

Isles of Scilly Route Partnership

# Isles of Scilly Route Study Major Scheme Bid

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Part Two: Options for the  
Future

July 31, 2004

Report no: RT/DV01104/25B/023



 Hart, Fenton & Co



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## Part Two: Options for the Future

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**Report no:** RT/DV01104/25B/023

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## 6 Baseline Forecasts of Passenger and Freight Demand

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This section outlines the baseline forecasts of passenger and freight demand. The baseline forecasts show what would be expected to happen in the future to demand for transport to the Isles of Scilly, assuming that there is no change in transport provision. The forecasts deal with all trips to the Isles of Scilly. This includes the trips by ferry and helicopter from Penzance and fixed wing from Land's End and also those by fixed wing from Newquay, Exeter, Bristol and Southampton and helicopter to Tresco, which represent a different "route" and market to the Scillonian III.

In the baseline situation, no change in transport provision is taken to mean a continuation of a similar level of service to the base year (2003) and assumes fare levels will remain as at present as will fare levels relative to competitor destinations. The assumption regarding fare levels is made given that the business aspirations of the transport operators are closely aligned with the Isles of Scilly tourism industry, who in turn will seek to maintain the position of the islands in the wider tourism market.

The baseline forecasts are intended to provide a basis for evaluation of the do-minimum and do-something options and have been used (with the subtraction of forecasts for the fixed wing from Newquay, Exeter, Bristol and Southampton and helicopter to Tresco) as the reference case in the transport model for the route (as set out in Appendix B).

### 6.1 Forecast Years

The base year for the study is 2003. The opening year is 2009 (with the first full year of operation, 2010) because it is anticipated that the Gry Maritha will cease to operate by 2009. The future forecast year is 2039, thirty years from opening, in accordance with current DfT guidance. Mid-term assessment years of 2020 and 2030 are also used.

### 6.2 Passenger Demand Forecasts

In the light of analysis of past trends in travel demand (as set out in detail in Appendix C: Technical Note – Past Trends in Travel Demand), it is considered that the best method for forecasting future travel demand is by examination of trends in each market segment. There are three main market segments of travel between the Isles of Scilly and the mainland:

- Day Trippers;
- Staying Visitors; and
- Resident, business and VFR trips.

## Day Trippers

The day trip market was estimated as XXXX single trips or XXXX day-visitors by all modes in 2003. The Tourism Strategy for the Isles of Scilly highlights that there has been a constant increase in the day trip market in the past four years. Figures from the Steamship Group for the Scillonian III and Skybus show a year on year XXXX since 2000, with an overall growth of XXXX. A monthly breakdown shows that there has been some broadening of the day visitor season with larger increases in April and October. The figure of XXXX over four year does however, include an increase of XXXX between 2002 and 2003 due to an earlier sailing on August Wednesdays, giving longer on the islands. There is a need to take a longer-term perspective on day trip trends to make robust forecasts.

The strategy 'Towards 2015 – The Shape of Tourism' produced by South West Tourism in 2003 forecasts activity in each tourism market segment for the region (and for some aspects by county). This research is considered to provide the most appropriate basis for forecasting tourism trends in the islands.

The research identifies that in the ten years from 2001, it is forecast that:

- Town day trips will increase by around 2% per annum;
- Countryside trips will increase by around 1% per annum, after recovering to pre foot and mouth levels by 2002/03;
- Coastal trips will increase marginally at around 0.5% per annum.

Spend per trip is estimated to remain the same over the period, at constant values.

It is considered that the best estimate for the long term of growth in day visitor numbers to the Isles of Scilly is an annual growth level of XXXX in line with those relating to coastal trips. This is a low forecast and thus will give a conservative indication of the impact of the do-minimum situation (in other words the potential number of day visits lost by not having a sea vessel is conservative). South West Tourism has indicated that a higher level of growth (of between 3% and 5% per annum) might be experienced in the Isles of Scilly. The baseline forecasts will use the low growth scenarios and this higher growth scenario is most appropriately used as one of the sensitivity tests.

The assumption is made that the level of growth will continue at the same rate over the longer term (i.e. beyond the 2011 period of the SW Tourism strategy).

Using the forecast growth level gives a baseline forecast of XXXX day visitors in 2009 and XXXX in 2039.

## Staying Visitors

It is estimated that in 2003 there was a total of XXXX single trips or XXXX staying visitors to the islands. The Isles of Scilly Tourism Strategy notes that the average length of stay was 7.8 days in 2002, indicating that XXXX tourist nights were spent on Scilly. There is a total of 2,619 bedspaces on the islands, indicating that on average beds were occupied for 255 nights or 70% of the year. This compares to the figure in the tourism strategy of 77% in the main season of March to October inclusive. The South West Region has an average occupancy of 60%.

In the future, it is assumed that there will be no net increase in the number of bedspaces, since capacity of the island economy, social infrastructure and environment to absorb additional bedspaces is highly constrained. There are two main trends that may however, lead to a growth in staying visitor numbers even with a static amount of accommodation:

- A reduced average number of nights stay (through growth in the short break market and people taking say one weeks holiday rather than two) leading to the same occupancy of accommodation overall but increased trips to and from the islands; and
- Increased occupancy of accommodation in the shoulder and winter seasons.

With regard to average number of nights stay, Scilly shows a contrasting profile to the South West Region, where average nights stay is only 2.1 days. The South West Tourism research indicates that it is higher in Cornwall at 4.8 days (in 2001). Over the ten years to 2001, the average number of nights per trip is forecast to fall in the South West to 4.14. Total trips in the South West are expected to increase by 30% (2.66% per annum) and total number of nights by 11% (1.05% per annum).

The total trips, nights and average occupancy of accommodation in Scilly has been calculated, assuming that the islands experience the same rate of growth in the long term to 2039 as anticipated for the South West. By 2039 this would lead to occupancy levels of more than 100% throughout the whole year. This is clearly unrealistic. Accommodation will therefore, at some point, constrain any further growth in tourism to the islands.

It is considered that an annual occupancy of 80% would be the maximum that could be achieved. This is the level currently experienced in May and September, either side of the summer peak. Occupancy of 80% assumes that there is growth in the shoulder seasons to the same occupancy levels as the summer and the months on the edge of the summer also increase. The forecasts indicate that such a situation might occur by 2016. Beyond this year, it is assumed that further growth will be capped by the level of accommodation and thus the volume of staying visitor trips will remain constant beyond 2016. Table 6.1 shows the forecast number of trips by staying visitors using these assumptions.

Table 6.1 - Forecast Staying Trips, Number of Nights and Accommodation Occupancy

Year	Total Staying Trips (one way)	Total Staying Trips (return)	No of Nights	Average bedspaces occupancy (12 mths) (2619 bedspaces)
2003	XXXX	XXXX	XXXX	XXXX
2010	XXXX	XXXX	XXXX	XXXX
2016	XXXX	XXXX	XXXX	XXXX
2039	XXXX	XXXX	XXXX	XXXX

## Resident, Business and VFR Trips

Trips by residents, business trips and visit to friends and relatives represent less than 10% of all trips and therefore it is considered appropriate to forecast these categories for the baseline in aggregate. It is estimated that the three modes carried 21,665 single way resident, business and VFR trips to and from the islands in 2003. The population of the islands was 2,153 in 2001. As a simple calculation, this equates to an average annual trip rate per resident (although not all are made by residents) of 10.1 or 5 return trips.

The TEMPRO database gives a forecast growth in total population of 0.4% by 2009 (from 2001) and 4.9% by 2036, the latest year available. This can be used to estimate that the population will be 2180 in 2010 and 2270 in 2039 (using the same level of compound annual average growth across the period).

It is assumed in the absence of local information to the contrary that the number of resident, business and VFR trips per resident will remain constant. The total number of resident, business and VFR trips is therefore forecast as XXXX in 2010 and XXXX in 2039.

### 6.2.1 Summary of Passenger Forecasts

Table 6.2 summarises the forecast passenger demand for trips to and from the Isles of Scilly in future years, based on the market segment approach to forecasts detailed above. It should be noted that these are single direction trips for all modes.

Table 6.2 – Summary of Passenger Forecasts 2003-2039

Year	Day Trip Passengers	Staying Visitor Passengers	Resident, Business and VFR Trips	Total Passenger Trips
2003	XXXX	XXXX	XXXX	XXXX
2010	XXXX	XXXX	XXXX	XXXX
2020	XXXX	XXXX	XXXX	XXXX
2030	XXXX	XXXX	XXXX	XXXX
2039	XXXX	XXXX	XXXX	XXXX

## 6.3 Freight Demand Forecasts

### 6.3.1 Past Trends

Limited information has been available on historic trends in freight movements to and from the Isles of Scilly before 1998.

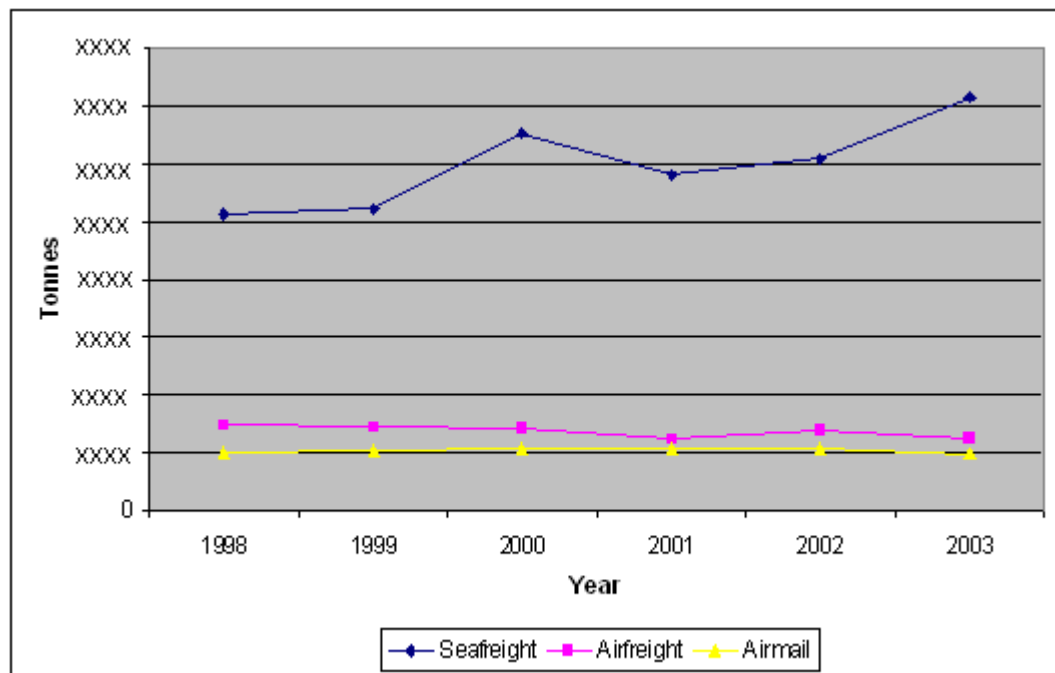
Freight volumes for the years 1998 to 2003 have been analysed for each mode, as supplied by St Mary's Airport and the Isles of Scilly Steamship Group. The total freight figures are given in Table 6.3 and Figure 6.1 shows the trend over the period.

