth at MLWS is required for inter-island freight vessels which currently have a maximum draught of 3.05m Landside access must be provided for vehicles, including mobile cranes and container lorries	✓
Location requirements	There are no specific location requirements for inter-island freight	✓

Table 1: Comparison of Option 2.2, new harbour East of QEII, with spatial requirements

¹ As no new berth is provided, it is understood that there is no need of having all tide access as with the current constraints the inter-island freight traffic works.


5. Assumptions

- Considering all commercial activities going out of the port, the leisure activities could be moved around according to the sector's necessities. This is developed in Options 5.1, 5.2 and 5.3
- Additionally, the berths provided in the new harbour, if available, could be potentially used for cruise mooring if the depth allows for it
- The land reclamation proposed might not be used entirely, therefore once a final design of the distribution of the landside areas accounting for traffic routes and other operations, the remaining landside area can be left unfilled and potentially used for inert waste material
- If Option 2.2 is selected for further development, a navigation simulation model would be necessary to ensure that there are no manoeuvring constraints at the berths

6. Costs

The implementation cost is between **£217** and **£360** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

In the cost estimate, the unused area of the land reclamation has been considered as unfilled, allowing to save approximately £11 million in land reclamation filling material.

Guernsey Future Harbour Requirements					
Activity and Location:			Date:	Job Number:	
St Peter Port, Guernsey			04/08/2020	B2382200	
Sheet Title:			Estimated By:	IV	
2.2 Option Cost Estimate Summary			Jacobs		
			Status of Design:		
			Concept/Planning		
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries					£ 33,874,900.00
General Conditions and Mod/Demob	20%	-	-	£ 33,874,900.00	
Breakwater East					£ 20,306,400.00
Armour Units (CoreLoc/Xbloc)	57,233	Cu.m	£ 158.00	£ 9,042,900.00	
Underlayer	34,340	Cu.m	£ 72.00	£ 2,472,500.00	
Core Rock	137,360	Cu.m	£ 64.00	£ 8,791,000.00	
Breakwater South					£ 25,115,700.00
Armour Units (CoreLoc/Xbloc)	70,788	Cu.m	£ 158.00	£ 11,184,500.00	
Underlayer	42,473	Cu.m	£ 72.00	£ 3,058,100.00	
Core Rock	169,892	Cu.m	£ 64.00	£ 10,873,100.00	
Revetment (Exposed)					£ 9,701,900.00
Armour Units (CoreLoc/Xbloc)	27,345	Cu.m	£ 158.00	£ 4,320,500.00	
Underlayer	16,407	Cu.m	£ 72.00	£ 1,181,300.00	
Core Rock	65,627	Cu.m	£ 64.00	£ 4,200,100.00	
Revetment (Sheltered)					£ 5,294,200.00
Rock Armor	19,550	Cu.m	£ 74.00	£ 1,446,700.00	
Underlayer	11,730	Cu.m	£ 72.00	£ 844,600.00	
Core Rock	46,920	Cu.m	£ 64.00	£ 3,002,900.00	
Revetment Lo-Lo quay (South side)					£ 159,200.00
Rock Armor	588	Cu.m	£ 74.00	£ 43,500.00	
Underlayer	353	Cu.m	£ 72.00	£ 25,400.00	
Core Rock	1,411	Cu.m	£ 64.00	£ 90,300.00	
Slope Unfilled Area (with land reclamation material)					£ 344,000.00
Underlayer material	4,778	EA	£ 72.00	£ 344,000.00	
Dredging					£ 21,642,200.00
Dredging (Rock) inc disposal	163,956	Cu.m	£ 132.00	£ 21,642,200.00	
Quay					£ 15,067,500.00
Blockwork Quay Wall	350	Lin m	£ 41,000.00	£ 14,350,000.00	
Quay Furniture	1	EA	£ 717,500.00	£ 717,500.00	
Port Facilities					£ 11,300,000.00
Ro-Ro Linkspan	2	EA	£ 3,500,000.00	£ 7,000,000.00	
Linkspan removal	1	EA	£ 300,000.00	£ 300,000.00	
Finger Jetty	100	Lin m	£ 40,000.00	£ 4,000,000.00	
Reclamation					£ 41,155,300.00
Supply and fill material	568,051	EA	£ 69.00	£ 39,195,500.00	
Ground Improvement	1	EA	£ 1,959,775.00	£ 1,959,800.00	
Pavement					£ 5,924,100.00
Concrete pavement	53,855	EA	£ 110.00	£ 5,924,100.00	
Buildings					£ 13,364,130.00
Customs/offices	4,670	Sq.m	£ 1,192.00	£ 5,566,640.00	
Passengers terminal International	2,125	Sq.m	£ 2,516.00	£ 5,346,500.00	
Passengers terminal Inter Island	850	Sq.m	£ 2,516.00	£ 2,138,600.00	
Building dismantling	2,670	Sq.m	£ 117.00	£ 312,390.00	
				Infrastructure Subtotal	£ 203,000,000.00
Planning, Design, Permits, and Construction Support				7%	£ 14,210,000.00
Infrastructure Construction Total					£ 217,000,000.00
Optimism Bias				66%	£ 143,000,000.00
				Total Project Cost	£ 360,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 3.1 - Technical Note

B2382200-JAC-02-XX-TN-C-0007 | P03

08 October 2020

States of Guernsey

-

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
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1. Introduction

The FHR 2020 study identifies that all commercial sectors (with the exception of bulk liquids) can be provided by a Do Minimum option. These Options are provided in Option 1.1 -1.3. As part of the requête, options outside the Harbours are also being considered. The Options Development Report identified that a new harbour facility located near St Sampson's harbour. Our Options development process identified Longue Hougue South as a suitable location for commercial activities.

The option presented in this technical note consists of relocating commercial activities currently located in St Peter Port harbour and St Sampson's harbour to an area adjacent to Longue Hougue South. The new harbour will need to suit current commercial needs and meet commercial forecast (high scenario) requirements. Note that leisure sectors are considered separately in another technical note.

The spatial requirements and demand study identified that it will be necessary to increase the land and berth space for the commercial sectors as well as to reorganise the facilities, public and secure areas, and to optimize traffic routes and security controls within St Peter Port harbour.

The key considerations used in the development of Option 3.1 are:

1. Ties in with proposed Longue Hougue South inert waste scheme.
2. Provide improved berth facilities: increased depths and lengths suitable for full tidal conditions.
3. Remove commercial activities from St Peter Port Harbour and St Sampson's harbour and free landside space within the existing harbours.
4. Maintain the LoLo berth and yard, RoRo berth and yard, departure area of the international passengers and car imports and exports area within the ISPS Zone.

2. Harbour layout

Option 3.1 considers the development of a new port facility adjoining the proposed Longue Hougue South inert waste reclamation site.

The proposed layout is as shown in Figure 1.



Figure 1: Layout for the new port facility – Option 3.1

Option 3.1 could benefit from the proposed inert waste site (depending on relative development timescales) and allow the movement of some or all commercial activities out of St Peter Port and St Sampson's harbour. Most commercial activities (LoLo, RoRo, bulk and international passengers) are moved from St Peter Port harbour and St Sampson's harbour.

3. Option description

Option 3.1 considers the development of a new port facility.

3.1 Berths

Rock dredging is required to provide sufficient water depth both at the berths and at the navigational channel and turning circle.

The following subsections describe the berth provisions Option 3.1 considers for the different sectors.

3.1.1 LoLo

One LoLo berth is provided at the sheltered side of the new western breakwater. A quay will be provided in this side to accommodate the cranes and equipment needed for undertaking safe, secure and productive operations.

The berth requirement for the LoLo vessels expected is -6.4 mCD and the access depth requirement is -7.4 mCD. This is achieved through dredging to provide all tide access and berthing. The length available for the LoLo berth in Option 3.1 is 150 m.

3.1.2 RoRo

Two RoRo berths are provided. The vessels will connect to the land with linkspans for the vehicles access and a finger between the ships to provide access for foot passengers. The berth requirement for the RoRo vessels expected is -6.6 mCD and the access depth requirement is -7.6 mCD. This is achieved through dredging to provide providing all tide access and berthing.

The distance between berths has been considered according to recommendations in the Port's Designer Handbook (Thoresen,2014). These state that the distance between the berths should be at least two times the beam of the widest vessel plus 30 meters. The biggest vessel (RoRo) has a beam of 28 meters, so the distance between berths should be at least 86 meters.

3.1.3 Bulk solids and liquids

One berth will be provided for both bulk solids and bulk liquids along the same quay where the LoLo berth is.

The berth requirement for the bulks is -5.5 mCD and the access depth requirement is -6.5 mCD. This is achieved through dredging to provide all tide access and berthing. The length available for the bulks berth is 110 m.

3.1.4 International passengers

There are three international passenger berths. Two of them are the RoRo berths and the third is a ferry berth located in a quay provided at the West of the RoRo berths, along the same quay where the LoLo berth is.

The berth requirement for the international passenger ferries is -3.3 mCD and the access depth requirement is -4.3 mCD. This is achieved through dredging to provide all tide access and berthing. The length available for the international passenger berth is 70 m.

3.1.5 Inter-island freight and passengers

Inter-island freight and passengers is to remain in St Peter Port harbour.

3.2 Landside space

The following subsections describe the landside proposals Option 3.1 considers for the different sectors.

3.2.1 RoRo

Two RoRo berths will be provided. Access to vessels for vehicles will be thorough the linkspans whilst foot passengers will use the finger. The landside space provided includes the international passenger terminal (which is shared with the dedicated international passenger ferry), space for parking and drop off, car marshalling area, unaccompanied vehicles storage area and room for accesses and customs and border control where required.

3.2.2 Unitised cargo

The LoLo dedicated berth will be located at the inner part of the western breakwater. The landside area is provided with land reclamation.

3.2.3 Bulk solids and liquids

The Bulks berth will be located at the inner part of the southern breakwater. The landside area is provided with land reclamation. Facilities for load/unload operations of both bulk solids (hoppers) and bulk liquids (manifold/pipe to storage areas) would be provided.

3.2.4 International passengers

The international passenger terminal will be shared with the RoRo berths (see Section 3.2.1)

3.2.5 Inter-island freight, inter-island passengers, cruise and other leisure sectors

Inter-island freight, inter-island passengers, cruise and other leisure sectors remain at St Peter Port.

3.3 Facilities

Reclamation, new quays, quay furniture, rock revetments, buildings, road accesses are provided.

New manifolds and pipelines to storage for hydrocarbons. The pipes routing design depends on the output of the Hydrocarbons Program regarding the location of the fuel storage facilities.

3.4 Access and ISPS fence

Controlled accesses will be required for all facilities. As Option 3.1 includes all international activities, excluding any local or Inter-island activities, the access to the areas will be restricted.

This means that the ISPS delimitation line will be the perimeter of all facilities provided in Option 3.1. Customs and border control will be provided both at the entrance and exit of the port facilities.

Access to bulks landside is provided at the back of the quay.

3.5 Inert waste project

To get the harbour shape, breakwaters orientation and minimise the dredging, certain features in the bathymetry (shallower and deeper small areas) needed to be considered for reducing the size, as not only from an economic point of view but also environmental, the costs would be lower.

Although Option 3.1 was at first considered to a further development of the inert waste site, when trying to accommodate all the international commercial activities in the harbour, the outlined inert waste site had to be slightly reduced.

This was because, if the site was maintained as suggested, the breakwaters would be in much deeper water and significant dredging would be required.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 3.1.

	Spatial requirements identified	Option 3.1
LoLo		
Berth	1 no. 120 m long berth with a depth of 6.4 m	✓*
Landside space	8,700 m ² should be provided for Twenty-foot Ground Slots	✓
Facilities	Two mobile cranes should be provided Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓
Location requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓
RoRo		
Berth	2 No. 155 m long berths with a depth of 6.6 m	✓*
Landside space	8,400 m ² should be provided for 110 trailer spaces 5,975 m ² should be provided for private and small commercial vehicles 576 m ² should be provided for car imports and exports	✓
Facilities	RoRo storage yard and private and small commercial vehicles: Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided No specific facilities required for car imports and exports	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the trailer storage area and to the local road network Landside access is required to the marshalling yard and from the Border Control / Customs building for cars and small commercial vehicles. The landside access	✓

	Spatial requirements identified	Option 3.1
	<p>route should be outside the ISPS Zone. The Border Control / Customs Building should be located on the edge of the ISPS Zone such that the ISPS Zone effectively runs through the point when vehicles have been cleared</p> <p>The area for storing imported and exported cars needs to be located in close proximity to the RoRo ramps and within the ISPS Zone</p>	
Location requirements	<p>The RoRo storage yard should be located within the ISPS area of the port and in close proximity to the RoRo berths</p> <p>The car and small commercial vehicle facility need to be at the same location as the foot passenger facility as the vehicles and foot passengers arrive on the same vessels</p> <p>Landside access is required to and from the car storage area</p>	✓
International passengers and vehicular traffic		
Berth	<p>2 No. 155 m long berths with a depth of 6.6 m (RoRo freight)</p> <p>1 No. 50 m long berth with a -3.3 mCD depth</p>	✓*
Landside space	<p>2,600 m² should be provided for the passenger terminal</p> <p>2,000 m² should be provided for parking spaces and drop off areas</p>	✓
Facilities	Passenger areas should include welfare facilities, retail areas and a café/restaurant area(s)	✓
Access and ISPS	<p>Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report</p> <p>Landside access is required to the passenger terminal for buses, taxis, private cars and foot passengers. The landside access route should not enter the ISPS port security area</p> <p>The departure area of the terminal needs to be within the ISPS zone and the public area needs to be outside the ISPS Zone. Therefore, the terminal needs to be as close to the boundary of the ISPS Zone as possible</p>	✓
Location requirements	The terminal for day passengers should be located within walking distance of St Peter Port Harbour commercial area. For other passengers being located close to St Peter Port Harbour commercial area is not critical	✓
Bulk solids		
Berth	1 No. 110 m long berths with a depth of 5.5 m	✓*
Landside space	2,000 m ² should be provided for load/unload/storage operations	✓
Facilities	Cranes for unload/load. Utilities: potable water, fire water, lighting, quayside power for vessels. Equipment: bollards, fenders, ladders, safety ropes, lifesaving equipment	✓
Access and ISPS	Bulk solid berths must be located in an ISPS restriction zone. Vessel and lorry access must be available in order to transfer the cargoes. Silos for cement storage must be located in close proximity to the cement berth to allow self-discharge of the vessel	✓

	Spatial requirements identified	Option 3.1
Location requirements	Possibility to cope with increase in road traffic between the new facilities and the existent storage areas	✓
Bulk liquids	Spatial Requirements to be determined by Hydrocarbons Supply Programme	


Table 1: Comparison of Option 3.1 with spatial requirements

5. Assumptions

- Option 3.1 assumes that the land reclamation provided in the area that will serve as basis of the extension of land areas for the construction of the new port. This land reclamation material will come from the Inert Waste project and will be used to fill in the areas as shown in Figure 1.
- If Option 3.1 is selected for further development, a navigation simulation model would be necessary to ensure that there are no manoeuvring constraints at the berths.

6. Costs

The implementation cost is between **£164** and **£272** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020					
Activity and Location:			Date:	Job Number:	
St Peter Port, Guernsey			06/08/2020	B2382200	
Sheet Title:			Estimated By:	IV	
3.1 Option Cost Estimate Summary			Jacobs		
			Status of Design:		
			Concept/Planning		
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries					£ 25,487,300.00
General Conditions and Mod/Demob	20%	-	-	£ 25,487,300.00	
Breakwater North					£ 8,434,300.00
Armour Units (CoreLoc/Xbloc)	22,303	Cu.m	£ 158.00	£ 3,523,900.00	
Underlayer	13,939	Cu.m	£ 72.00	£ 1,003,600.00	
Core Rock	55,758	Cu.m	£ 64.00	£ 3,568,500.00	
Crown wall	929	Cu.m	£ 364.00	£ 338,300.00	
Breakwater South					£ 26,244,800.00
Armour Units (CoreLoc/Xbloc)	69,400	Cu.m	£ 158.00	£ 10,965,200.00	
Underlayer	43,375	Cu.m	£ 72.00	£ 3,123,000.00	
Core Rock	173,500	Cu.m	£ 64.00	£ 11,104,000.00	
Crown wall	2,892	Cu.m	£ 364.00	£ 1,052,600.00	
Dredging					£ 42,068,400.00
Dredging (Rock) inc disposal	318,700	Cu.m	£ 132.00	£ 42,068,400.00	
Quay					£ 24,581,600.00
Blockwork Quay Wall	571	Lin m	£ 41,000.00	£ 23,411,000.00	
Quay Furniture	1	EA	£ 1,170,550.00	£ 1,170,600.00	
Port Facilities					£ 11,000,000.00
Ro-Ro Linkspan	2	EA	£ 3,500,000.00	£ 7,000,000.00	
Finger Jetty	100	Lin m	£ 40,000.00	£ 4,000,000.00	
Pavement					£ 7,850,700.00
Concrete pavement	71,370	EA	£ 110.00	£ 7,850,700.00	
Buildings					£ 7,256,800.00
Customs/offices	600	Sq.m	£ 1,192.00	£ 715,200.00	
Passengers terminal International	2,600	Sq.m	£ 2,516.00	£ 6,541,600.00	
Infrastructure Subtotal					£ 153,000,000.00
Planning, Design, Permits, and Construction Support					7% £ 10,710,000.00
Infrastructure Construction Total					£ 164,000,000.00
Optimism Bias					66% £ 108,000,000.00
Total Project Cost					£ 272,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 3.2 - Technical Note

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08 October 2020

States of Guernsey

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Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
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P03	08/10/20	Final	IV	MSS	HB	MSS

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1. Introduction

The FHR 2020 study identifies that all commercial sectors (with the exception of bulk liquids) can be provided by a Do Minimum option. These options are provided in Option 1.1 - 1.3. As part of the requête, options outside the Harbours are also being considered. The Options Development Report identified that a new harbour facility located near St Sampson's harbour. Our options development process identified Longue Hougue South as a suitable location for commercial activities.

The option presented in this technical note consists of relocating some commercial activities currently located in St Peter Port harbour and St Sampson harbour into an area adjacent to Longue Hougue South. The new harbour will need to suit current commercial needs and meet commercial forecast (high scenario) requirements. Note that leisure sectors are considered separately in another technical note.

The spatial requirements and demand study identified that it will be necessary to increase the land and berth space for the commercial sectors as well as to reorganise the facilities, public and secure areas, and to optimize traffic routes and security controls within St Peter Port harbour.

The key considerations used in the development of Option 3.2 are:

1. Ties in with proposed Longue Hougue South inert waste scheme.
2. Provide improved berth facilities: increased depths and lengths suitable for full tidal conditions.
3. Removes LoLo from St Peter Port harbour and Bulk Solids and Liquids from St Sampson's harbour and free landside space within the existing harbours.

2. Harbour layout

This option considers the development of a new port facility adjoining the proposed Longue Hougue South inert waste reclamation site.

The proposed layout is as shown in Figure 1.

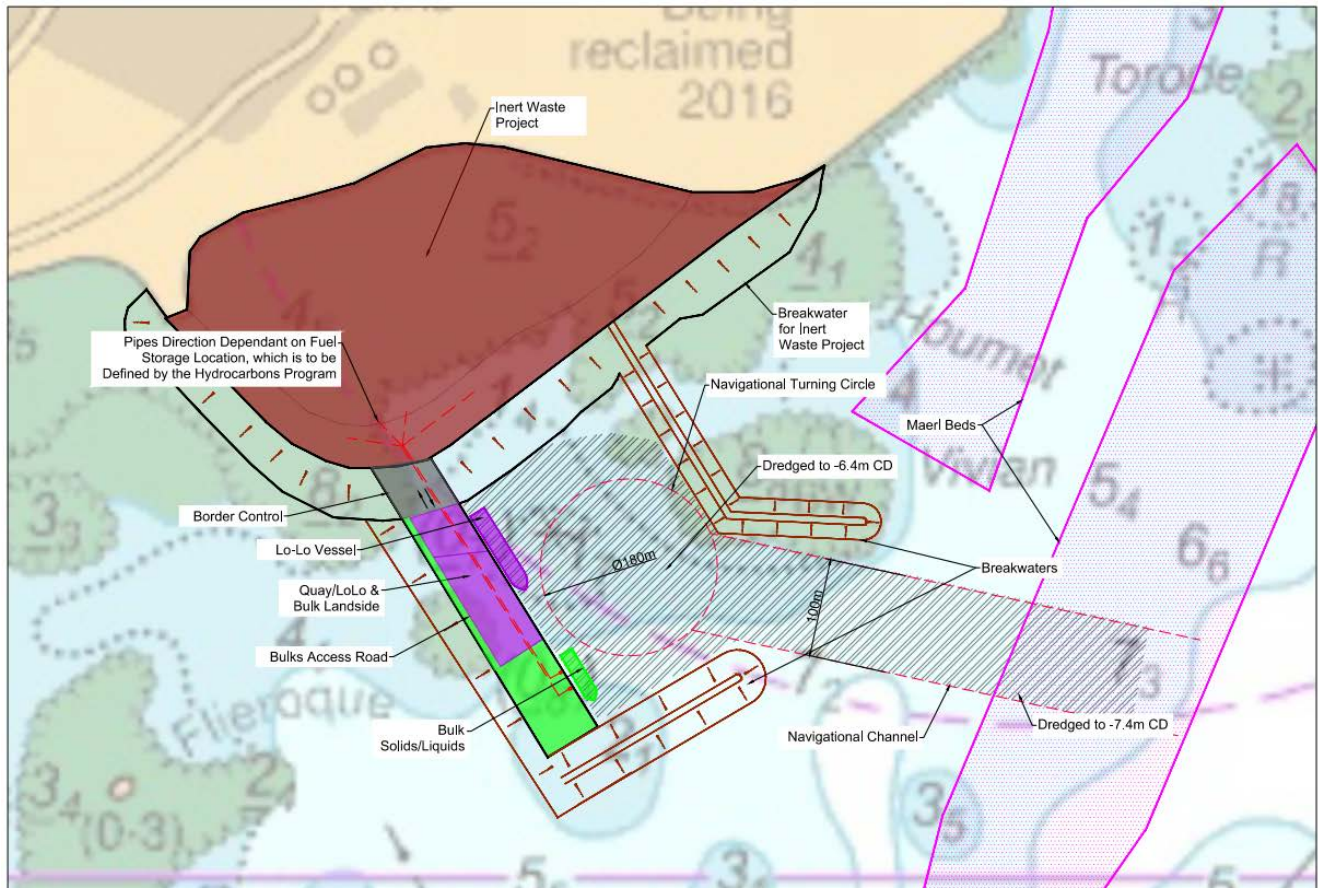


Figure 1: Layout for the new port facility – Option 3.2

This option could benefit from the proposed inert waste site (depending on relative development timescales) and allow the movement of some or all commercial activities out of St Peter Port and St Sampson's harbour. Only a limited set of sectors (LoLo and Bulk only) are moved from St Peter Port harbour and St Sampson's harbour.

3. Option description

This option considers the development of a new port facility.

3.1 Berths

The following subsections describe the berths provisions Option 3.2 considers for the different sectors.

3.1.1 LoLo

One LoLo berth is provided at the sheltered side of the new western breakwater. A quay will be provided in this side to accommodate the cranes and equipment needed for undertaking safe, secure and productive operations.