Table 6.3 - Total Freight Figures (metric tonnes) 1998-2003

	1998	1999	2000	2001	2002	2003
Sea Freight	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
Air Freight	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
Air Mail	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
Total	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

It can be seen from the table and the figure that the overall volume of freight has increased over the time period by XXXX. The growth has however been in sea freight (which has seen a XXXX increase) whereas general air freight and air mail volumes have remained relatively static.

Figure 6.1: Trend in Freight Movements by Mode 1998-2003



### 6.3.2 Future Year Freight Demand Forecasts

The limited amount of historic data on freight volumes means that past trends must be treated with caution. Moreover, there has been a very high level of growth in the six year period, which if extrapolated in the future would forecast a significant rise in freight demand over the study period (XXXX by 2009, XXXX by 2039). As with past trends in passenger data, while there has been an upward movement, there have clearly been other factors influencing demand for freight movement other than gradual growth in time. Factors involved are likely to have particularly included a growth in numbers of tourists and the amount of building work being carried out. The period has seen some significant investments in hotels and the Tresco visitor centre, for example.

It is considered therefore that it would not be appropriate to extrapolate past trends forward in freight demand given the recent high growth, the limited amount of data and other factors influencing growth.

Forecasts of freight demand will be based instead on change in GDP. The “Highways Agency Guide to Freight” report, for example, while it deals specifically with road freight, highlights that *“In many western European countries there has been a close link between growth in road freight demand and economic growth. Assumptions for economic growth have therefore been the basis for many forecasts of freight traffic.”* The report notes that currently, the annual growth in tonnes lifted is about 1 per cent, while the rate of growth of the GDP is about 3 per cent.

The Cornwall Local Transport Plan notes that changes in Heavy Goods Vehicle movements in Cornwall reflect national trends. It can therefore be assumed that the HA national trend figure is reflected in the Cornish situation.

For the Isles of Scilly Route, freight is of course carried by sea and air. Given that there is no road link, the freight carried can be assumed to be equivalent to that normally moved by road. It is therefore assumed that the volume of freight moved to the Isles of Scilly will be in line with the national estimate of 1% annual growth in tonnes lifted by road, assuming a continuation of GDP growth of 3% per annum.

Using 1% growth per annum to forecast future growth, Table 6.4 shows projected future volumes of freight carried by all modes to and from the islands. The forecast gives a growth of 6% in volume of freight by 2009 and a further 33% by 2039.

**Table 6.4: Forecast Growth in Freight Volume**

Year	Total Freight Movements (metric tonnes)		
	Sea	Air General	Air Mail
2003	XXXX	XXXX	XXXX
2010	XXXX	XXXX	XXXX
2039	XXXX	XXXX	XXXX
Increase 2003-2010	XXXX	XXXX	XXXX
Increase 2010-2039	XXXX	XXXX	XXXX



The do-minimum has three components:

1. Investments in transport infrastructure;
2. Changes in the transport services anticipated if there is no public intervention; and
3. Subsequent impacts on passenger and freight demand in comparison to the baseline forecasts.

## 7.2 Investments in Transport Infrastructure

The “current commitments” by the providers of transport infrastructure is the basic threshold of investment that will have to take place, in the absence of any additional allocation of public funding. The current commitments are set out for each element of infrastructure in the following sections.

### St Mary’s Harbour

The Duchy of Cornwall anticipate that in a do-minimum situation whereby there is no step change in investment in St Mary’s harbour, there will be a need to continue to invest to ensure that the facility can operate, albeit at a very basic level. The do minimum scenario assumes that the passenger ferry will fail to operate (as discussed in the next section). Therefore the facilities that will need to be provided are those for the freight vessel to and from the mainland as well as the inter-island freight and passenger services, facilities for the fishermen, emergency services and various other craft including yachts.

Regular maintenance of the quay will be required. The main quay structure requires regular maintenance and will, in due course, require refurbishment.

There are currently health and safety issues that need to be resolved and many of these are already programmed for action by the Duchy of Cornwall. One of the main issues is the mixing of pedestrians and vehicles along the quay. Improvement is essential and it is proposed that railings will be provided along the length of the quay to allow separate lanes for vehicles and passengers. Passing places will need to be provided for the vehicles due to the very narrow route. A raised kerb is also being provided along the length of the quay to prevent vehicles accidentally veering from their lane. Other minor improvements are proposed that include lighting and an emergency warning system.

Improvements to security are also anticipated with possible cordoning off of the quay for freight activities with only restricted access available to the outer steps.

The do-minimum measures are estimated to cost XXXX.

### Penzance Harbour

Penzance Harbour currently costs XXXX per year for maintenance, including a contribution to dredging. There is no committed capital

expenditure beyond the annual maintenance. However, in a do-minimum situation whereby there are no additional public monies, the harbour owners (Penwith District Council) would need to undertake a basic level of works to ensure the harbour can continue to operate. This will mainly be in respect of security measures to separate the cargo facilities from public access (to comply with the Port Safety Code) which is likely to cost in the region of XXXX.

### **Penzance Heliport**

British International own and operate the heliport and are planning to invest in the facility to:

- provide an apron area next to the runway to improve operations and use of the runway; and
- develop a hangar for helicopter maintenance: the maintenance operation will be transferred from Plymouth to Penzance.

The total cost of the scheme is in the region of XXXX million. British International may be seeking public funding support for the proposal, but this will be from separate sources to the Major Scheme Bid and is therefore treated as part of the do-minimum. It is assumed that the runway apron will be completed in the 2004/05 financial year and the maintenance facility in 2005/06.

### **St Mary's Airport**

Improvements to the terminal building are proposed to meet security requirements and improve baggage handling.

Over the thirty-year timeframe there may also be investments required to meet new legislation, but this cannot be anticipated at the present time. It is assumed that operators of transport infrastructure will meet requirements as necessary at the relevant point in the future.

## 7.3 Future Provision of Transport Services

The Isles of Scilly to mainland route is operated by two commercial operators. In the do-minimum there will be no public intervention beyond existing commitments but there will be responses by commercial operators to the new situation, those already in the market and other operators who may enter the market. These responses can be described as “market-led scenarios” for future transport provision.

Analysis has been undertaken to assess what is likely to happen once the Gry Maritha and Scillonian III are no longer economically viable for the Steamship Company.

### 7.3.1 Replacement of Vessels by the Private Sector

The first possibility that has been considered is whether the Steamship Company could feasibly replace the two vessels with new or second hand like for like vessels and operating characteristics without any public intervention.

#### Replacement Freight Vessel

The capital cost of a new cargo vessel (of dimensions 43 m length, 10 m beam and requiring a draught of 2.9m as per the existing vessel) is estimated by Hart Fenton naval architects at £9.5 million. Such a vessel would have crane- loading facilities as with the existing vessel – it will not be a roll-on roll-off vessel. It is likely to be possible to purchase a second hand vessel to serve the route, although it may not be as suitable as the Gry Maritha, depending on what is available. The cost of a second hand vessel has been assumed by Hyder Consulting to be half the new cost (£4.75 million).

A replacement cargo vessel to serve the route is assumed to travel at 12 knots, giving a journey time of 3 hours 15 minutes. The vessel is estimated to have an annual operating cost of XXXX. In addition to the vessel operating costs, the Steamship Group incur ‘Stevedore’ costs of handling freight on shore which are estimated as XXXX.

The revenue has been estimated by Hyder Consulting based on the company’s declared income from sea services. This has been split for freight and passenger services in accordance with numbers of passengers carried, average fares, tonnes of freight and an average cost per tonne. The revenue estimates have been verified by the Steamship Company as giving a realistic representation of the business.

The Steamship Group do not currently meet the costs of capital replacement of a freight vessel from freight revenues. The Gry Maritha and the Scillonian III currently carry XXXX tonnes of freight (2003) at an average cost to the freight user of XXXX per tonne. This generates approximately XXXX million in revenue, comparing to total operating costs of XXXX million.

Purchase of a second hand vessel at £4.75 million, assuming an 85% loan at 7% interest over 8 years, would cost XXXX per year in mortgage payments, plus the capital injection of XXXX from the operator.

In order to cover the mortgage payment and operating costs of the vessel, as well as make a return to the company, there would be a need to increase revenue to XXXX per annum for a second hand vessel. This would necessitate a rise in the average cost of carrying a tonne to XXXX for a second hand vessel (50%). As a result, it is not expected that the freight service will cease as it is an essential service to the islands. The additional costs will be therefore passed on to Isles of Scilly businesses, residents and tourists. The cost of imports and exports to the Isles of Scilly in a competitive business environment is already a serious concern and any increase would clearly exacerbate the situation.

### **Replacement Passenger Vessel**

The capital cost of a replacement passenger vessel (of dimensions 58m length, 10.75m beam and requiring a draught of 2.9m) is estimated by Hart Fenton naval architects at £11 million. A second hand vessel would not be available to meet the requirements and therefore a replacement vessel would need to be built bespoke for the route. The vessel of this size would be smaller than the existing Scillonian III, but have better stability due to modern design techniques.

A replacement passenger vessel to serve the route at the same speed as existing would travel at 15 knots, giving a journey time of 2 hours 40 minutes. The vessel is estimated to have an annual operating cost of XXXX XXXX.

The revenue for the passenger vessel is approximately XXXX million. As with the freight vessel, the Steamship Group do not currently meet the costs of capital replacement of a passenger vessel from passenger revenues. Purchase of a new vessel at £11 million, assuming an 85% loan at 7% interest over 12 years, would cost XXXX per year in mortgage payments, plus the capital injection of XXXX from the operator.

In order to cover the mortgage payment and operating costs of the vessel, as well as make a return to the company, there would be a need to increase revenue to XXXX per annum for a second hand vessel. This would necessitate a rise in the average fare by 75%.

Clearly, a fare rise of this magnitude would have a significant impact on patronage, particularly the important day visitor market. This has been assessed using the transport model, which would predict a 57% fall in passenger numbers as a result. This in turn would reduce revenue. This would, it is considered, make the service not viable.

The inference from the analysis is that passenger ferry services would be expected to cease in the do-minimum, without public intervention.

**The do-minimum for transport services is therefore a situation where there is no passenger ferry service beyond 2014 and freight services continue to be operated by one or more commercial operators using replacement vessels to the Gry Maritha. This would be at significantly greater cost to freight users.**

### 7.3.2 Main Impacts of the Do-Minimum

The main impact of the loss of the passenger ferry service will be to reduce the choice of modes to fixed wing air service and helicopter services. There will be no link by sea for passengers, except a limited number (up to 12) on freight sailings. This will also mean that in foggy weather, when air services are grounded, there will be no sea vessel to get passengers on or off the islands.

Passengers will be reliant on air services to travel to the islands. Discussions with the air operators and air consultants has confirmed that there is highly unlikely to be a situation whereby an increase in passenger numbers could reduce operating costs sufficiently to bring fares down to the level of the ferry service. Therefore the transfer of passengers to air will be restricted by the significantly greater fares on the air services. There will also be other factors, which may restrict the willingness of passengers to transfer, such as fear of flying and bulk of luggage.

The impact of the loss of the sea service, and a step-up in travel costs to the Isles of Scilly if transferring to air travel, will be a reduction in the numbers of passengers travelling to the islands (particularly day visitors) which will have an impact on the tourism economy of the islands and Penwith.