The berth requirement for the LoLo vessels expected is -6.4 mCD and the access depth requirement is -7.4 mCD. This is achieved through dredging to provide all tide access and berthing. The length available for the LoLo berth in Option 3.2 is 150 m.

3.1.2 Bulk solids and liquids

One berth will be provided for both bulk solids and bulk liquids along the same quay where the LoLo berth is.

The berth requirement for the bulks is -5.5 mCD and the access depth requirement is -6.5 mCD. This is achieved through dredging to provide all tide access and berthing. The length available for the bulks berth is 110 m.

3.2 Landside space

The following subsections describe the landside proposals this option considers for the different sectors.

3.2.1 Unitised cargo

The LoLo dedicated berth will be located at the inner part of the western breakwater. The landside area is provided with land reclamation.

3.2.2 Bulk solids and liquids

The Bulks berth will be located at the inner part of the southern breakwater. The landside area is provided with land reclamation. Facilities for load/unload operations of both bulk solids (hoppers) and bulk liquids (manifold/pipe to storage areas) would be provided.

3.3 Facilities

New quays, quay furniture, rock revetments, buildings, road accesses are provided.

New manifolds and pipelines to storage for hydrocarbons. The pipes routing design depends on the output of the Hydrocarbons Program regarding the location of the fuel storage facilities.

3.4 Access and ISPS fence

Controlled accesses will be required for all facilities. As this option includes only international activities, excluding any local or Inter-island activities, the access to the areas will be restricted.

This means that the ISPS delimitation line will be the perimeter of all facilities provided in this option. Customs and border control will be provided both at the entrance and exit of the port facilities.

Access to bulks landside is provided at the back of the quay.

3.5 Inert Waste project

Option 3.2 does include the entire site for the inert waste project. In this case it is possible because the size of the harbour is not required to be as extent as in Option 3.1, as it only includes LoLo and bulks.

Therefore, spaces in deeper and shallower areas of the bathymetry have been easily used to get an optimised size of the harbour adjoining the currently proposed inert waste project.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 3.2.

	Spatial requirements identified	Option 3.2
LoLo		
Berth	1 no. 120 m long berth with a depth of 6.4 m	✓*
Landside space	8,700 m ² should be provided for Twenty-foot Ground Slots	✓
Facilities	Two mobile cranes should be provided Utilities: Potable water, fire water and area lighting should be provided Safety equipment: Bollards and fenders should be provided Safety equipment: Ladders, safety ropes and chains and lifesaving equipment should be provided	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing, or preferably no tide constraint. Navigation channels and turning circles should comply with best practice for width and depth e.g. PIANC WG121 Report Landside access is required to the container storage area and to the local road network	✓
Location requirements	The LoLo berth and yard should be located within the ISPS area of the port	✓
Bulk solids		
Berth	1 No. 110 m long berths with a depth of 5.5 m	✓*
Landside space	2000 m ² should be provided for load/unload/storage operations	✓
Facilities	Cranes for unload/load. Utilities: potable water, fire water, lighting, quayside power for vessels. Equipment: bollards, fenders, ladders, safety ropes, lifesaving equipment	✓
Access and ISPS	Bulk solid berths must be located in an ISPS restriction zone. Vessel and lorry access must be available in order to transfer the cargoes. Silos for cement storage must be located in close proximity to the cement berth to allow self-discharge of the vessel	✓
Location requirements	Possibility to cope with increase in road traffic between the new facilities and the existent storage areas	✓
Bulk liquids	Spatial Requirements to be determined by Hydrocarbons Supply Programme	


Table 1: Comparison of Option 3.2 with spatial requirements.

5. Assumptions

- If Option 3.2 is selected for further development, a navigation simulation model would be necessary to ensure that there are no manoeuvring constraints at the berths.

6. Costs

The implementation cost is between **£121** and **£201** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020					
Activity and Location:			Date:	Job Number:	
St Peter Port, Guernsey			06/08/2020	B2382200	
Sheet Title:			Estimated By:	IV	
3.2 Option Cost Estimate Summary			Jacobs		
			Status of Design:		
			Concept/Planning		
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries					£ 18,761,300.00
General Conditions and Mod/Demob	20%	-	-	£ 18,761,300.00	
Breakwater North					£ 5,614,200.00
Armour Units (CoreLoc/Xbloc)	14,846	Cu.m	£ 158.00	£ 2,345,600.00	
Underlayer	9,279	Cu.m	£ 72.00	£ 668,100.00	
Core Rock	37,115	Cu.m	£ 64.00	£ 2,375,300.00	
Crown wall	619	Cu.m	£ 364.00	£ 225,200.00	
Breakwater South					£ 24,112,800.00
Armour Units (CoreLoc/Xbloc)	63,762	Cu.m	£ 158.00	£ 10,074,400.00	
Underlayer	39,851	Cu.m	£ 72.00	£ 2,869,300.00	
Core Rock	159,406	Cu.m	£ 64.00	£ 10,202,000.00	
Crown wall	2,657	Cu.m	£ 364.00	£ 967,100.00	
Dredging					£ 39,600,000.00
Dredging (Rock) inc disposal	300,000	Cu.m	£ 132.00	£ 39,600,000.00	
Quay					£ 11,623,500.00
Blockwork Quay Wall	270	Lin m	£ 41,000.00	£ 11,070,000.00	
Quay Furniture	1	EA	£ 553,500.00	£ 553,500.00	
Reclamation					£ 11,029,800.00
Supply and fill material	152,241	EA	£ 69.00	£ 10,504,600.00	
Ground Improvement	1	EA	£ 525,230.00	£ 525,200.00	
Pavement					£ 1,111,000.00
Concrete pavement	10,100	EA	£ 110.00	£ 1,111,000.00	
Buildings					£ 715,200.00
Customs/offices	600	Sq.m	£ 1,192.00	£ 715,200.00	
				Infrastructure Subtotal	£ 113,000,000.00
Planning, Design, Permits, and Construction Support				7%	£ 7,910,000.00
Infrastructure Construction Total					£ 121,000,000.00
Optimism Bias				66%	£ 80,000,000.00
				Total Project Cost	£ 201,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 4.1 - Technical Note

B2382200-JAC-02-XX-TN-C-0009 | P02

08 October 2020

States of Guernsey

-

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Author: Isabel Vidal
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1. Introduction

This option considers the provision of a dedicated cruise berth outside the harbour, located to the East of QEII Marina, selected as one of the shortlisted options in the evaluation process.

Currently there is no dedicated berth for cruise vessels in Guernsey, with cruise ships anchoring outside the St Peter Port harbour. Passengers are transferred from cruise ships to the harbour using tenders, which land at a dedicated tender berth located between Victoria Marina and Albert Marina. The spatial requirements and demand study identified that cruise passengers are important to the tourist industry within St Peter Port and therefore a dedicated cruise berth has been considered as part of the options appraisal.

The spatial requirements and demand study also identified that it will be necessary to increase the land and berth space for the commercial sectors as well as to reorganise the facilities, public and secure areas, and to optimise traffic routes and security controls within St Peter Port harbour. These layout options are considered in separate technical notes.

2. Harbour layout

The options short-listing process revealed that the most suitable solution for a new dedicated cruise berth required the construction of a breakwater, land reclamation and dredging. The length of the berth needs to be at least 375 m as defined in the spatial requirements study.

This dedicated cruise berth option considers the construction of a breakwater to protect the berth, and an extension of the southern breakwater. The alignment of the breakwater has been defined using the existing bathymetry to optimise the dredging and breakwater volumes. A land reclamation with quay space for the cruise vessel is provided at the western part of the new proposed harbour. This layout would require significant dredging, not only at the berth, but also at the entrance and within the navigation channel approaching the berth.

The proposed layout for Option 4.1 is as shown in Figure 1 in this document.

The harbour dimensions need to be such that the biggest vessel expected (350 m) has enough space to manoeuvre through the harbour entrance and to/from the berth, considering the manoeuvrability of the ship. For this layout we have estimated the space required, based on expert judgement. However, if this option is further developed a navigation simulation would be required in order to ensure that the design of the entrance, the manoeuvring area and navigation channel comply with the navigation requirements.

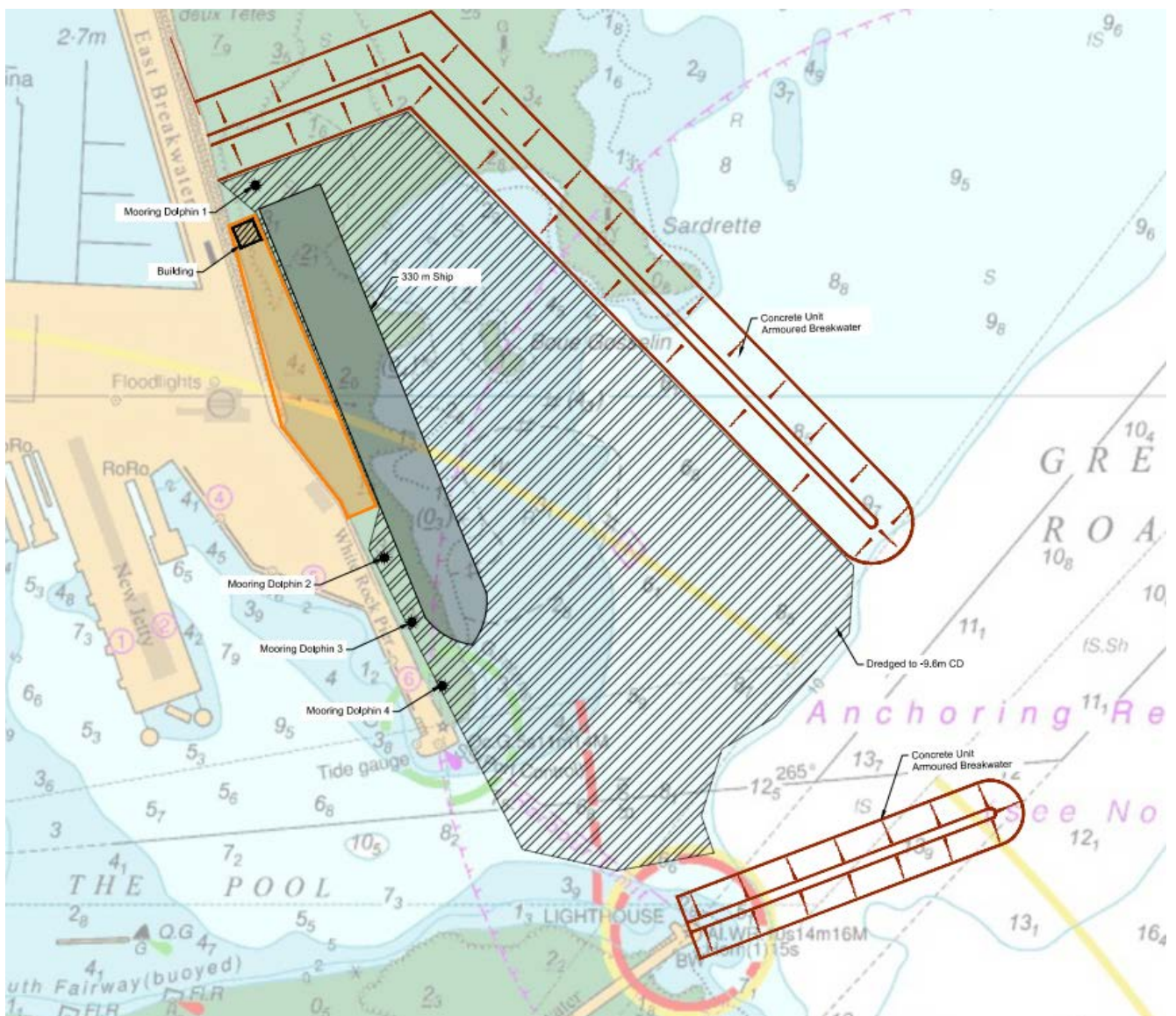


Figure 1: Proposed layout for Option 4.1¹

¹ This is a draft for Option 4.1 subject to further modifications

3. Option description

The following subsections describe the arrangements considered for the cruise berth, landside space and facilities.