The impact of the do-minimum has been assessed using the transport model. In the reference case, modelling the demand for fixed wing from Land's End, helicopter to St Mary's and the ferry, a total of XXXX return trips would be expected by 2039. In the do-minimum this would reduce to XXXX overall for the route – a loss of 13% of all travellers to and from the Isles of Scilly.

## 8 Current and Future Problems

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### 8.1 Introduction

A wide range of issues and problems associated with transport links to the Isles of Scilly have been identified as part of the investigations and consultations in previous studies and by the stakeholders involved in the Route Partnership. In order to structure the discussion of the problems, an 'objective-led' approach has been used as specified in the GOMMMS document, paragraph 3.2.1, which states that:

*"[in the] objectives-led approach...objectives are first specified. These are then used to identify problems by assessing the extent to which current or predicted future conditions, in the absence of new policy measures, fail to meet the objectives".*

This section of the report seeks to clarify and define the problems using the government's objectives and the route objectives, as established in the previous section, as a framework. Each main criterion for transport is taken in turn to discuss the relevant issues to the Isles of Scilly route situation and assess how the current and future transport infrastructure and operations measures against the objectives. The problems are summarised at the end of the section in Table 8.8 – Problem Summary.

### 8.2 Environment

The GOMMMS document requires an assessment of the environmental impacts as listed in DMRB Volume 11. The evaluation of the do-minimum and do-something options in the NATA Appraisal involves a fuller assessment of impacts. In terms of the existing situation however, it is considered that the main environmental issues are:

- noise and vibration;
- atmospheric pollution; and
- journey ambience.

#### 8.2.1 Noise and Vibration

Noise and vibration impacts of the transport links are primarily associated with the take-off and landing and in air travel of fixed wing aircraft and helicopter flights. The Sikorsky S61-N helicopter is suited to the route because of its size (30 passengers) and its operating costs but is generally regarded as a noisy aircraft, both for passengers and community impacts in the vicinity of the heliports. No figures on decibel levels on take-off or landing are available at present but the Tresco Helipad development has a planning condition to limit the number of flights on noise/ disturbance grounds.

The Transport Strategy for the Isles of Scilly states that the Twin Otter has a noise rating of 78.0 decibels on approach to the airport. Comparatively, it

can be said that the noise levels are greatest for a single helicopter flight, than the fixed wing aircraft flight and both are significantly greater than the passenger or freight vessels. As the Scottish Office Planning Advice Note PAN56 states: “Helicopter noise has different characteristics from that of fixed wing aircraft and is often regarded as more intrusive and annoying by the public, especially when helicopters spend time hovering overhead.”

Volume of movements is also a key factor in level of disturbance with XXXX helicopter flights per annum compared to XXXX fixed wing aircraft flights and XXXX sailings. All flights and sailings however take place within the day time which minimises impacts on the communities. There are no flights on Sundays.

## 8.2.2 Atmospheric Pollution

Atmospheric pollution arises from emissions from fixed wing aircraft, helicopters and the sea vessels, as well as vehicles providing surface access on the mainland and Isles of Scilly to each transport interchange facility.

With regard to the fixed wing and helicopter services, the environmental research part of the Civil Aviation Authority highlights that the impact of the aviation industry on local air quality, especially in the vicinity of airports, has long been recognised. The pollutants of concern are the emissions of nitrogen oxides, carbon monoxide, hydrocarbons and soot. Emissions limits from aircraft engine exhausts have been defined for these pollutants by the International Civil Aviation Organisation (ICAO), although the limits only apply during the Landing Take-Off (LTO) cycle. The local climatic conditions at St Mary’s Airport (very exposed and adjacent to the sea) means that local air quality may not be strongly affected but this may need further assessment.

The other environmental concern regarding aviation is the contribution of aircraft exhaust emissions to climate change. The most important emissions are considered to be those of carbon dioxide and nitrogen oxides. Subsonic aviation currently contributes between 2-3% of the carbon dioxide emitted from all fossil-fuel combustion. The emissions of nitrogen oxides lead to the production of ozone in the upper troposphere. There is also increasing scientific concern about the sulphur oxide and soot emissions. The impact of aerosol and cloud formation from these species could potentially have a large but currently uncertain impact on climate change.

Despite the absence of detailed data on emissions from Isles of Scilly services, it is clear that the air quality impacts of the fixed wing and helicopter services will be significantly greater per passenger kilometre than the sea vessel.

## 8.2.3 Journey Ambience

The GOMMMS document includes journey ambience as a sub-objective of environment. As is noted, a high quality journey, when experienced, is often taken for granted. However a poor quality journey, when experienced

can be easily recognised. Journey ambience is particularly important given that the majority of travellers are tourists for whom the journey is part of the overall experience of the visit to the Isles of Scilly. Moreover, tourists can choose whether or not to travel (residents and business travellers have less choice) and thus are more influenced in travel demand than by the quality of the experience.

There are issues of the quality of the journey for each of the three modes serving the route.

### **The Journey by Sea**

The journey by sea between Penzance and St Mary's suffers from two main issues:

- Lack of facilities for passengers at Penzance and St Mary's Harbour; and
- The comfort of the Scillonian III vessel.

The facilities for passengers at Penzance and St Mary's Harbours are limited, giving a poor quality experience to the user. In Penzance there are no holding areas for passengers who are therefore exposed to wind and rain. Moreover, the quay where the Scillonian III berths is very exposed to the winds and sea spray can overtop the quay walls. As there are limited dropping off or picking up facilities close to the ferry berth, passengers are subject to weather conditions for considerable walking distances to car parks and the main bus stops and railway station. There is also localised traffic congestion around the harbour area, leading to a congested environment.

The quay at St Mary's' Harbour is exposed to the elements. There are no shelters or waiting facilities for passengers. There is a small waiting room next to the Harbour Hotel but this can only cater for the off-island ferries. Passengers can be dropped off on the quayside by minibuses and taxis but may also walk the length of the quay from the centre of Hugh Town. As an arrival point, however, the harbour is attractive and leads directly to the centre of island activity.

The Scillonian III is flat-bottomed and can give rise to considerable discomfort for passengers. The Burness, Corlett & Partners (BC&P) report describes the prevailing weather conditions on the sea route. The passage from Penzance to the Isles of Scilly is across an exposed and open sea area and experiences a wide variety of weather conditions. BC&P obtained data from a Maritime and Coastguard Agency study conducted by the UK Meteorological Office on sea areas between Cornwall and Isles off Scilly. The data showed that the significant wave height varies from 2.5m to 3.0m (20%) during the summer (April – October) and rises to 4.0m during the year. The passage is therefore susceptible to moderate to rough seas. Moreover, the Gulf Stream splits at Land's End to go either side of the south west peninsula, meaning also that the vessels go against currents on the way to Scilly and with them on the way back.

The Scillonian III, being a flat-bottomed vessel is subject to severe ship motions in these conditions. Combined with a journey time of 2hrs 40mins this can make for an unpleasant and uncomfortable experience. Evidence

provided by the naval architects indicates that sea sickness is more prevalent in journeys of over two hours. Respondents to a questionnaire of islanders commented that they would like to see a more comfortable, stable ride (Moving On report).

### **The Journey by Helicopter**

The helicopter service operates from Penzance Heliport, which offers a covered and comfortable waiting area with café and toilet facilities, however luggage retrieval facilities are poor. Helicopters land at Tresco, which has a new waiting area with buggy links to the gardens and good quality facilities. St Mary's Airport has waiting areas and a café facility.

The journey itself is scenic and has an attraction of novelty, as many people may not have travelled by helicopter before. It is however noisy onboard and there is vibration which can be uncomfortable. The journey experience may not appeal to more nervous travellers.

### **Journey by Fixed Wing**

The fixed wing services operate in either 20-seater or 8-seater planes. The route over Land's End to the Isles of Scilly is scenic but the small size of the planes does mean that the service may not appeal, as with the helicopter service, to more nervous travellers.

## **8.3 Safety**

The GOMMMS document sets out how to assess current safety issues and achievement of the safety objective in terms of accidents and security. Accident and casualty rates are usually analysed for the road and rail network. The DfT's guidance on appraising port developments provides other indicators including safety of dockworkers and ship crew, safety on surface access modes and the safety of adjacent communities. Security is also a key issue for ports, both to protect employees, users, cargo and passenger but also in the interests of national security. Neither of these approaches fully takes into account the safety and security issues specific to the Isles of Scilly links. It is considered that safety and security is most appropriately examined in terms of:

- The safety record of the operators of the Isles of Scilly links for passengers, crew and freight, including where appropriate, information on casualty rates for each mode;
- Operational and Health and Safety issues within the harbours; and
- Security issues within the harbours and airports as a result of new requirements.

### **8.3.1 Safety of Transport Services**

Safety issues have been discussed with the operators of the Isles of Scilly links. There was a serious helicopter accident leading to 20 fatalities in 1983. This was however, in an historic environment in terms of safety procedures. There have not been any fatal incidents in the past ten years, both operators recently having a good safety record for providing services

to the Isles of Scilly. Both commercial operators have been operating the routes for the long-term and understand local conditions.

Data is available on actual numbers of accidents in the UK by mode. Table 8.1 shows these numbers for fixed wing, helicopter and ferry. Overall there have been very few fatalities by any of the modes between 1992 and 2001, although the figures are not given in the context of passenger hours or kilometres.

**Table 8.1: Number of Accidents by Mode (UK)**

Severity	Transport Mode		
	Ferry	Fixed Wing (<5,700kg MTWA)	Helicopter (Public)
Slight	194	1	5
Serious	1005	5	1
Fatal	7	22	10

*Source: Marine accident investigation branch 1992-2002 and CAP Aviation Safety Review 1992-2001*

It is difficult to find comparable statistics on accident rates for modes that relate to the Isles of Scilly, but as an example, European Union data on fatalities per 100 million passenger kilometres by mode (as reported in Railwatch, November 2002) gives a rate of 0.3 for ferry compared to 0.1 for air. The rates make no distinction between fixed wing and helicopter operations. Overall, safety by both modes should be seen in the context of rates for road travel, which at 1.1 is more than three times the rate by ferry. It is considered that passenger safety is not a significant problem for travel to the Isles of Scilly, particularly in the context of accidents on roads. The only issues may be minor injuries (such as from falls on board ship) and passenger perceptions of safety on all modes.

### 8.3.2 Harbour Operations

Although there have been substantial improvements in recent years, an initial review of the quay operations at St Mary's by Scott Wilson consultants has identified a number of operational and safety issues. These include the following:

- Restricted access to the quay for vehicles and passengers;
- No separate access for vehicles and passengers;
- Quay area is too small for the quantity of passengers and freight – severe overcrowding;
- Difficulty in providing segregation between passengers, freight and vehicles;

- Lack of protection to quay from severe weather i.e. quay and approaches suffer from sea overtopping. Inadequate shelter for passengers;
- Improper access to smaller boats (e.g. inter-island ferries) from quay;
- Lack of disabled facilities;
- Inadequate depth of water at low water for lifeboat and ambulance boat;
- Quay structure provides inadequate shelter to smaller vessels;
- Potential tripping hazards from tailing pipes and cables due to inadequate number of service points;

There are also operational safety and security issues in Penzance harbour, which are that:

- Foot traffic is embarked along the South and Lighthouse Piers in good weather conditions or along the Albert Pier during foul weather. This means that the facilities for loading have to be relocated depending upon the weather conditions.
- Most passengers access the loading area either from coaches or from cars. There is inadequate parking or manoeuvring space for the number of vehicles involved which leads to dangerous and inefficient traffic/pedestrian movements. New Dock Regulations will require cargo and pedestrian traffic to be separated.
- Larger commercial vehicles can not turn within the harbour area and have to reverse onto the adopted highway. There is also inadequate stacking area and therefore queuing occurs on the main through route.
- During foul weather waves overtop the existing pier walls drenching passengers and leading to obvious health and safety problems. It is worth noting that the volume of water overtopping the walls can be sufficient to create problems with the berthing of the ferry. It is during these conditions that the passenger loading operations are moved to the more sheltered Albert Pier.

### 8.3.3 Harbour and Airport Security

Planning permission has granted for the terminal building to be extended and altered at St Mary's Airport in order to improve baggage handling facilities and security. Security at airports has had to be increased in the light of September 11<sup>th</sup> 2001 and measures have had to be implemented including the segregation of departing passengers and the planned installation of x-ray equipment. In the future it is likely that further investments will be required to meet security requirements.

In St Mary's and Penzance Harbours, currently passengers place their luggage into containers and then register to go on board. At St Mary's luggage is picked up outside of accommodation and taken separately to the harbour. It is likely that due to security concerns that this process will have

to change with passengers having to register their luggage on board and possibly they may even need to have their luggage x-rayed. Undertaking either of these activities on the existing quayside where there is no space for permanent buildings will be almost impossible to perform adequately.

## 8.4 Economy

The economic issues and problems associated with the transport links are discussed in this section under the following headings:

- Freight movements and the economy;
- Transport links and tourism;
- Reliability of services;
- Economic efficiency of services; and
- Financial viability of services.

### 8.4.1 Freight Movements and the Economy

It was described in the context section how freight on the route comprises approximately XXXX imports and XXXX exports.

The import of goods to the Isles of Scilly is essential for the maintenance of island life and to support businesses. As an island community, residents and businesses are entirely dependent on the options of carriage by the Gry Maritha for bulk freights and fuel and the Gry Maritha, Scillonian III, Skybus and helicopter for other freight. Thus timings of arrivals and departures, and the cost of freight carriage are key factors in the survival of the Scilly economy.

The key issues raised in previous studies and consultations are:

- The cost of freight carriage;
- Sailing timings and restrictions; and
- Handling problems.

#### **Costs of Freight Carriage**

The cost of freight to and from the Isles of Scilly has three impacts – reducing the competitiveness of exported products, increasing the cost of living on Scilly and increasing the cost of visiting Scilly.

While it is to be expected to some extent that freight costs will be higher to and from an island community than a mainland community, costs to and from Scilly are considerably higher than other islands of the British Isles. Table 8.2 compares the cost of freight by sea for the Scilly route to those in the Scottish Highlands and Islands (from Fisher Associates report). All of the Scottish routes are subsidised. It can be seen that costs of freight movement for Scilly is double that of the next most expensive, although it should also be borne in mind that all of the other services have roll-on, roll-off operations with cheaper handling costs.

**Table 8.2 – Freight Cost Comparison**

Route	Distance (miles)	Cost per Tonne
Penzance – St Mary’s	42	£93.00*
Kennacraig – Islay	28	£11.92**
Ullapool – Stornaway, Lewis	42	£18.52**
Scrabster – Stromness, Orkney	25	£39.70**

\*figure updated by Hyder Consulting for 2003 \*\*subsidised cost

Source: Fisher Associates, 2002

As an example of costs for exports, a main export is fresh flowers and the flower industry is highly competitive. The sea freight cost of about £1.40 per 10kg box in 2002, equating to XXXX per tonne. Distribution rates on the mainland are more like XXXX per tonne.

Atlantic Consultants consultations with businesses found that sea freight is the main method used for imports by local businesses including tourism. All Scilly businesses pass on the additional freight costs incurred in importing goods and services. This means that the cost of living on Scilly in terms of food costs is estimated to be about 21% higher on Scilly than on the mainland. It is found to be 40-60% higher for construction costs. These additional costs are also passed on to the tourist, thus affecting the competitiveness of the tourism offer of the isles.

In a do-minimum situation whereby the Gry Maritha is replaced using private investment, freight costs need to rise by an estimated 50% per tonne. This would have a significant impact on the cost of carrying out business and living in the islands.

### **Sailing Timings and Restrictions**

The Fisher Associates survey of residents and businesses asked for views on the current arrangements for the carriage of freight on the Gry Maritha. Just over half thought the current arrangements were adequate.

However, the frequency of the Gry Maritha for freight causes Isles of Scilly businesses problems with regard to importing goods. Lead times from placing an order to receiving goods make it more difficult to be responsive to customers and consignments are larger than they would be with a more frequent service, leading to congested freight distribution and the need for warehousing capacity. The opportunity for faster or same day delivery was raised as important.

The Fisher Associates report describes how flowers, bulbs and other agricultural products account for the majority of exports from the islands. Flower buyers on the mainland tend to want flowers on Mondays and Thursdays and thus the timing of the Gry Maritha is important to meet these requirements. Flowers are despatched on a Saturday and Tuesday, but because many orders come in late, the Gry Maritha has to wait for the orders before departing. There is limited cold storage on the islands and they have to be placed in cold storage as quickly as possible and unloaded in Penzance in time for 0800 collection by the distribution centre lorries. In

winter the more restricted air service makes freight transit by air difficult to meet connections on the mainland.

### Handling of Goods

The section on safety and security of the ports described various issues associated with the portside handling of goods. At St Mary's harbour there are inadequate freight storage facilities, particularly for fuel, the limited quay space hinders landing or shipping bulk items such as aggregate and scrap and all freight has to be lifted on and off.

There are a number of issues regarding the handling of freight at Penzance:

- Freight is delivered by road to the North Arm of the dock where some of it is stored within the existing Rank building. This building is in a state of structural distress and it lacks the space sufficient for storage of all the freight.
- Dry goods often have to be stored on the quayside and are exposed to the environment leading to them becoming damaged.
- There are no provisions for freight that either need to be chilled or kept frozen such as certain foodstuffs.
- Due to the limited width of the North Arm the delivery area can only receive one lorry at a time. Lorries have to reverse onto the Arm and then drive off. The problem is compounded by the fact that there is inadequate storage in the building. This means that delivery lorries have to deliver directly to the cargo vessel just before it leaves. As a result there can be multiple lorries stacked up or manoeuvring dangerously on the congested pier and on the public highway.
- Freight deliveries are made to all the islands forming the Isles of Scilly. However there is inadequate space for the sorting of the goods prior to them being loaded up, this leads to complex and time consuming operations at the points of delivery.
- The existing loading location is within the dock, which can only be accessed at certain states of the tide. This leads to the tides dictating sailing times.

There were some complaints in consultations with businesses about damage to goods, partly due to inappropriate packaging by the suppliers but also because of the amount of handling that the goods are subjected to, particularly if arriving from or going to the off-islands. Claims against the IoSSG for damage totalled XXXX in the year ending April 2003 (of which an unknown amount was paid by insurance).

## 8.4.2 Transport Links and Tourism

The transport links are, as set out in the tourism economy, vital in bringing more than XXXX tourists to the Isles of Scilly every year.

There are various issues of service timings and seasonal issues, which have an impact on tourism visits to the islands. Firstly, none of the

transport services operate on a Sunday, with the exception of some sailings in August. This is for historic and cultural reasons but does restrict the flexibility of business and resident travel. It also means that there are no day visitors on the Isles of Scilly on a Sunday.

The key restriction on the passenger ferry service is tidal. Most sailings depart Penzance at 09.15 and arrive in St Mary's for about noon then leave at 16.30, to fit in with the tides. This does mean that the length of a return journey is 5hrs 20 mins compared to 4 hrs 30 mins in the Isles of Scilly. The timetable is variable according to the tides and there are times when a day trip, with time on the islands, is not feasible. Moreover, there is a need for passengers to arrive at the ship in good time for a sailing, adding to the length of time involved in travel. The journey by ship is thus a disproportionate amount of the overall experience. If the ship was less restricted by tidal access or if there were timetable changes at times of low tide, a longer period of time could be spent on the islands compared to the journey.

The ship does not operate between November and March and thus the choice of modes is restricted to air services or passengers using the limited facility on the Gry Maritha in the winter months.

### 8.4.3 Reliability of Services

The survey questionnaire of island residents and businesses (Fisher Associates 2002) asked respondents to rate the reliability of the various transport links on a scale of 1 to 10, with 1 being poor and 10 excellent. This gives a qualitative indication of reliability of links, based on islanders experiences or perceptions. The weighted average score for reliability for each service are given in Table 8.3. It can be seen that islanders rate the ferry service as most reliable, followed by the helicopter services. The Land's End Skybus route is viewed as the least reliable. Fisher Associates note that although the helicopters were rated highly in terms of reliability, survey respondents commented that the helicopters are prone to technical problems and delays.

Although this is only a view by islanders rather than a quantified assessment, it is important in that these perceptions are likely to influence modal choice.

**Table 8.3 – Residents and Businesses Reliability Score for Mainland Links**

Service	Weighted Average Score for Reliability
<b>Scillonian III</b>	7.6
<b>Skybus:</b>	
Land's End to St Mary's	5.5
Newquay to St Mary's	6.5
Exeter to St Mary's	6.4
Bristol to St Mary's	6.4
<b>Helicopter:</b> Penzance to St Mary's	7.1

Source: Fisher Associates 2002

The most significant factor in reliability of services is that of the weather. St Mary's airport can be affected by poor visibility and can be closed for several days per year because of it. Land's End has a runway that is grass and can be affected by rain, and the aerodrome is also affected by fog. The Sikorsky helicopters used on the Penzance to St Mary's and Tresco routes can fly in conditions that would ground a fixed wing aircraft, but although they can cope with lower visibility than the aircraft, they cannot fly with existing technology in fog. Evidence to Fisher Associates from British International for January to October 2002 showed that out of 3,434 flights scheduled, XXXX were flown (XXXX were cancelled) of which XXXX were on time and only XXXX were subject to more than an hours delay. The main cause of delay or cancellation was the weather. Some flights were consolidated through lack of demand and some through technical difficulties.

The Scillonian III is reliable in that it rarely loses sailing's due to weather, and offers an alternative if air flights are cancelled. Of course it does not offer a service in the winter when the weather is at its most adverse, but the Gry Maritha however, sails throughout the year, offering a freight service and passenger carriage (up to 12 people in all conditions). It is very rare for the ship not to sail and there have been occasions when it is the only mode of travel from the islands. The sea vessel is regarded by the Tourism Association as the essential link, whereby they can guarantee to visitors that they will be able to depart from Scilly in the majority of conditions.

#### 8.4.4 Economic Efficiency of Transport Operations

The tourist season runs primarily from April to the end of October with XXXX of demand for travel across all modes during this six-month period and only XXXX in the four months of November to February 2003. This is reflected in the reduced frequency of air and sea services in the winter. Such a reduction in services causes problems for operators as they are faced with either running services with greatly reduced revenue or re-deploying equipment to other routes. Operators maintain staff levels over the winter in order to retain skilled staff, thus operating costs are high. There are some savings in winter for the Scillonian III on variable costs of fuel, port charges, some seasonal labour and some maintenance, by not operating in winter.

There are similar reductions in the operating costs of the Skybus in the winter and aircraft could be reassigned to other routes, although in practice they are not.