3.1 Cruise berth

The berth is provided by a quay alongside a small area of reclaimed land. The quay does not run the full length of the biggest vessels, providing 220 m which is enough berth length to enable passengers to embark and disembark. Four mooring dolphins distributed at both sides of the quay and four breasting dolphins along the quay will extend the berth length to the 375m required allowing safe mooring and berthing. In order to meet the requirements for accessing the berth, in terms of navigational and tidal constraints, the depth of the berth needs to be -9.6 mCD. The available depth at the berth varies from 5mCD to -1mCD, meaning that significant dredging will be needed to accommodate the vessels. Additional dredging will be required at the navigation channel and vessel manoeuvring areas to provide enough depth for the vessel to get to and from the berth.

3.2 Cruise landside space

The landside space is provided by the new area of land reclamation. Cruise vessels require sufficient landside space to allow access for buses and taxis, including a turning area. Landside access is also required for waiting foot passengers. The landside space provided is approximately 6,100 m².

3.3 Cruise facilities

Although it would be advisable to place the cruise berth as close as possible to the town centre and shops, providing a new dedicated cruise berth inside St Peter Port harbour was ruled out in the short-listing of the options due to lack of space. This means that the location proposed for the Cruise berth in Option 4.1 will require accesses and parking spaces for buses and taxis for the cruise passengers.

Adequate parking for buses and taxis to accommodate all passengers of the largest vessel needs to be provided.

A 200 m² building is provided at the north part of the land reclamation to provide a sheltered area where passengers can wait to board the vessels or wait for the buses or taxis when needed. Toilets should be located here.

3.4 Access and ISPS fence

The existing access road with a new link could be used to provide vehicle access to the landside area of the cruise berth. In and out lanes need to be provided in this area with enough space for the turning circle of the buses.

The ISPS line arrangement will be dependent on the distribution of the rest of the sectors in the current available spaces (see technical notes for Options 1.1 and 1.2). Assuming that the cruise vessels have passport control systems in place before the passengers disembark the vessel, the cruise berth can be outside of the restrictive area delimited by the ISPS line. If no passport control is undertaken on the vessel, the building provided or the space at the quay area could be used to provide a temporary passport control point.

3.5 Freed space

If a dedicated cruise berth is provided, the existing berths currently used by the cruise tenders could potentially be repurposed, provided that not more than one cruise arrives to St Peter Port at the same time.

4. Location and spatial requirements

Table 1 shows a checklist of the facilities and landside areas distribution proposed for Option 4.1 which analyses if the spatial and location requirements identified in the Spatial requirements study are met.

	Spatial requirements identified	Option 4.1 Dedicated Cruise Berth Provision
Berth	The berth length must be 375m long with a depth of 9.6m	✓
Landside space	1,750m ² of space would be required alongside the vessel for waiting passengers 3,750 m ² additional landside access must be provided for taxis and buses	✓
Facilities	Toilets need to be located close to embarkation / disembarkation point. The area that is used for passengers to wait for tenders would benefit if it was covered or at least part covered	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report Landside access must be provided for cars, taxis and potentially foot passengers	✓
Location requirements	Cruise ship passengers should be within walking distance of the town centre	✓

Table 1: Comparison of Option 4.1, dedicated cruise berth layout, with spatial requirements


5. Assumptions

It is known that sometimes more than one cruise ship arrives at St Peter Port at the same time, meaning that providing a dedicated cruise berth would only solve partially the cruise passengers space demands. It would therefore be necessary to maintain the tender berths in order to provide service to additional cruise ships if visiting at the same time or provide facilities for tender berthing in the vicinity of the new cruise terminal.

6. Costs

The implementation cost is between **£ 144** and **239** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

This cost corresponds to a berth for a 330 m vessel, which has a capacity of 4,300 PAX. If the berth was reduced to accommodate a 245 m ship (1400 PAX capacity), the reduction of dredging and breakwater volumes could lead to a reduction of the cost of approximately 15%.

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4.1 Option Cost Estimate Summary			Jacobs		
			Status of Design:		
			Concept/Planning		
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries					£ 22,434,900.00
General Conditions and Mod/Demob	20%	-	-	£ 22,434,900.00	
Breakwater East					£ 20,057,000.00
Armour Units (CoreLoc/Xbloc)	53,038	Cu.m	£ 158.00	£ 8,379,900.00	
Underlayer	33,149	Cu.m	£ 72.00	£ 2,386,700.00	
Core Rock	132,594	Cu.m	£ 64.00	£ 8,486,000.00	
Crown wall	2,210	Cu.m	£ 364.00	£ 804,400.00	
Breakwater South					£ 14,617,100.00
Armour Units (CoreLoc/Xbloc)	41,198	Cu.m	£ 158.00	£ 6,509,300.00	
Underlayer	24,719	Cu.m	£ 72.00	£ 1,779,800.00	
Core Rock	98,875	Cu.m	£ 64.00	£ 6,328,000.00	
Dredging					£ 62,968,800.00
Dredging (Rock) inc disposal	477,036	Cu.m	£ 132.00	£ 62,968,800.00	
Quay					£ 10,693,600.00
Blockwork Quay Wall	220	Lin m	£ 41,000.00	£ 9,020,000.00	
Mooring dolphins	3	EA	£ 104,848.00	£ 314,500.00	
Breasting moorings	4	EA	£ 227,018.00	£ 908,100.00	
Quay Furniture	1	EA	£ 451,000.00	£ 451,000.00	
Reclamation					£ 3,016,500.00
Supply and fill material	41,636	EA	£ 69.00	£ 2,872,900.00	
Ground Improvement	1	EA	£ 143,645.00	£ 143,600.00	
Pavement					£ 583,000.00
Concrete pavement	5,300	Sq.m	£ 110.00	£ 583,000.00	
Buildings					£ 238,400.00
Small building for Cruise passengers	200	Sq.m	£ 1,192.00	£ 238,400.00	
Infrastructure Subtotal					£ 135,000,000.00
Planning, Design, Permits, and Construction Support				7%	£ 9,450,000.00
Infrastructure Construction Total					£ 144,000,000.00
Optimism Bias				66%	£ 95,000,000.00
Total Project Cost					£ 239,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 4.2 - Technical Note

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-

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1. Introduction

The current operation for cruise passengers to visit Guernsey utilises tender boats to bring in passengers from where the cruise ships anchor, which is east of the entrance to St Peter Port harbour, into St Peter port harbour. Three anchorages are available but the berths are limited to two large cruise ships.

The current operations require berth space adequate for tenders for the two largest cruise ships to embark and disembark passengers at the same time. As the anchorage is limited to two large cruise ships, or three smaller cruise ships, it is not anticipated that additional space will be required, however, one additional pontoon unit would allow for three tender vessels.

This option considers the provision of an additional tender berth, as an extension of the existing ones, and the provision of a wider 50 m long access bridge.

The spatial requirements and demand study also identified that it will be necessary to provide landside access for buses, cars, taxis and foot passengers.

The spatial requirements and demand study also identified that it will be necessary to increase the land and berth space for the commercial sectors as well as to re-organise the facilities, public and secure areas, and to optimise traffic routes and security controls within St Peter Port harbour. These layout options are considered in separate technical notes.

2. Harbour layout

The options short-listing process revealed a possible Do Minimum solution for the cruise sector. This option considers the installation of an additional tender berth and a wider 50 m access bridge, as shown in Figure 1. The proposed layout would not likely require any dredging.

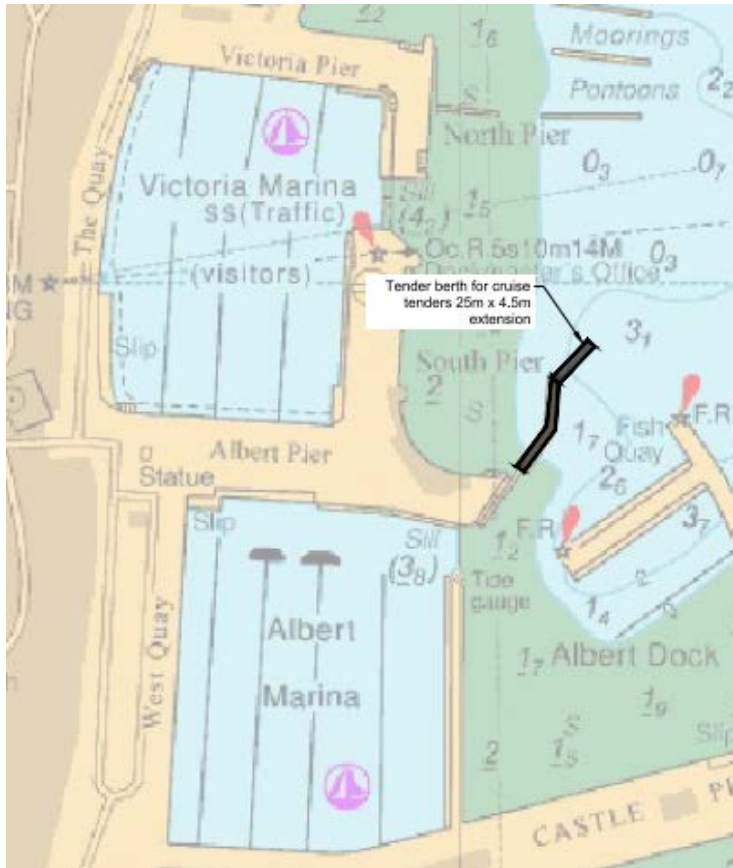


Figure 1: Layout for additional tender berth

3. Option description

A description of this option is provided in the following section, along with a comparison with the spatial requirements identified for the cruise ship tenders.

3.1 Tender berths

The existing tender berth is currently 50 m long with a depth of -1.7 mCD. The required berth to meet the requirements for the 2050 high scenario forecast is to be 75 m long and with a depth of 2.2 m. It is therefore proposed to provide an additional 25 m long tender berth as shown in Figure 1. The proposed layout will avoid the need for dredging.

3.2 Tender landside space

The cruise landside area is to remain unaltered. Sufficient landside space for buses and taxis and waiting foot passengers (500 m²) is available to meet the 2050 high scenario forecast.

3.3 Tender facilities

Toilets need to be located close to embarkation / disembarkation point.

3.4 Access and ISPS fence

Cruise passengers are to access the purpose-built berth (pontoons located off the east of Albert Pier) via Albert Pier.

The cruise area is out of the ISPS boundary.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 4.2.

	Spatial requirements identified	Option 4.2
Berth	The tender berth length must be 75 m long with a depth of 2.2 m.	✓
Landside space	2,500 m ² of space would be required for waiting passengers, taxis and buses.	✓
Facilities	Toilets need to be located close to embarkation / disembarkation point. The area that is used for passengers to wait for tenders would benefit if it was covered or at least part covered.	✓
Access and ISPS	Berths need to have direct access to the sea with minimal tidal constraints as existing or preferably no tide constraint. Navigation channels and turning circles shall comply with best practice for width and depth e.g. PIANC WG121 Report. Landside access must be provided for cars, taxis and potentially foot passengers.	✓
Location requirements	Cruise ship passengers should be within walking distance of the town centre.	✓

Table 1: Comparison of Option 4.2, additional tender berth, with spatial requirements

5. Assumptions

- It is assumed that even though the existing tender berths have less depth than required, this are currently been used and fit for purpose and therefore, could be kept in the future.

6. Costs

The implementation cost is between £ 1,4 and 2,3 million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020						Jacobs	
Activity and Location:					Date:	Job Number:	
St Peter Port, Guernsey					06/07/2020	B2382200	
Sheet Title:				Estimated By:	ILE		
				Jacobs			
Option 3.2 Cost Summary				Status of Design:			
				Concept/Planning			
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost		
Preliminaries					£ 215,500.00		
General Conditions and Mod/Demob	20%	-	-	£ 215,500.0			
Pontoons							
Pontoons (including fingers, services and moorings)	75	m	£ 5,030.0	£ 377,250.0	£ 377,250.0		
Access bridge	560	m	£ 1,250.0	£ 700,000.0	£ 700,000.0		
Intermediate support for access bridge	1	EA	£ 50,000.0	£ 50,000.0	£ 50,000.0		
Infrastructure Subtotal					£ 1,300,000.00		
Planning, Design, Permits, and Construction Support					7%	£ 91,000.0	
Infrastructure Construction Total					£ 1,391,000.00		
Optimism Bias					66%	£ 918,100.00	
Total Project Cost					£ 2,300,000.00		
* Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.							



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Option 5.1 - Technical Note

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States of Guernsey

-

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1. Introduction

The shortlist identifies that all recreational sectors (with the exception of local yachts and super yachts) can be provided by a Do Minimum option. This demonstrates that for most recreational sectors there is no harbour specific requirement to expand current berth areas. However, future spatial requirements do require a modification to the marine area for local yachts and super yachts to meet high demand.

The shortlist options identified that the preferred option is to retain local yachts within St Peter Port harbour. Super yachts are currently accommodated on commercial berths that are available when they arrive, as there is no dedicated berth for these. The Spatial Requirements study identified that providing a single berth would meet the present demand and would allow growth in this sector.

No additional requirements have been forecast for visiting yachts other than landside facilities such as showers, toilets and fuelling areas.

The Do Minimum Option 5.1 considered in this technical note consists of increasing the number of berths for local yachts increasing the marina spaces within St Peter Port and St Sampson's Harbours to meet future needs and forecast recreational (high scenario) requirements and providing a super yacht dedicated berth in St Peter Port harbour.

2. Harbour layout

Option 5.1 considers providing additional marine facilities for the local yachts (converting the existing Careening Hard into a marina in St Peter Port and increasing the number of moorings in St Sampson's harbour) and providing a dedicated berth for super yachts in St Peter Port harbour.

In St Peter Port harbour, a new breakwater extends from Castle Pier into the harbour, protecting the super yacht berth and additional berths for larger local yachts.

The proposed layout is as shown in Figure 1.

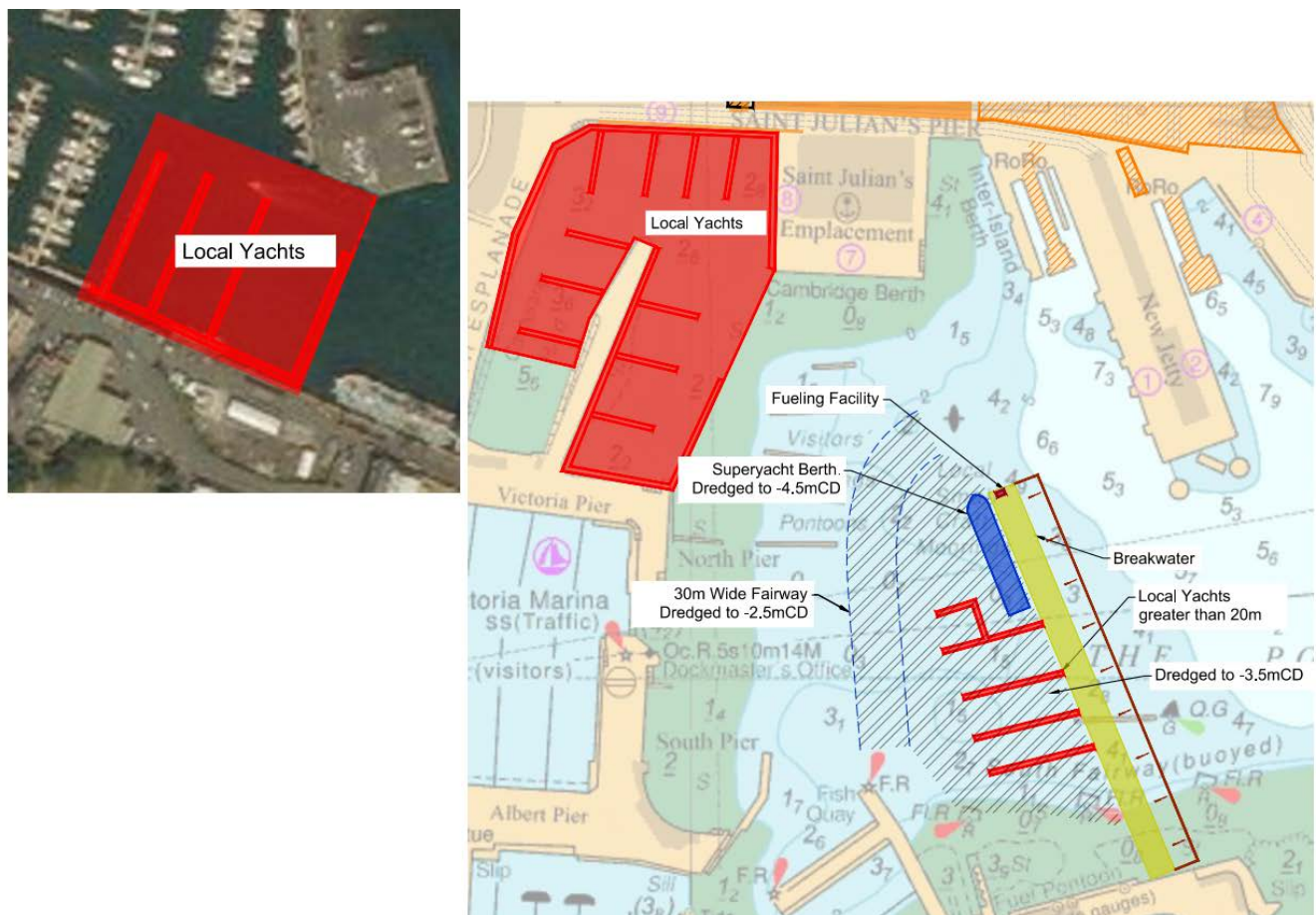


Figure 1: Layout for recreational sectors – Option 5.1 (St Sampson's harbour at the top left, St Peter Port harbour bottom right)

3. Option description

Option 5.1 considers providing additional marine facilities for local yachts and providing a dedicated berth for super yachts in St Peter Port harbour, as well as landside facilities for both recreational sectors.

3.1 Berths

3.1.1 Local yachts

The Spatial Requirements report outlines the need of increasing the number of berths by 343 berths/ 32,486 m² to cover the high scenario demand in 2050. Therefore, additional moorings are proposed in the form of pontoons within the existing Careening Hard (see Figure 1) and towards the mouth of St Sampson's harbour.

Option 5.1 assumes that the bulk liquid (hydrocarbons) commercial activities are moved out of St Sampson's harbour, and therefore a larger marina (see Figure 1) could be located within the harbour, leaving sufficient space at the South Quay to accommodate bulk solids vessels for aggregates. To create the additional marina space at the both locations, breakwaters are to be constructed (see Figure 1) and sills across the entrance, to maintain a suitable minimum water depth within each marina basin.

A breakwater is to be constructed to shelter Victoria Marina and additional pontoons on the sheltered (west) side. These pontoons provide additional moorings for local yachts including local yachts greater than 20 m in length (see Figure 1). Dredging is required in this area to allow both for berthing and accessing the pontoons at the back of the breakwater (see Figure 1).

3.1.2 Super yachts

There is currently no dedicated berth for super yachts. A dedicated berth for super yachts is provided on the sheltered side of the proposed breakwater. A dredged berth pocket would be required as shown in Figure 1.

3.2 Landside space

Space for toilets and showers for local yachts, a fuelling facility for super yachts were identified as requirements in the Spatial Requirements report. However, for Option 5.1 it is considered these could be provided within the allocated landside space. No additional landside space is required.

3.3 Facilities

Facilities such as toilets and showers should be provided at the new marinas.

A fuelling facility for super yachts should be provided.

All pontoons should be provided with water, power and lighting.

3.4 Access and ISPS fence

Local yachts and super yachts are outside of the ISPS area.

Albert Marina and St Sampson's harbour Marina are to remain unaltered and so is the access to both of them.

Access to the marina located on the Careening Hard is provided along Victoria Pier and St Julian's Pier.

Access to the landside area of the designated area for super yachts is provided along Castle Pier.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 5.1.

	Spatial requirements identified	Option 5.1
Local Yachts		
Berth	2,110 berths are required to suit the high scenario forecast	✓
Landside space	Pontoons should be connected to the shore by access ramps with suitable gradients	✓
Facilities	Toilet and shower facilities should be provided Pontoons should be provided with water, power and lighting	
Access and ISPS	All tide access is a preference for local yachts	✓
Location requirements	Berths for local yachts should be located in sheltered water	✓
Super yacht		
Berth	1 No. 90 m long berth with a depth of 4.5 m	✓
Landside space	See Facilities below	✓
Facilities	Landside access needs to be provided for crew and for tankers Pontoons should be connected to the shore by access ramps with suitable gradients Pontoons should be provided with water, power and lighting Safety ladders and hand holds should be provided	✓
Access and ISPS	All tide access is required for super yachts, noting that super yachts deeper than 4 m draught can use the commercial berths if required	✓
Location requirements	Berths for visiting super yachts should be located in sheltered water and close to the town centre, restaurants, shops and other amenities	✓


Table 1: Comparison of Option 5.1, Do Minimum for the recreational sectors, with spatial requirements

5. Assumptions

- Dredging is required to achieve suitable water depths for local yachts and super yachts.
- An alternative fairway is proposed around the breakwater, as the existing fairway will not be operational due to the breakwater construction.
- The number of boats that can be accommodated in each pontoon has been estimated using the existing number of moorings within the existing marinas.

6. Costs

The implementation cost is between **£62** and **£103** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020					
Activity and Location:		Date:		Job Number:	
St Peter Port, Guernsey		13/08/2020		B2382200	
Sheet Title:		Estimated By:		ILE	
Option 5.1 Recreational - Cost Summary		Jacobs			
		Status of Design:			
		Concept/Planning			
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries					£ 9,549,900.00
General Conditions and Mod/Demob	20%	-	-	£ 9,549,900.00	
Breakwater RHDV					£ 15,138,800.00
Armour Units (CoreLoc/Xbloc)	40,000	Cu.m	£ 158.00	£ 6,320,000.00	
Underlayer	25,000	Cu.m	£ 72.00	£ 1,800,000.00	
Core Rock	100,000	Cu.m	£ 64.00	£ 6,400,000.00	
Crown wall	1,700	Cu.m	£ 364.00	£ 618,800.00	
Dredging					£ 5,280,000.00
Dredging (Rock) inc disposal	40,000	Cu.m	£ 132.00	£ 5,280,000.00	
Quay					£ 20,664,000.00
Blockwork Quay Wall	480	Lin m	£ 41,000.00	£ 19,680,000.00	
Quay Furniture	1	EA	£ 984,000.00	£ 984,000.00	
Pontoons					£ 6,666,500.00
Pontoons (including fingers, access bridges, services and moorings)	1,990	m	£ 3,350.00	£ 6,666,500.00	
Quay					£ 457,000.00
Toilets for local yachts and storage for fishermen	1	EA	£ 457,000.00	£ 457,000.00	
Infrastructure Subtotal					£ 57,756,200.00
Planning, Design, Permits, and Construction Support					7% £ 4,043,000.00
Infrastructure Construction Total					£ 62,000,000.00
Optimism Bias					66% £ 40,920,000.00
Total Project Cost					£ 103,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 5.2 - Technical Note

B2382200-JAC-02-XX-TN-C-0012 | P02

08 October 2020

States of Guernsey

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Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
P01	28/08/20	ISSUE	IV	CH	MSS	MSS
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Future Harbour Requirements Study 2020

Project No: B2382200
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Document No.: B2382200-JAC-02-XX-TN-C-0012
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Client Name: States of Guernsey
Client No: -
Project Manager: Mark Sherlock-Smith
Author: Inma Lastres
File Name: Option 5.2 - technical note P02

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1. Introduction

The shortlist identifies that all recreational sectors (with the exception of local yachts and super yachts) can be provided by a Do Minimum option. This demonstrates that for most recreational sectors there is no harbour specific requirement to expand current berth areas. However, future spatial requirements do require a modification to the marine area for local yachts and super yachts to meet high demand.