The key issue in terms of economic efficiency is however the separation of passenger and freight sea services. This was a decision by the IoSSG in the late 1980s because of health and safety constraints on operations. The impact is that for eight months of the year two ships are being operated on the same route with two sets of crews and operating costs. There are also still some crew costs in winter for the Scillonian.

In the do-minimum situation, there would be only vessel but the central costs of the sea operations of the Steamship Company would have to be met by the freight operation.

#### 8.4.5 Financial Viability of Operations

The financial viability of the existing mainland services has been examined in consultation with the operators and by reference to published annual accounts.

British International comprises two companies, a holding company British International Ltd which services the debt associated with purchase of the company and Veritair Ltd which is the operating company. The company operates the Penzance to Isles of Scilly route as well as contracts for the Ministry of Defence and in the North Sea. Overall the operation had a turnover of XXXX in the 2002/03 and returned a profit before tax between the two companies of in the region of XXXX. The operation is experiencing continuing growth in the patronage of the Penzance operation and the route appears sustainable into the future.

The IoSSG 2003 Group accounts show that the revenue from services by sea was XXXX million and on air services XXXX million. These combined accounted for XXXX of the company's revenue. The Group made a profit before tax of XXXX in 2003 compared to XXXX in 2002. Revenues for sea services include fares and passenger expenditure on the Scillonian III, freight charges for the Gry Maritha, income from the off-island service on the Lyonesse Lady and the Royal Mail contract. Operating costs include crewing, maintenance, fuel etc for the vessels as well as onshore staff handling freight in port and within the travel company. Indications are that the IoSSG is operating viably but the levels of profit are not sufficient to fund the capital costs of replacement vessels.

Penzance Harbour is owned and operated by Penwith District Council. The total turnover is approximately XXXX, of which XXXX of revenue is received from the IoSSG. The Isles of Scilly services are therefore an important contributor to Penzance harbour.

St Mary's Harbour is owned and operated by the Duchy of Cornwall. There are issues of financial viability at present, the quay operates at a XXXX of around XXXX per annum, and there would be serious concerns in the future if the passenger service ceased. This would reduce income which would need to be recovered from the other operations using the quay e.g. the freight services and off-island ferries. This would also impact on the cost of transporting freight to and from the mainland.

## 8.5 Accessibility

The Government's accessibility objective is concerned with the ease with which people can gain access to transport services in order to access facilities and services. The main issues at present are:

- Access to services on the mainland for residents;
- Accessibility to the ports and harbours; and
- Access for all, including people with disabilities.

### 8.5.1 Access to Mainland Services

At present there are a range of options for residents to gain access to the mainland. The evaluation of impacts will examine option values i.e. the value of having access to a service to use, even if they chose not to use it. In the Isles of Scilly context, there is currently a choice of three modes, and typically 9 helicopter flights, 1 sailing and 15 fixed wing flights leaving the islands on a summer weekday. This generally gives sufficient options to residents. This does mean that in respect of modal choice and service levels, access to the mainland is currently quite good. The main constraints are as with tourists, in restricted timing, lack of transport on a Sunday and seasonal issues.

### 8.5.2 Accessibility to Mainland Ports and Harbours

Level of access to the ports and harbours by public transport is important to consider for residents who arrive on the mainland without access to a car for the onward journey and to encourage tourists to travel by non car modes.

Table 8.4 shows the level of access to each of the ports and harbours serving the route by each mode. The end column gives an overall assessment of current level of accessibility.

Table 8.4 – Accessibility to Mainland Ports and Harbours

Transport Facility	Access	Level of Accessibility
Penzance Harbour	Railway station well located in the town centre with small car park and adjacent bus station. 600m walking distance from Central bus / railway stations	Reasonable (except for those with luggage/ small children)
Penzance Heliport	Adjacent to the A30. 1.5 km from railway station. Dedicated Heliport mini bus from railway station. Number 2 and 17 buses operate an hourly service from bus station.	Good
Land's End Airport	5km north of Land's End adjacent to the B3306. No direct rail services / links. Ring on demand mini bus service £4 / return. Summer bus service Penzance – Land's End – St Ives. Hourly service stopping at the airport.	Poor
Newquay Airport	8km north east of Newquay adjacent to the A3059 and A39. No direct rail services. 910 bus service from Newquay – every 2 hrs. 556 bus service from Newquay – every 2 hrs.	Poor
Exeter Airport	8km east of city centre adjacent to the A30 / B3184. Readily accessed from the M5. Hourly bus service between Exeter Bus station – service 56. No direct rail linkages to the airport. Nearest – Exeter St David's – 15km. Only 2-3% modal share by public transport.	Reasonable
Bristol Airport	Surface access links to Bristol are not as good as many other similar size airports in UK. 13 km south of Bristol adjacent to the A38. 30 min journey time on Bristol International Flyer bus service from Temple Mead's and Bus Station. Bus service 331 operates a 20 minute service from Bristol Bus station. No direct rail linkages to the airport. Low public transport modal share 4%.	Reasonable
Southampton Airport	6km north west of city centre adjacent to A355. 101 bus service from city centre operates a half hourly service. 50 m from train to airport terminal. 3 trains per hour from London Waterloo. 4-5 trains per hour Southampton city station.	Good

The accessibility assessment undertaken indicates that the facilities with problems of accessibility are Land's End Aerodrome and Newquay Airport, both of which are remote from main public transport interchanges.

### 8.5.3 Access for People with Disabilities

The air services are able to carry passengers who are elderly or infirm, who are assisted onto aircraft by staff (wheelchairs can be carried if foldable) and the terminals are fully accessible. The sea passenger service in terms of the harbour areas is more problematic. The quay areas are difficult for people with disabilities to negotiate, who may be only able to walk short distances (particularly in inclement weather or exposed areas) and many small obstacles to negotiate. The ship itself is accessible however, with staff assisting passengers with disabilities up the gangway and there is a stairlift on board between levels for wheelchair users or those whose walking distances are limited.

## 8.6 Integration

The key issues to consider in terms of integration are:

- Integration between modes of transport;
- Freight interchange; and
- Integration with policies and strategies.

### 8.6.1 Integration between Modes of Transport

The issues of integration between modes are discussed in terms of accessibility, with Land's End Aerodrome and Newquay Airport being the most poorly integrated with public transport services. The quality of passenger interchange has been assessed according to the framework provided in Table 8.1 of the GOMMMS. The assessment is shown in Table 8.5. In summary, facilities for passenger interchange are very limited in the harbours but are better provided in the heliport and St Mary's Airport.

While the air and sea services are in competition with each other to carry passengers to the mainland, there is a degree of integration between the modes. The Isles of Scilly Steamship Group operates both the Scillonian III and the Skybus services and offers passengers various options including travel out by ferry and back by plane to Land's End. If there are weather or technical issues affecting either fixed wing or helicopter services, the Scillonian III is able to offer passengers a return journey by ship. There is a good level of communication between existing operators.

Table 8.5 – Current Standard of Passenger Interchanges

Passenger Indicator	Penzance Harbour		St Mary's Harbour		Penzance Heliport		St Mary's Airport	
	Comment	Standard	Comment	Standard	Comment	Standard	Comment	Standard
Waiting Environment	Non-existent waiting room	Poor	Small waiting room not sufficient or designed to serve mainland services	Poor	Comfortable and well lit waiting room but overall quality could be updated.	Moderate	Comfortable and well lit waiting room but overall quality could be updated.	Moderate
Level of Facilities	No facilities within harbour. Range of facilities within walking distance for eating etc.	Poor	Some facilities within harbour. Range of facilities within walking distance for eating etc.	Poor	Generally good facilities available	Moderate	Generally good facilities available	Moderate
Level of Information	Limited information available	Poor	Limited information available	Poor	Some information available	Moderate	Some information available	Moderate
Visible Staff Presence	Staff presence visible for some periods of time	Moderate	Staff presence visible for some periods of time	Moderate	Staff presence visible at all times	High	Staff presence visible at all times	High
Physical Linkage for next stage of Journey	Need to change to physically separate terminal. No parking	Poor	Some connections direct from harbour side. No parking	Moderate	Need to change to physically separate terminal. Adjacent car park	Moderate	Connections direct from airport terminal. Adjacent car park.	High
Reliability of Connection (to other public transport modes)	Operate as separate modes with no co-ordination of timetables.	Poor	Some local co-ordination of timetables.	Moderate	Local shuttle bus services connects to train services	Moderate	Local shuttle bus connections meets arrivals	Moderate

## 8.6.2 Freight Interchange

The quality of freight interchange facilities at the two harbours, which handle the majority of freight, has been assessed using Table 8.2 of the GOMMS Guidance Volume 2. The assessment jointly of St Mary's and Penzance Harbours is shown in Table 8.6. There is some cross-over between this assessment and the issues raised under safety and security and economy with regard to the handling of goods. It can be observed that current arrangements for freight interchange at the harbours are generally poor.

A key issue is the access for freight vehicles to Penzance harbour. The strategic route network to Penzance is good with the A30 being a dual carriageway for the majority of the route from the M5 and improvement schemes for lengths of current single way carriageways and the removal of the railway bridge at Goss Moor at an advanced stage of planning. The route from the A30 to Penzance harbour passes through a complex gyratory (with substantial queuing particularly in the summer), along the coast road (with access to the main car park for the town), across a swing-bridge into the harbour area. The harbour area has a very ill-defined carriageway, with limited or no pedestrian facilities. The access for service vehicles is restricted in width and the quay area prevents large vehicles from turning, resulting in reversing movements, which are dangerous for pedestrians and other road users. The level of storage areas also means a concentration of vehicle arrival times, plus there are a number of partial deliveries that need to be amalgamated.

**Table 8.6 – Current Quality of Freight Interchange**

Indicator	Comment	Level of Quality
Reliability (at the interchange facilities)	Evidence of a generally good reliability record but still some problems with delays, postponed services and handling.	Moderate
Level of Facilities for Freight Users	Generally poor level of facilities for freight personnel and freight goods or services (access to storage, weighing, testing facilities or other services)	Poor
Freight Transfer	Generally difficult or non-existent transfer facilities. Goods require significant or time-consuming handling. Poor or little interoperability of equipment.	Poor
Timetabling/ Connections/ Co-ordination	Evidence of some co-ordination of services but other services still lack co-ordination.	Moderate
Level of Information for Freight Users	Poor level of information although nature of freight being carried means strong local knowledge.	Moderate
Freight security at the interchange	Poor or no level of security reflected in the absence of measures such as alarms, lighting, staff presence etc.	Poor

### 8.6.3 Integration with Land Use Policies

The three key documents are the Cornwall Structure Plan, the Penwith Local Plan and the Isles of Scilly Local Plan, although it should be noted that as the Isles of Scilly is a unitary authority and not covered by the Cornwall Structure Plan – the Isles of Scilly Local Plan also functions as the Structure Plan. The relevant policies from the land use plans were discussed in detail in Section Four in Part One.

At present the transport services are well integrated with land use policies. In the do-minimum situation, two policies of the Isles of Scilly Local Plan and one of the Cornwall Structure Plan will be adversely affected through the loss of visitors to the islands and of the passenger ferry service:

- Isles of Scilly Local Plan Policy 3: Maintain levels of employment and economic activity to support viable communities. Proposals based on the existing economic base of tourism will be supported.
- Isles of Scilly Local Plan Policy 4: Achieve an affective and affordable, year round, transport system on and between islands and to the mainland.
- Cornwall Structure Plan Policy Tour 4: With development proposals account will be taken of the need to protect and enhance visitor facilities.

## 8.7 Social Inclusion and Equity

The advice contained within DfT Transport Analysis Guidance on appraisal of major transport schemes in LTPs states that:

“it is important that major schemes pay due regard to social inclusion impacts and the effect on all groups in society and transport users, especially those who face difficulties in accessing and using transport”.

The key issues of social inclusion and equity for the Isles of Scilly are related to income and the cost of travel. The services do not unduly act against differing ages, genders, ethnic groups, health, location or mobility, although this will be fully assessed in the next stage evaluation of do-minimum and do-something options.

There are two areas of financial inequity experienced by islanders, which in turn disproportionately disadvantage those of lower incomes, which are:

- Higher transport costs for non-local trips compared to the UK mainland and no public subsidisation for these trips;
- Higher transport costs for mainland to Isles of Scilly links compared to other mainland UK to island links.

As residents of an island community, Scillonians are subject to higher transport costs for their non-local trips as compared to residents of the UK mainland. This is inequitable but it is recognised that UK central and local government would not seek to redress this imbalance by intervening to reduce transport costs to a similar level as there are considered to be compensatory factors of island life. However, as Fisher Associates

highlight, rural communities on the UK mainland all enjoy some level of public funding to connect the community to an administrative/ social/ commercial hub, such as Penzance. Local or central government funding supports all the roads, the majority of rural bus services and the rail network. There is currently no funding support for the connections from the rural communities of the Isles of Scilly to Penzance and this is inequitable.

Moreover, comparison with the costs of transport between the UK mainland and other island communities shows that the cost of services to the Isles of Scilly is higher than those on routes between the UK mainland and other islands. This is an inequitable situation that deserves further consideration.

Fisher Associates undertook a fare comparison per mile for various comparable routes to the Isles of Scilly situation. This is shown in Table 8.7. It is noted that this should be treated cautiously, because:

- The fares shown are adult single fares for foot passengers. The Isles of Scilly ferry is a passenger ferry unlike ferries serving other islands, which offer lower foot passenger fares to fill up spare capacity; and
- The comparisons are with routes serving much bigger populations and are year round services, with the exception of the Scottish routes.

**Table 8.7 – Fare Comparison**

Route/ Mode	Fare (adult single)	Distance (miles)	Fare per mile (£)
<b>Sea Transport</b>			
Penzance to St Mary's	£36.00	42	£0.86
Weymouth to Jersey	£55.00	96	£0.57
Liverpool to Isle of Man	£30.00	82	£0.37
Portsmouth to Isle of Wight	£5.05	12	£0.42
Kirkwall to North Ronaldsay*	£5.40	35	£0.15
Scrabster to Stromness, Orkney	£16.50	25	£0.66
<b>Air Transport</b>			
Penzance to St Mary's (helicopter)	£50.00	33	£1.52
Land's End to St Mary's (fixed wing)	£47.50	28	£1.70
Bristol to St Mary's (fixed wing)	£120.00	200	£0.60
Liverpool to the Isle of Man	£110.00	82	£1.34
Wick to Kirkwall	£39.20	30	£1.31

Note: \*subsidised service

Source: Fisher Associates, 2002, from various sources

## 8.8 Summary of Transport Problems

The examination of issues in relation to the objectives has identified a range of problems related to transport provision. Problems are summarised in Table 8.8 against each objective.

Within the table an assessment is included as to the severity of the problem (i.e. how serious a problem is it) and the magnitude of the problem (i.e. how many people/ businesses does it affect). The assessment is largely qualitative, based on stakeholder consultations, previous research and an

objective view from the consultants. The severity and magnitude assessment enables some priority to be afforded to addressing particular problems. Clearly, for example, a severe problem which affects all transport users is one that may be given priority over one which is a moderate problem affecting some users.

**Table 8.8 – Summary of Transport Problems**

Objective	Problems	Severity	Magnitude
Environment	Noise and vibration impacts of aircraft	Moderate	Affects all travellers and residents within noise contours of airports.
Environment	Emissions impact of aircraft	Moderate	Global impact and localised air quality impact
Environment	Poor journey ambience by sea vessel – passenger facilities at harbours and comfort of trip	Serious	Affects all sea passengers
Environment	Journey ambience by helicopter and fixed wing affected by noise and vibration.	Slight	Affects all air passengers
Safety	Operational and health and safety issues within Penzance and St Mary's harbours	Serious	Affects all harbour users
Safety	Some security issues within harbours and the airports	Slight	Affects all travellers
Economy	The cost of freight carriage has impact on competitiveness of Isles of Scilly exports and costs of imports to residents and businesses.	Serious	All island businesses and residents
Economy	Sailing timings and tidal restrictions pose constraint to effective freight delivery.	Moderate	Businesses requiring short lead times
Economy	Methods of freight handling and storage lead to exposure to elements and damage.	Serious	All imports and exports
Economy	Tidal restrictions restrict the length of time spent on Scilly by day visitors, making the sea journey disproportionate.	Moderate	All day visitors
Economy	Fixed wing aircraft and helicopter services are subject to reliability problems due to weather conditions and greater propensity to technical difficulties than sea vessels.	Slight	All air service users
Economy	Economic efficiency of sea operations affected by seasonality of operations and the separation of freight and passenger sea vessels.	Serious	Sea vessel operator
Accessibility	Poor level of access to Land's End Aerodrome and Newquay Airport.	Moderate	Passengers using the two airports.
Accessibility	Access for the disabled problematic in St Mary's and Penzance Harbours.	Slight	Passengers with disabilities.
Integration	Passenger interchange facilities poor in St Mary's and Penzance Harbours.	Serious	All sea passengers.
Integration	Quality of freight interchange poor in harbours.	Serious	All imports and exports
Social Inclusion and Equity	Higher transport costs for non-local trips compared to the UK mainland and no public subsidisation for these trips;	Moderate	All island residents and businesses
Social Inclusion and Equity	Higher transport costs for mainland to Isles of Scilly links compared to other mainland UK to island links.	Moderate	All island residents and businesses

## 9 Do Something Options

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### 9.1 Introduction

The Route Study leading to the Major Scheme Bid has considered a wide range of Do Something options with the aim of meeting government and local objectives and addressing the identified problems, mainly the anticipated loss of the sea vessels to the route: the freight vessel in 2009 and the passenger vessel in 2014. In line with the Department for Transport – Transport Analysis Guidance (Major Schemes in Local Transport Plans), a wide range of initial options to address the problems were identified. All the options that have been considered have been **public interventions** in future transport services and infrastructure provision.

The development of options has been a complex and iterative process, involving the Route Partnership (representing the key stakeholders) with technical advice from the team of consultants. This section summarises the process that has arrived at the options subject to the full appraisal.

### 9.2 Consideration of Alternatives

From the outset of the Route Study it was considered, on the basis of some years of deliberations and investigations by the stakeholders, that the best solution to the problems of the route would probably involve the replacement of the sea vessels alongside improvements to the harbour infrastructure at Penzance and St Mary's. In order to ensure however that there were no available alternatives that would provide better value for money while also addressing problems and meeting objectives, other opportunities were also considered in the Route Study. These included:

- Public investment in the development of air services;
- Investment in Newlyn or Falmouth harbours on the mainland rather than Penzance.

#### 9.2.1 Air Services

The study is a multi-modal study and therefore in a situation whereby the passenger ferry service may cease to operate in future, the possibility of air services being developed to meet the shortfall in transport services required consideration. Discussions have taken place with the air operators and Avia Solutions, a specialist aviation consultancy, has provided informal advice to the study team.

The key considerations are that the air market is to a large extent discrete from the ferry passenger market. The transfer of passengers from ferry services to air will be largely dependent on the level of airfares in comparison (as well as willingness to travel by air compared to sea).

With regard to helicopter services, British International plan in the near future to relocate their maintenance facilities at Penzance, which result in two additional being based at Penzance. This could potentially provide additional capacity to carry passengers to the Isles of Scilly. However, the operating costs of helicopters are such that even if there were to be savings from a higher volume operation, it is highly unlikely that the helicopter fare would ever be at a comparable level to that offered by the Scillonian III. The volume of passengers that will transfer to the helicopter will therefore be constrained by fare levels.

In this situation, it is considered that there is not a feasible public sector do-something option that would provide a comparable outcome to the options for investment in sea services. Helicopter services will however expand in the do-minimum option with a transfer of a proportion of passengers to air services, but at the existing level of fares, thus catering for a discrete sector of the market.

The fixed wing air services currently use Twin Otter and Islander aircraft. There are no equivalent fixed wing aircraft which match the Twin Otter's short take-off and landing characteristics and the planes are no longer in production. It is considered that it might be possible to carry out some improvements to the airport to bring faster but similar sized aircraft to the islands. This would however, only benefit the longer routes (such as Bristol and Southampton). It is only the route from Land's End to St Mary's that competes in any way with the passenger ferry service. Options for developing the air market may therefore be available, but are likely to be for longer distance routes and serving a separate market (average fares of £200 compared to £36).

Bringing in any other types of aircraft would require major investment in the runway at St Mary's Airport with consequent environmental implications. It is also unlikely to create economies whereby fares would be equivalent to those by sea. It is therefore considered that while air services play a very significant role in serving the Isles of Scilly, there are no air options to be considered as 'do-something' options in the study, in comparison to the sea vessel options. Air operators will continue to develop and expand air services in accordance with the market demand.

## 9.2.2 Other Mainland Port Options

The potential for developing sea services from other mainland ports than Penzance has been considered. There are two possible alternatives – Newlyn and Falmouth.

### Newlyn

Newlyn is an important fishing port and proposals are being developed to improve its operational efficiency, to provide space for ancillary and related facilities. This will require significant investment in the harbour.

Consideration has been given as to the feasibility of providing a passenger/cargo berth for the Isles of Scilly service within the harbour, as

an alternative to Penzance. This would require investment in the harbour to a similar level to that in Penzance, in order to separate operations from the fishing port. Costs have not been estimated for achieving this, given that there are a number of significant issues to consider, which are:

- The compatibility with the main function of the harbour as a working fishing port;
- The very poor accessibility for passengers, with limited public transport links, lack of parking areas and congestion;
- The need to transfer not just the operations of the ferry, but the economic infrastructure linked to the Isles of Scilly route, currently based in Penzance.

It was therefore considered that Newlyn did not present a viable alternative to Penzance.

## Falmouth

There has been significant investment in Falmouth Harbour and it is most likely to be feasible to provide berthing facilities for an Isles of Scilly service without additional investment in the harbour. A day trip to the Isles of Scilly would however rely on a high-speed passenger service from Falmouth, given that the travel distance is twice that from Penzance. Hart Fenton naval architects investigated this possibility and concluded that a High Speed Craft (travelling at around 35 to 40 knots) would not meet the requirements of the route given the sea conditions. The operating restrictions placed on a High Speed Craft, in terms of significant wave height to operate in, would be so restrictive to cause down times in excess of 47% in the summer months. This was felt to be too high a percentage to provide a viable service.

Sailing from Falmouth would also not be advantageous for freight, given that journey time would be more than 5 hours at 12 knots and a day return would be problematic within crewing hours. It was therefore concluded that Falmouth does not offer a viable alternative to Penzance to serve the Isles of Scilly.