The shortlist includes options to retain local yachts within St Peter Port harbour. Super yachts are currently accommodated on commercial berths if they are available when they arrive, as there is no dedicated berth for super yachts. The Spatial Requirements study identified that providing a single berth would meet the present demand and would allow growth in this sector.

No additional requirements have been forecast for visiting yachts other than landside facilities such as showers, toilets and fuelling areas.

The Do Minimum Option 5.2 considered in this technical note consists of increasing the number of berths for local yachts by increasing the marina spaces within St Peter Port harbour to meet future needs and forecast recreational (high scenario) requirements, providing a super yacht dedicated berth in St Peter Port harbour and re-positioning the fishing sector berths to accommodate a yacht marina.

Option 5.2 could be implemented while retaining the existing commercial activities at their current locations in St Peter Port harbour.

2. Harbour layout

Option 5.2 considers providing additional marine facilities for the local yachts (converting the existing Careening Hard and Albert dock into marinas).

A new breakwater extends from Castle Pier into the Harbour, protecting pontoons for local yachts and providing a dedicated berth for super yachts. The fishing fleet is to be relocated on the dedicated area created for the fishing fleet on the sheltered side of the breakwater.

The proposed layout is as shown in Figure 1.

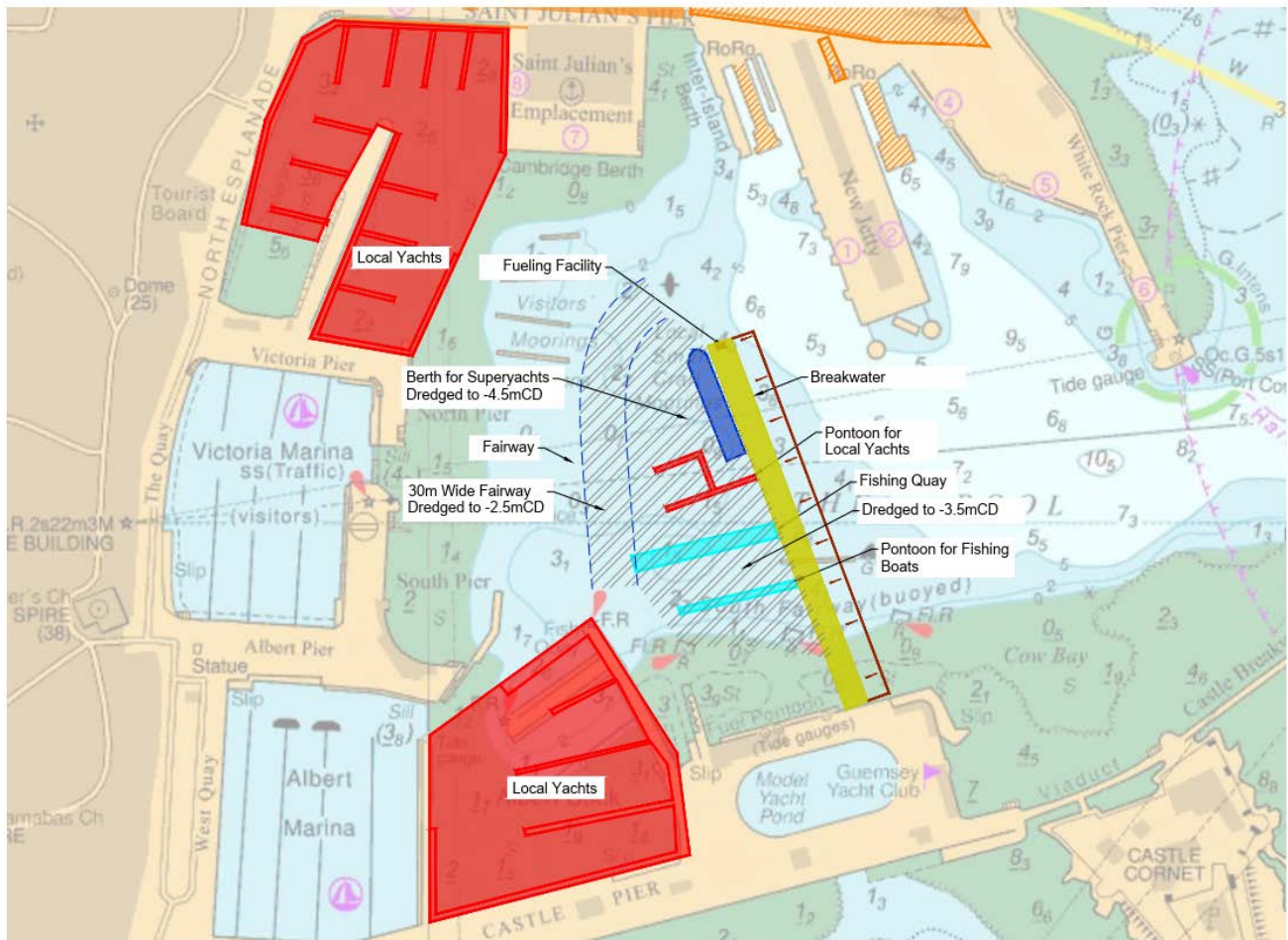


Figure 1: Layout for reconfiguration of the existing landside areas – Option 5.2

3. Option description

Option 5.2 considers providing additional marine facilities for local yachts and providing a dedicated berth for super yachts in St Peter Port harbour, as well as landside facilities for both recreational sectors. The fishing fleet would be relocated to the area designated for it. No additional requirements have been identified for fishing boats.

3.1 Berths

3.1.1 Local yachts

The Spatial Requirements report outlines the need of increasing the number of berths by 343 berths/ 32,486 m² to cover the high scenario demand in 2050. Therefore, additional moorings are proposed to be installed in the form of pontoons within the existing Careening Hard and Albert Dock (see Figure 1). To create the additional marina space at the both locations, breakwaters are to be constructed (see Figure 1) and sills across the entrance, to maintain a suitable minimum water depth within each marina basin.

A breakwater is to be constructed to shelter Victoria Marina with additional pontoons on the sheltered (west) side. Some of these pontoons are to accommodate some of the additional moorings required for local yachts. Dredging is required in this area to allow both for berthing and accessing the pontoons at the back of the breakwater (see Figure 1).

3.1.2 Super yachts

There is currently no dedicated berth for super yachts. A dedicated berth for super yachts is provided on the sheltered side of the proposed breakwater. A dredged berth pocket would be required as shown in Figure 1.

3.1.3 Fishing sector

The fishing fleet is to be relocated to a new designated quay and pontoon on the sheltered side of the breakwater. Dredging is required in this area to allow both for berthing and accessing the pontoons at the back of the breakwater (see Figure 1).

No additional moorings are required for the fishing sector, and therefore, an arrangement similar to the existing one in Albert Dock is proposed at the new proposed location.

3.2 Landside space

Space for toilets and showers for local yachts, a fuelling facility for super yachts and toilets, indoor and outdoor storage for the fishing sector were identified as requirements in the Spatial Requirements report. However, for Option 5.2 it is considered these could be provided within the existing/developed landside space. No additional landside space is required.

3.3 Facilities

Facilities such as toilets and showers should be provided to the new marinas.

A fuelling facility for super yachts should be provided.

All pontoons should be provided with water, power and lighting

The fishing boat mooring area requires: fresh water, electricity, lighting, toilet facilities, hoist for loading and unloading. Access to indoor and outdoor storage and clean seawater are also required.

3.4 Access and ISPS fence

Local yachts and super yachts and fishing fleet are outside of the ISPS area.

Albert Marina is to remain unaltered and so is the access to it. Access to the new marina located in the Careening Hard is provided along Victoria Pier and St Julian's Pier.

Access to the landside area designated for super yachts, new proposed area for the fishing fleet and to the marina located in Albert dock is provided along Castle Pier access road.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 5.2.

	Spatial requirements identified	Option 5.2
Local yachts		
Berth	2,110 berths are required to suit the high scenario forecast	✓
Landside space	Pontoons should be connected to the shore by access ramps with suitable gradients	✓
Facilities	Toilet and shower facilities should be provided Pontoons should be provided with water, power and lighting	
Access and ISPS	All tide access is a preference for local yachts	✓
Location requirements	Berths for local yachts should be located in sheltered water	✓
Super yacht		
Berth	1 No. 90 m long berth with a depth of 4.5 m	✓
Landside space	See Facilities below	✓
Facilities	Landside access needs to be provided for crew and for tankers Pontoons should be connected to the shore by access ramps with suitable gradients Pontoons should be provided with water, power and lighting Safety ladders and hand holds should be provided	✓
Access and ISPS	All tide access is required for super yachts, noting that super yachts deeper than 4 m draught can use the commercial berths if required	✓
Location requirements	Berths for visiting super yachts should be located in sheltered water and located close to the town centre, restaurants, shops and other amenities	✓
Fishing		
Berth	17,064 m ² marine area, 149 berths divided in: Fishing areas: 8,000 m ² and 28 berths Marina areas: 4,528 m ² and 68 berths Other areas: 4,536 m ² and 53 berths	✓
Landside space	Outside and inside storage areas Indoor storage total of 150 m ² for 20 units and outdoor storage total of 200 m ² for 20 unit	✓
Facilities	Toilet facilities Pontoons/quay should be provided with water, power and lighting A hoist for loading and unloading Safety ladders and hand holds should be provided	✓
Access and ISPS	Berth locations should be accessible by vehicles All tide access is required for commercial fishing vessels	✓

	Spatial requirements identified	Option 5.2
	Pontoons should be connected to the shore by access ramps with suitable gradients	
Location requirements	Access to clean seawater	✓


Table 1: Comparison of Option 5.2, Do Minimum for the recreational sectors, with spatial requirements

5. Assumptions

- Dredging is required to achieve suitable water depths for local yachts, super yachts and fishing fleet.
- An alternative fairway is proposed around the breakwater, as the existing fairway will not be operational due to the breakwater construction.
- The number of boats that can be accommodated in each pontoon has been estimated using the existing number of moorings within the existing marinas.