## 9.3 Sea Vessel Options

### 9.3.1 Introduction

Section Seven: the do-minimum discussed how, without public intervention, it is anticipated that the passenger service will no longer operate and freight services will increase significantly in cost.

The possibilities for replacement of the sea vessels have been considered. The assumption has been used for the purposes of developing the options, that there would be some form of public assistance in meeting the capital costs of the replacement of vessels, although the level of contribution and the mechanism for delivery is for further discussion with funding partners following the submission of the Major Scheme Bid.

The premise for public sector assistance stems from the analysis reported in Section Seven, that the passenger service would not be financially viable if passenger revenues had to meet the full replacement costs of the passenger vessel. There is a need for the public sector to intervene as the passenger vessel is a significant contributor to all aspects of island life and its loss would be of significant detriment. Moreover with regard to the freight vessel, the full replacement costs would have to be passed on to island businesses in higher freight costs, also having a detrimental impact on the islands economy and the liveability of the Isles of Scilly.

### 9.3.2 Issues Considered

Hart Fenton and Co. Limited (Naval Architects) were instructed to undertake various tasks and advise the study group on sea vessel options. The purpose was to arrive at the optimum type of vessel or vessels to serve the route taking into account issues of:

- Vessel motion and sea sickness;
- Cargo handling;
- Suitable types of passenger vessels;
- Passenger vessel capacity;
- Vessel size;
- Vessel speed alternatives;
- Vessel size and capacity; and
- Vessel Availability.

Hart Fenton were asked to consider the replacement of the passenger and freight vessels with a single, combined vessel, or with separate vessels as at present and to advise on appropriate vessel types for the two alternatives. The section concludes with the specification of appropriate vessels together with capital and operating costs.

#### ***Vessel Motion and Seasickness***

Various reports and anecdotal evidence highlight the fact that the sickness is a significant issue with the passengers. The brief to Hart Fenton was to ensure that any future vessel provides at the least the same level of comfort, but ideally an improved level. Hart Fenton reported that time exposure is a factor in the levels of motion sickness incidence. By inference a shorter journey time i.e. a faster ship, could reduce the levels of sea sickness, provided vertical accelerations did not increase with the faster speed. It is noted that the development of the design of any replacement vessels needs to undertake detailed motion analysis, together with a study of how motions (rolling, pitching) can be controlled to improve passenger comfort. A replacement passenger vessel should therefore ideally be faster than at present (currently 14 knots) and have improved design to improve comfort.

### ***Cargo Handling***

With regard to a freight only or combined vessel, different types of cargo handling were considered. A generalised review was made of cargo handling capability for vessels, the application of these capabilities to the Isles of Scilly service was then undertaken. It was concluded that:

- The use of Ro-Ro is not suitable due to variance of cargoes, and the cargo inability to remain in a unitised rollable mode beyond the quay in St Mary's. The significant investment in linkspans with the ongoing maintenance and overheads makes it unattractive.
- The present system of cargo handling, crane and pallet lift, in essence can fulfil the cargo carrying requirements for the route. To develop, in terms of efficiency and capacity, requires refinement of the shore side infrastructure, the present ship loading systems capacity for a greater rate of loading/unloading than the shore facilities, which are close to operating at their maximum through put capability. Any new ship should make use of pallet lifts, cranes with and without pallet forks and readily manageable bespoke containers that can accommodate pallets and supermarket cages requiring weather protection.

### ***Suitable Types of Passenger Vessel***

For the passenger only service, a range of vessel types in service were reviewed and a report was collated on the various types to highlight the choices of vessels available. It was concluded firstly that a High Speed Craft would not be appropriate to the route, given the operating restrictions, in terms of the significant wave height the craft could operate in, would be so restrictive to cause down times in excess of 47% in the summer months.

It was considered that an appropriate vessel would have a similar layout to a roll-on, roll-off and passenger vessel in general terms, although the majority of such vessels have draughts greater than the existing vessel.

### ***Passenger Vessel Capacity***

The Scillonian III has a passenger capacity of 600. There is more than adequate capacity to meet demand in the majority of the eight months that it operates, with August being the peak month with on average 426 passengers per sailing. The Route Partnership requested Hart Fenton to consider the implications of a vessel with a smaller capacity with the objective of keeping the capital costs of the vessel and the size requirement for harbour infrastructure as low as possible. A vessel of 400 capacity was considered to be adequate to meet all but the peak demand.

### **Vessel Size**

For comparison purposes, the existing Scillonian III has the following characteristics:

Length	68 m
Beam of	11.9 m
Draught of	2.9 m
Passenger capacity	600
Cargo capacity	100 tonnes
Service speed	14 knots

In the early stages of the option development, Hart Fenton were working to a capacity of 600 passengers and an optimum size of vessel to give the most comfortable ride possible.

This led to the consideration of a passenger vessel of 70m length and draught of 3.1m and a combined vessel of 80m length and draught of 3.4m. The implication of these vessel parameters was for considerable dredging requirements at each harbour, as well as particular quay extension options being essential. The total cost of the options put the economic viability of the project in doubt. The Route Partnership asked Hart Fenton to consider a passenger vessel with lower capacity and shorter than the Scillonian III (that would not therefore need a quay extension at St Mary's as the existing vessel overhangs by 10 metres) and a combined vessel of the same size as at present (i.e. 68m). It was also required that the vessels would have the same draught as existing, thus limiting the necessity for dredging, and be capable of bottoming out at low tide. Hart Fenton have given particular consideration to concerns as to whether a smaller vessel than at present could still offer greater comfort and consider that this is possible given modern design and stabilisation techniques.

### **Vessel Speed Alternatives**

The Route Partnership asked Hart Fenton to compare the costs of vessels operating at similar speed to the existing vessels to faster vessels. A shorter journey time was considered to be likely to offer a range of benefits: notably enhanced passenger comfort and a longer time for day trippers on the islands. It would also allow for two sailings per day, subject to tidal conditions or the associated dredging being undertaken. Capital and operating costs have been provided for a freight vessel of 12 knots (the Gry Maritha currently travels at 9 knots), a passenger vessel of 15 or 20 knots (currently 14 knots) and a combined vessel of 15 or 20 knots. A 15 knot vessel provides a similar journey time to the Scillonian III, of 2 hours 40 minutes. A 20 knot vessel gives a journey time of just under two hours.

### **Vessel Availability**

The possibility of finding second hand tonnage to fulfil the route requirements for a passenger only vessel or combined vessel was addressed. A report was produced commenting on the availability and



The assumptions on the price of the vessels are that they would all be strengthened to allow grounding whilst alongside. The passenger only and combined vessels are assumed to have a stabilising system (probably active water tanks) to improve passenger comfort. The freight only vessel is assumed to have quite sophisticated cargo handling to meet the varied nature of the freight cargo.

As previously noted, it is considered by the Route Partnership that there may be a possibility of finding a second hand freight vessel. It has not been possible for Hart Fenton to provide a cost estimate as it is dependent on many factors. A cost of half of that of a newly built vessel has been assumed in the later analysis by Hyder Consulting (and this will be subject to risk assessment).

### **Vessel Operating Costs**

The operating costs of the five vessels have been calculated and are shown in Table 9.2. The assumptions regarding the sailing schedules for each vessel in the operating costs are also shown. These are based on a similar profile to the existing vessels – any increase in the number of sailings through an enhanced service would lead to higher overall operating costs but a reduced cost per sailing. In particular, while the 20 knot vessels would be capable of two sailings per day on more occasions, this is not assumed in the costs as it is also dependent on the infrastructure and the market demand.

The cost of mortgage repayments for each vessel is not included in the annual operating costs. The cost of freight handling in port is also additional for the freight only vessel and combined vessel (an additional XXXX per annum).

For the combined vessel it is assumed that in the winter months it would revert to being a freight only vessel and would travel at 12 knots thus saving on crewing and fuel costs.

**Table 9.2: Vessel Annual Operating Costs**

	Combined Vessel (15 knots)	Combined Vessel (20 knots)	Freight Vessel	Passenger Vessel (15 knots)	Passenger Vessel (20 knots)
Sailing Schedule (see notes)	A	A	B	C	C
Annual Number of Scheduled Sailings	520	520	318	388	388
Service Speed	15 knot tourist season/ 12 knot winter	20 knot tourist season/ 12 knot winter	12 knots	15 knots	20 knots
Voyage Crossing (h:m)	2:36/ 3:13	1:56/ 3:13	3:13	2:36	1:56
Operating Costs	XXXX	XXXX	XXXX	XXXX	XXXX
Port Dues	XXXX	XXXX	XXXX	XXXX	XXXX
<b>Total Outgoings</b>	<b>£1,679,701</b>	<b>£1,773,864</b>	<b>£832,969</b>	<b>£1,219,295</b>	<b>£1,296,136</b>

**Note:**

**Sailing Schedule A:**

1 Jan to 31 Mar – 3 sailings per week at reduced speed  
1 April to 31 October – 1 crossing per day, no sailings on Sundays  
1 August to 31 August – 2 crossings per day on 2 days per week  
1 Nov to 31 Dec - 3 sailings per week at reduced speed

**Sailing Schedule B:**

1 Jan to 31 Dec – 3 sailings per week

**Sailing Schedule C:**

1 Jan to 31 Mar – No service  
1 April to 31 October – 1 crossing per day, no sailings on Sundays  
1 August to 31 August – 2 crossings per day on 2 days per week  
1 Nov to 31 Dec – No Service

## 9.4 Harbour Infrastructure Options

Options for investment in harbour infrastructure at Penzance and St Mary's have been developed in order to address the current problems and meet the future needs of the passenger and freight vessels. The process of options development and the emerging options for further evaluation are set out in the proceeding sections.

### 9.4.1 Penzance Harbour

Hyder Consulting undertook a review of all previous options developed for Penzance Harbour. The Option Review sought to identify the key infrastructure issues and develop preferred options for discussion and to determine the extent of technical investigations required. A total of 14 options were reviewed in January 2004. The basis of the review covered the following requirements as being needed to ensure that the mainland to Isles of Scilly route could be run safely and economically:

- Single berthing area for all seasons and weather conditions. This was based on the indication that a combined freight and passenger vessel was the desired method for future sea operations. Subsequently, it has been considered appropriate to retain the option of maintaining the existing situation of separate passenger and freight vessels for evaluation. The emerging options have been adapted accordingly;
- Capability for roll-on roll-off operations. Roll-on, roll-off freight handling was considered desirable at the time of the Option Review. Subsequently, as discussed earlier in this section, this is no longer considered appropriate and crane handling is the preferred method. The emerging options have been adapted accordingly;
- An adequate cargo storage building which should include provision for frozen storage, chilled storage, dry food storage and ancillary dry storage areas. This building should also incorporate an area large enough for freight to be sorted and containerised for delivery to the separate islands.