6. Costs

The implementation cost is between **£69** and **£115** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020					
Activity and Location:		Date:		Job Number:	
St Peter Port, Guernsey		13/08/2020		B2382200	
Sheet Title:		Estimated By:		ILE	
Option 5.2 Recreational - Cost Summary		Jacobs		Status of Design:	
				Concept/Planning	
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries				£	10,656,800.00
General Conditions and Mod/Demob	20%	-	-	£ 10,656,800.00	
Breakwater RHDV				£	15,138,800.00
Armour Units (CoreLoc/Xbloc)	40,000	Cu.m	£ 158.00	£ 6,320,000.00	
Underlayer	25,000	Cu.m	£ 72.00	£ 1,800,000.00	
Core Rock	100,000	Cu.m	£ 64.00	£ 6,400,000.00	
Crown wall	1,700	Cu.m	£ 364.00	£ 618,800.00	
Dredging				£	5,280,000.00
Dredging (Rock) inc disposal	40,000	Cu.m	£ 132.00	£ 5,280,000.00	
Quay				£	25,830,000.00
Blockwork Quay Wall	600	Lin m	£ 41,000.00	£ 24,600,000.00	
Quay Furniture	1	EA	£ 1,230,000.00	£ 1,230,000.00	
Pontoons				£	7,035,000.00
Pontoons (including fingers, access bridges, services and moorings)	2,100	m	£ 3,350.00	£ 7,035,000.00	
Quay				£	457,000.00
Toilets for local yachts and storage for fishermen	1	EA	£ 457,000.00	£ 457,000.00	
Infrastructure Subtotal				£	64,397,600.00
Planning, Design, Permits, and Construction Support				7%	£ 4,508,000.00
Infrastructure Construction Total					£ 69,000,000.00
Optimism Bias				66%	£ 46,000,000.00
Total Project Cost				£	115,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 5.3 - Technical Note

B2382200-JAC-02-XX-TN-C-0013 | P02

08 October 2020

States of Guernsey

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Future Harbour Requirements Study 2020

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Project Manager: Mark Sherlock-Smith
Author: Inma Lastres
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1. Introduction

The shortlist identifies that all recreational sectors (with the exception of local yachts and super yachts) can be provided by a Do Minimum option. This demonstrates that for most recreational sectors there is no harbour specific requirement to expand current berth areas. However, future spatial requirements do require a modification to the marine area for local yachts and super yachts to meet high demand.

The shortlist includes options to retain local yachts within St Peter Port harbour. Super yachts are currently accommodated on commercial berths if they are available when they arrive, as there is no dedicated berth for super yachts. The Spatial Requirements study identified that providing a single berth would meet the present demand and would allow growth in this sector.

No additional requirements have been forecast for visiting yachts other than landside facilities such as showers, toilets and fuelling areas.

The Do Minimum Option 5.3 considered in this technical note consists of increasing the number of berths for local yachts, increasing the marina spaces within St Peter Port harbour to meet future needs and forecast recreational (high scenario) requirements, providing a super yacht dedicated berth in St Peter Port harbour and moving the fishing sector berths to vacated commercial berths closer to the harbour entrance.

Option 5.3 assumes that the existing commercial activities have been moved from their current locations in St Peter Port harbour thus freeing up space within the Harbour.

2. Harbour layout

Option 5.3 considers providing additional marine facilities for the local yachts (converting the existing Careening Hard and converting Albert dock into marinas) and providing a dedicated berth for super yachts in St Peter Port harbour. The fishing fleet is to be relocated outside of Albert Dock, on the area in between berths 2 and 4/5.

A new breakwater extends from Castle Pier into the harbour, protecting pontoons and additional berths for larger local yachts.

The proposed layout is as shown in Figure 1.

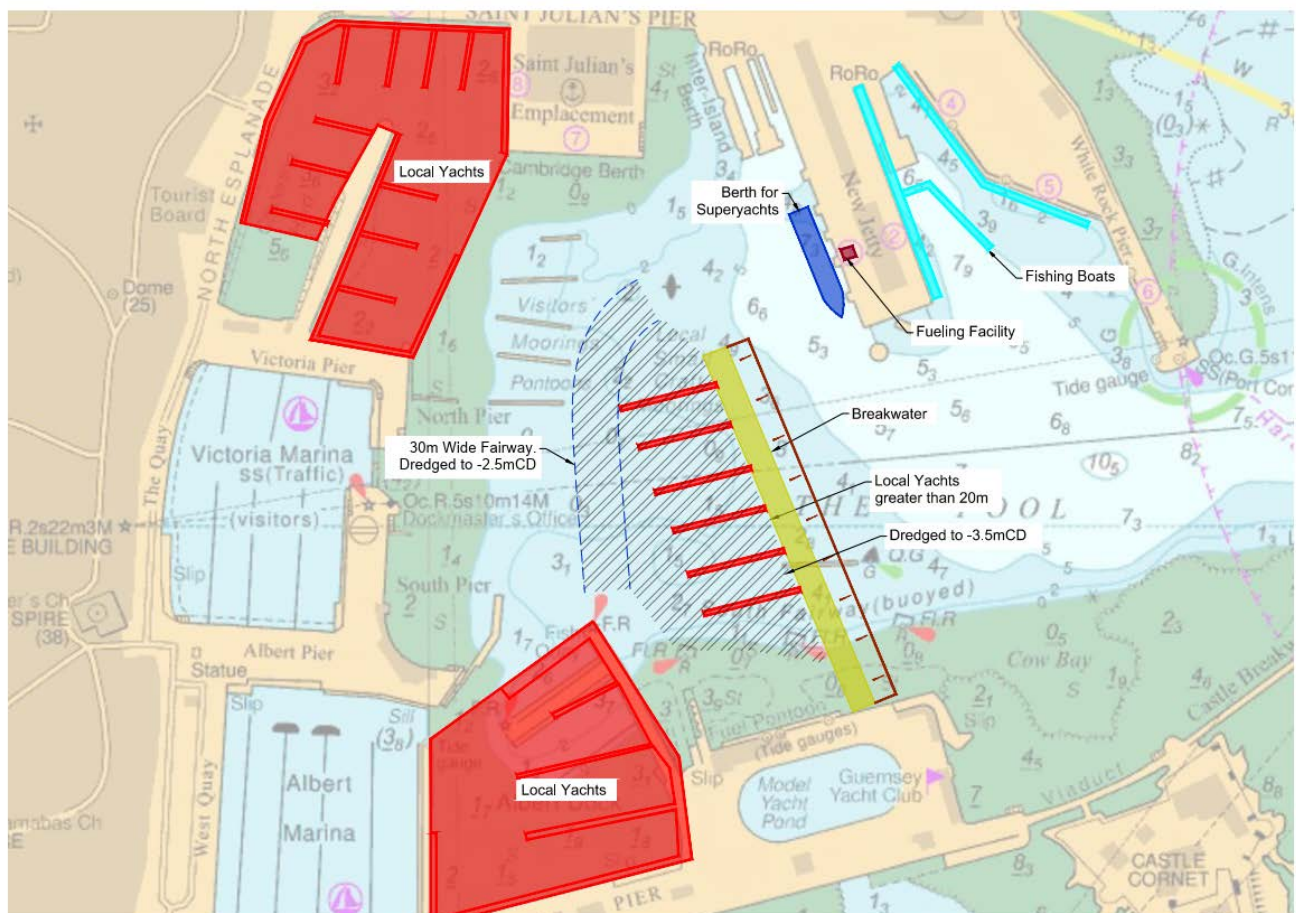


Figure 1: Layout for reconfiguration of the existing landside areas – Option 5.3.

3. Option description

Option 5.3 considers providing additional marine facilities for local yachts and providing a dedicated berth for super yachts in St Peter Port harbour, as well as landside facilities for both recreational sectors. The fishing fleet would be relocated to the area designated for it. No additional requirements have been identified for fishing boats.

Option 5.3 assumes that the existing commercial activities have been moved from their current locations in St Peter Port harbour thus freeing up space within the harbour.

3.1 Berths

3.1.1 Local yachts

The Spatial Requirements report outlines the need to increase the provision for local yachts by 343 berths/ 32,486 m² to cover the high scenario demand in 2050. Therefore, additional moorings are proposed in the form of pontoons within the existing Careening Hard and Albert Dock (see Figure 1). To create the additional marina space at the both locations, breakwaters are to be constructed and sills across the entrance, to maintain a suitable minimum water depth within each marina basin.

A breakwater is to be constructed to shelter Victoria Marina with additional pontoons on the sheltered (west) side. These pontoons provide additional moorings for local yachts including local yachts greater than 20 m in length. Dredging is required in this area to allow both for berthing and accessing the pontoons at the back of the breakwater (see Figure 1).

3.1.2 Super yachts

There is currently no dedicated berth for super yachts. A dedicated berth for super yachts is provided in berth 1, currently dedicated to RoRo vessels. The depth at this berth is between 4.8 and 7 m below CD. This is sufficient depth to accommodate super yachts.

3.1.3 Fishing sector

The fishing fleet is to be relocated to the quay and pontoons currently designated for the RoRo and LoLo sectors. This can be accommodated without dredging as there is enough water depth for the fishing boats at these locations.

3.2 Landside space

Space for toilets and showers for local yachts, a fuelling facility for super yachts and toilets, indoor and outdoor storage for the fishing sector were identified as requirements in the Spatial Requirements report. However, for Option 5.3 it is considered these could be provided within the allocated landside space. No additional landside space is required.

3.3 Facilities

Facilities such as toilets and showers should be provided at the new marinas.

A fuelling facility for super yachts should be provided.

All pontoons should be provided with water, power and lighting

The fishing boat mooring area requires: fresh water, electricity, lighting, toilet facilities, hoist for loading and unloading. Access to indoor and outdoor storage and clean seawater are also required.

3.4 Access and ISPS fence

Local yachts, fishing fleet and super yachts are outside of the ISPS area.

Albert Marina is to remain unaltered and so is the access to it. Access to the new marina located in the Careening Hard is provided along Victoria Pier and St Julian's Pier.

Access to the landside area designated for yachts on the sheltered side of the breakwater and to the marina located in Albert dock is provided along Castle Pier access road.

Access for fishing vessels and super yachts is through St Julian's Pier, the New Jetty and White Rock.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 5.3.

	Spatial requirements identified	Option 5.3
Local Yachts		
Berth	2110 berths are required to suit the high scenario forecast	✓
Landside space	Pontoons should be connected to the shore by access ramps with suitable gradients	✓
Facilities	Toilet and shower facilities should be provided	✓
	Pontoons should be provided with water, power and lighting	
Access and ISPS	All tide access is a preference for local yachts	✓
Location requirements	Berths for local yachts should be located in sheltered water	✓
Super yacht		
Berth	1 No. 90 m long berth with a depth of 4.5 m	✓
Landside space	See Facilities below	✓
Facilities	Landside access needs to be provided for crew and for tankers	✓
	Pontoons should be connected to the shore by access ramps with suitable gradients	
	Pontoons should be provided with water, power and lighting	
	Safety ladders and hand holds should be provided	
Access and ISPS	All tide access is required for super yachts, noting that super yachts deeper than 4 m draught can use other commercial berths if required	✓
Location requirements	Berths for visiting super yachts should be located in sheltered water and located close to the town centre, restaurants, shops and other amenities	✓
Fishing		
Berth	17,064 m ² marine area, 149 berths divided in:	✓
	Fishing areas: 8,000 m ² and 28 berths	
	Marina areas: 4,528 m ² and 68 berths	
	Other areas: 4,536 m ² and 53 berths	
Landside space	Outside and inside storage areas	✓
	Indoor storage total of 150 m ² for 20 units and outdoor storage total of 200 m ² for 20 unit	
Facilities	Toilet facilities	✓
	Pontoons/quay should be provided with water, power and lighting	
	A hoist for loading and unloading	
	Safety ladders and hand holds should be provided	
Access and ISPS	Berth locations should be accessible by vehicles	✓
	All tide access is required for commercial fishing vessels	

	Spatial requirements identified	Option 5.3
	Pontoons should be connected to the shore by access ramps with suitable gradients	
Location requirements	Access to clean seawater	✓


Table 1: Comparison of Option 5.3, Do Minimum for the recreational sectors, with spatial requirements.

5. Assumptions

- Dredging is required to achieve suitable water depths for local yachts behind the breakwater.
- An alternative fairway is proposed around the breakwater, as the existing fairway will not be operational due to the breakwater construction.
- The number of boats that can be accommodated in each pontoon has been estimated using the existing number of moorings within the existing marinas.

6. Costs

The implementation cost is between **£63** and **£105** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020					
Activity and Location:			Date:	Job Number:	
St Peter Port, Guernsey			13/08/2020	B2382200	
Sheet Title:			Estimated By:	ILE	
Option 4.3 Recreational - Cost Summary			Jacobs		
			Status of Design:		
			Concept/Planning		
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
Preliminaries					£ 9,812,200.00
General Conditions and Mod/Demob	20%	-	-	£ 9,812,200.00	
Breakwater RHDV					£ 15,138,800.00
Armour Units (CoreLoc/Xbloc)	40,000	Cu.m	£ 158.00	£ 6,320,000.00	
Underlayer	25,000	Cu.m	£ 72.00	£ 1,800,000.00	
Core Rock	100,000	Cu.m	£ 64.00	£ 6,400,000.00	
Crown wall	1,700	Cu.m	£ 364.00	£ 618,800.00	
Dredging					£ 3,960,000.00
Dredging (Rock) inc disposal	30,000	Cu.m	£ 132.00	£ 3,960,000.00	
Pontoons					£ 8,006,500.00
Pontoons (including fingers, access bridges, services and moorings)	2,390	m	£ 3,350.00	£ 8,006,500.00	
Quay					£ 21,955,500.00
Blockwork Quay Wall	510	Lin m	£ 41,000.00	£ 20,910,000.00	
Quay furniture	1	EA		£ 1,045,500.00	
Infrastructure Subtotal					£ 58,873,000.00
Planning, Design, Permits, and Construction Support					7% £ 4,121,000.00
Infrastructure Construction Total					£ 63,000,000.00
Optimism Bias					66% £ 42,000,000.00
Total Project Cost					£ 105,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					



Future Harbour Requirements Study 2020

Option 6.1 - Technical Note

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08 October 2020

States of Guernsey

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1. Introduction

Havelet Bay is an attractive location for providing additional space for leisure facilities given its proximity to St Peter Port harbour and semi enclosed nature. Option 6.1 allows some leisure sectors to be moved out of St Peter Port harbour, potentially reducing congestion or freeing up space for other activities.

2. Harbour layout

The marina Option 6.1 provides in Havelet Bay will be protected by a breakwater with an elbow, protecting from easterly waves and an additional detached breakwater that will protect the harbour from waves coming from the South.

The proposed layout is as shown in Figure 1.

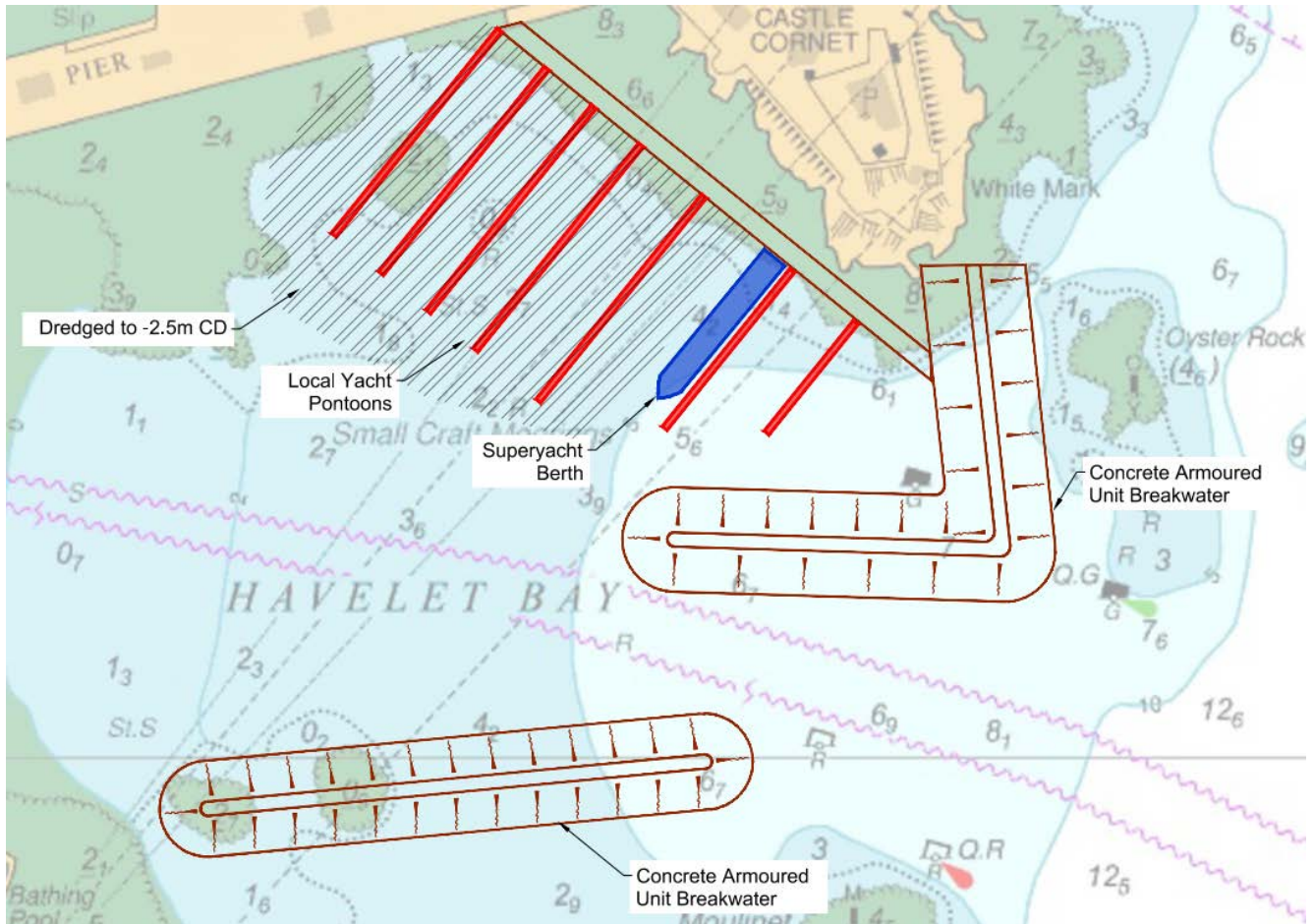


Figure 1: Layout for the marina – Option 6.1

3. Option description

This option considers the development of a new port facility.

3.1 Berths

Breakwater construction is proposed to provide large sheltered areas with variable water depth, which could be developed in stages for a variety of leisure activities.

3.1.1 Local and visiting yachts

Additional marina space and moorings for local yachts and visiting yachts is to exceed the high demand scenario, providing at least 350 additional berths for yachts. A small amount of dredging would be advisable for the yachts to come in and berth.

3.1.2 Super yachts

A dedicated super yacht berth(s) could be developed. super yacht berth would be all tide without needing any dredging in the berth pocket. However the access would be limited to MLWS if no dredging of an access channel is undertaken.

3.2 Landside space and facilities

3.2.1 Local and visiting yachts

The maximum distance between the pontoons and the closest toilets and showers facilities is no longer than 250m, so toilet facilities can be provided at the existing pier (Castle Pier).

3.2.2 Super yachts

A fuelling facility for super yachts should be provided as identified in the Spatial Requirements report.

3.3 Access and ISPS fence

Leisure activities are outside the ISPS delimitation line.

Navigational access for the super yachts is constrained to MLWS if no dredging is undertaken.

Foot accesses to the marina will be through the Castle Pier.

4. Location and spatial requirements

Table 1 provides a comparison of the spatial requirements identified and Option 6.1.

	Spatial requirements identified	Option 6.1
Local yachts		
Berth	2,110 berths are required to suit the high scenario forecast	✓
Landside space	Pontoons should be connected to the shore by access ramps with suitable gradients	✓
Facilities	Toilet and shower facilities should be provided	✓
	Pontoons should be provided with water, power and lighting	
Access and ISPS	All tide access is a preference for local yachts	✓
Location requirements	Berths for local yachts should be located in sheltered water	✓
Visiting yachts		
Berth	25,000m ²	✓
Landside space	2 x 35 m ² for shower and toilet blocks	✓
Facilities	Toilet and shower facilities	✓
	Water supply	
	Electric hook up on some berths	
	Refuse disposal	
	Wi-Fi	
Access and ISPS	All tide access for a proportion of the visiting yachts	✓
	Pontoons connected to the shore by access ramps with suitable gradients	
Location requirements	Located in sheltered water	✓
	Close to the town centre, restaurants, shops and other amenities	
Super yacht		
Berth	1 No. 90 m long berth with a depth of 4.5 m	✓
Landside space	See Facilities below	✓
Facilities	Landside access needs to be provided for crew and for tankers	✓
	Pontoons should be connected to the shore by access ramps with suitable gradients	
	Pontoons should be provided with water, power and lighting	
	Safety ladders and hand holds should be provided	
Access and ISPS	All tide access is required for super yachts, noting that super yachts deeper than 4 m draught can use the commercial berths if required	✓
Location requirements	Berths for visiting super yachts should be located in sheltered water and close to the town centre, restaurants, shops and other amenities	✓


Table 1: Comparison of Option 6.1 with spatial requirements

5. Assumptions

- If Option 6.1 is selected for further development, a navigation simulation model would be necessary to ensure that the super yacht has no access constraints (apart from MLWS).
- If Option 6.1 is selected for further development, it is strongly suggested to perform a wave penetration and agitation model of the harbour to ensure that the leisure berthed ship movements are limited to the recommended values.

6. Costs

The implementation cost is between **£63** and **£105** million. Costs are for capital works and do not include existing and ongoing maintenance costs and costs for equipment.

Guernsey Future Harbour Requirements 2020					
Activity and Location:			Date:	Job Number:	
St Peter Port, Guernsey			06/08/2020	B2382200	
Sheet Title:			Estimated By:	IV	
6.1 Option Cost Estimate Summary			Status of Design:		
			Concept/Planning		
Item	Quantity	Units	Unit Cost	Subtotals	Total Cost
<i>Preliminaries</i>				£	9,904,500.00
General Conditions and Mod/Demob	20%	-	-	£	9,904,500.00
<i>Breakwater North</i>				£	12,014,800.00
Armour Units (CoreLoc/Xbloc)	31,771	Cu.m	£ 158.00	£	5,019,800.00
Underlayer	19,857	Cu.m	£ 72.00	£	1,429,700.00
Core Rock	79,428	Cu.m	£ 64.00	£	5,083,400.00
Crown wall	1,324	Cu.m	£ 364.00	£	481,900.00
<i>Breakwater South</i>				£	10,146,300.00
Armour Units (CoreLoc/Xbloc)	28,597	Cu.m	£ 158.00	£	4,518,400.00
Underlayer	17,158	Cu.m	£ 72.00	£	1,235,400.00
Core Rock	68,633	Cu.m	£ 64.00	£	4,392,500.00
<i>Dredging</i>				£	6,039,000.00
Dredging (Rock) inc disposal	45,750	Cu.m	£ 132.00	£	6,039,000.00
<i>Quay</i>				£	20,923,500.00
Blockwork Quay Wall	430	Lin m	£ 41,000.00	£	17,630,000.00
Quay Furniture	1	EA	£ 881,500.00	£	881,500.00
Pontoons	720	Lin m	£ 3,350.00	£	2,412,000.00
<i>Facilities</i>				£	398,800.00
Toilet blocks	440	Sq.m	£ 500.00	£	220,000.00
Fishing fleet storage	150	Sq.m	£ 1,192.00	£	178,800.00
Infrastructure Subtotal				£	59,000,000.00
Planning, Design, Permits, and Construction Support				7%	£ 4,130,000.00
Infrastructure Construction Total					£ 63,000,000.00
Optimism Bias				66%	£ 42,000,000.00
Total Project Cost				£	105,000,000.00
*Percentages used for Contingency, Design and Permits only consider infrastructure cost and excludes cost of equipment.					