- The need for exterior storage areas for heavy freight (such as building materials) which can also be used for the storage of large passenger related items such as boats, etc.
- The need for good road access to the cargo handling facility for lorries making deliveries and for receiving freight.
- The need for a new fuel bunkering supply.
- The new facilities should be made secure. This is not only to protect against theft and vandalism, but also to ensure that any future nationally designated security requirements can be implemented.
- There must be good road access to allow for coaches and cars to drop off and to pick up passengers and their luggage. It should be noted that although passenger car parking is not required at the new facility, there is a requirement for car parking in the Penzance area to service the harbour. This is a separate subject to the matters covered by this document. However, under the Newlyn Harbour project, the need for a park and ride scheme has been identified. It would be prudent for any study for a park and ride to take on board any requirements for Penzance Harbour as well.
- A passenger terminal building – this will need:
  - A passenger handling area
  - A passenger holding area large enough for up to 150 people,
  - There should be canteen/vending and toilet facilities in the holding area;
  - There will need to be an area sufficient for the processing of baggage, security checks and for stowing into containers;
  - A passenger baggage reclaim area;
- The building will need to incorporate the offices for the Steamship Group, the floor area for this has been identified as being approximately 360m<sup>2</sup>. The provision of approximately 10 staff car parking spaces should also be made if possible.

A framework matrix was prepared of the options and assessed by a weighted score as follows:

Requirement	Weighting
Adequate Passenger and Cargo Facilities	0.08
Condensed Passenger and Cargo Facilities	0.08
Free up space on Existing Dock	0.08
Provide ro-ro Ferry Link Span	0.08
Provide Year-round Berth for Ferry	0.08
Improve/Minimise Obstruction to Highway	0.11
Environmental Impact	0.11
Cost	0.30
	<u>1.00</u>

The option matrix included a scoring for providing for ro-ro freight handling, which has since been dismissed as inappropriate for the route. The scoring of options has been reviewed in the light of changes in preferred freight handling and taking out this weighting does not affect the shortlisted options emerging from the evaluation.

Three options emerged from the evaluation as clear leaders. The three included one option for the developed inner harbour and two options for the outer harbour.

Following the options review, and preliminary appraisal of the viability of options, it became clear that there was a need to further investigate low cost options. Three low cost options have also been developed.

The process has led to six possible options, which are summarised in the following sections.

### **Options A1, A2 and A3: South Pier Options**

The South Pier options are a development of the previously discussed Beckett Rankine Partnership Intermediate Option A but include revised traffic management schemes and relocation of certain industries within the dock.

The options involves the reclamation of approximately 2,400m<sup>2</sup> of land reclaimed at the root of the South Pier. This area is covered under the 1990 South Pier Extension Act. The options can facilitate the operations of a combined vessel or of separate vessels in the harbour, a new passenger vessel being berthed along the Lighthouse Pier and a cargo vessel within the Wet Dock. With the cargo vessel being berthed inside the Wet Dock freight operations will be relocated from the North Arm and Rank Building to an area along the South Pier.

The reclaimed land would then provide a suitable area for passenger and cargo operations – allowing the required segregation of cargo/passengers. On this would be constructed a passenger terminal that can adequately

serve the needs of the IoSSG if the new passenger vessel is berthed either inside the Wet Dock or along the Lighthouse Pier. A covered walkway would be constructed along the south side of the South/Lighthouse Pier between the passenger terminal and the vessel berth. This would segregate passengers from the dock area by crash barriers and a chain link fence.

The North Arm would be released for use once the cargo operations have been relocated onto the South Pier. The Rank Building would be demolished allowing for the construction of marine industrial units and a new harbour master office, with the North Arm being dedicated to marine industrial activities.

**South Pier Option A1** is the lowest cost option. It includes the above features but does not limit overtopping or provide 24 hour berthing. It also restricts the timings for Scillonian III to remain in port as a new extension limits slipping along the face. The cost of Option A1 is £6.36m.

**South Pier Option A2** provides measures to limit overtopping but does not provide 24 hour berthing. If the timings for the Scillonian III are restricted in port as the vessel cannot slip along the face, then the cost of Option A2 is £8.02m. If this problem is addressed by extending the quay and/or dredging, then the cost of the option is £9.55 million.

**South Pier Option A3** provides measure to limit overtopping and also provides a 24 hour berth for the passenger or combined vessel. The cost of the option is £9.79 million. To provide for the additional draught of a new cargo/passenger ferry, dredging will be required to a depth of -3.5mOD adjacent to both the Lighthouse and the Albert Piers. The effect of this dredging will mean that the Lighthouse Pier will require localised strengthening/extension to avoid being undermined.

### **Option B: Inner Harbour**

This option involves the reclamation of approximately 5,000m<sup>2</sup> of land north of the North Arm, within the Inner Harbour. This reclamation will also include the repositioning of the Scillonian Berth into an area adjacent to the North Arm and the construction of a piled deck berthing pier. On the reclaimed land would be situated a passenger terminal, freight terminal and also provision for marine industrial units. These are set around the perimeter of the reclaimed land and hence suitable freight handling and external storage areas are available. Any loading/unloading operations can be made by cranes situated on the quayside.

The drying out berth currently adjacent to the North Arm will be repositioned to the outside edge of the new land reclamation. An operational strip would also be provided. The size and shape of the area means that a suitable car and coach drop-off/pick-up area is available and there is clear designation as to vehicle routing.

Access to the area is provided along 'The Quay' road, next to the existing swing bridge, and means that congestion is taken away from the junction at the foot of the South Pier, since all vehicles associated with the Scillonian

would now use the new facilities. This access point would require suitable traffic management works to be undertaken.

This option proposes the demolition of the Rank Building on the North Arm, and the construction of a new Harbour Master office with associated parking. Behind this would sit a liner tender pontoon with linkspan access.

To provide suitable berthing conditions for the newly located Scillonian, the Lighthouse Pier will need to be extended by approximately 50m and a rock armour revetment constructed to surround the head of the pier and the outside face of the existing Lighthouse Pier and the South Pier.

Cost estimates for this option indicate capital costs of approx. £10.1 million. It does however have significant operational issues, which remain to be resolved in relation to the dry dock and other harbour operations.

### **Option C: Outer Harbour Separate Vessels**

Option C provides for separate passenger and cargo vessels. The location of the passenger vessel berth would be maintained along the Lighthouse Pier, with the cargo vessel berth being relocated into the Wet Dock on the inside edge of the South Pier.

This option involves the reclamation of approximately 6,000m<sup>2</sup> of land on the southward side of the Lighthouse Pier. It extends in-line with the alignment of the existing South Pier and would require the construction of a new pier head to provide suitable berthing for any new vessel.

The layout of the facilities on the reclaimed land would alter from the outer harbour option D to make best use of the available space when separate vessels are used. This would mean the construction of the freight terminal, covered storage area and fuel bunkering adjacent to the South Pier. In addition, a freight handling and external storage area would be provided.

A new Passenger Terminal would be constructed on the reclaimed land adjacent to the Lighthouse Pier. With separate coach/car parking drop off area next to the passenger terminal, all users of the passenger vessel are kept away from the congested harbourside in a dedicated area. Access to both the cargo and passenger areas would be provided from the existing junction of South Pier, with vehicles moving both ways along the piers. For access by foot, passengers could walk along a protected foot-way on the south side of the South Pier.

Rock armour would be provided on the southward side of both the Lighthouse and South Piers to provide protection to new and existing structures. The Rank Building would be demolished and re-developed with a visiting liner launch berth constructed adjacent to the dock gate on the North Arm.

This option would not reduce the traffic flow along the South Pier or at the junction with Quay Road, but the demolition of existing buildings should provide increased space and all traffic queuing will be away from the road.

The cost estimate of Option C is £18.1 million.

### Option D: Outer Harbour Combined Vessel

This option involves the reclamation of approximately 6,000m<sup>2</sup> of land on the southward side of the Lighthouse Pier. It extends in-line with the alignment of the existing South Pier and would require the construction of a new pier head to provide suitable berthing for any new vessel. The option means no disruption or modifications to the inner harbour or the wet dock and the only disruption to navigation around the harbour will come in the form of the pier head. This option allows for the locating of a large passenger and freight terminal adjacent to the vessel berth which means that there is no need for offsite cargo consolidation, an obvious advantage that should ultimately lead to less vehicular movement around the times of sailing. In addition, the reclaimed land would provide adequate space for coach parking and suitable drop-off points for passengers using the Scillonian.

A large freight handling and external storage area would be provided for and means there can be segregated areas for freight and passengers – thus avoiding any conflict of interest and improving safety around the harbour.

The berth of the vessel is to be offset 5m from the Lighthouse Pier, with a pile supported deck providing access to the starboard side and the stern of the vessel. This additional space will allow for an improved loading/unloading procedure within the harbour and will limit any strengthening works to the toes of the existing pier.

Rock armour is to be provided on the southward side of both the Lighthouse and South Piers to provide protection to new and existing structures. The existing buildings at the root of the South Pier will be demolished and relocated and a covered walkway constructed along the Pier, toward the Passenger Terminal.

This option will not reduce the traffic flow along the South Pier or at the junction with Quay Road, but the demolition of existing buildings should provide increased space and all traffic queuing will be away from the road.

Anticipated capital costs are approximately £18.1 million. It has the advantage of providing the best operational capability both for the handling of cargo and passengers and moves the congestive nature of the vessel operations to a purpose built facility away from the already congested harbourside.

The options are summarised in Table 9.3 and provided in the attached figures.

Table 9.3 - Summary of Penzance Harbour Options

Option	Description	Capital Cost	Additional Annual Maintenance Cost
A1: Low Scale (South Pier Option)	Suitable for both combined and separate vessels. Overtopping issues not addressed. 24 hour tidal access not provided. Restrictions on berthing times of passenger/ combined vessel as cannot slip eastwards along quay face on falling tide.	£6.36m	First five years £50k annual dredging. Thereafter £150k per annum harbour walls and buildings and £50k dredging.
A2: Low Scale (South Pier Option)	Suitable for both combined and separate vessels. Overtopping issues addressed with rock armouring along the seaward face of Lighthouse Pier. 24 hour tidal access not provided. Restrictions on berthing times of passenger/ combined vessel addressed by extension to quay/ dredging (£750k less if not addressed).	£9.55m	First five years £50k annual dredging. Thereafter £78k per annum harbour walls and buildings and £50k dredging.
A3: Low Scale (South Pier Option)	Suitable for both combined and separate vessels. Overtopping issues addressed. 24 hour tidal access provided for combined but only for passenger vessel if separate.	£9.79m	First five years £100k annual dredging. Thereafter £78k per annum harbour walls and buildings and £100k dredging.
B: Medium Scale (Inner Harbour) (DWG 1230)	Suitable for both combined and separate vessels but freight vessel will have to use north face of inner harbour. 24 hour tidal access provided for all combined vessel, but only for passenger vessel if separate.	£10.1m	First five years £100k+ annual dredging. Thereafter £25k harbour walls and £28k passenger and freight buildings, every year.
C: Significant Scale (Outer Harbour) (DWG 1236)	Suitable for separate vessels only. 24 hour tidal access provided for both vessels.	£18.1m	First five years £100k annual dredging. Thereafter £100k harbour walls and £28k passenger and freight buildings, every year.
D: Significant Scale (Outer Harbour 2) (DWG 1228)	Suitable for combined vessel only. 24 hour tidal access provided for both vessels.	£18.1m	First five years £100k annual dredging. Thereafter £100k harbour walls and £28k passenger and freight buildings, every year.

## 9.4.2 St Mary's Harbour

Scott Wilson has undertaken a review of all possible sites for harbour infrastructure, together with numerous alternative layouts for the possible sites. It should be noted that the layouts are only schematic at present and are produced to establish principles of the quay improvements.

The options included four options derived during a previous study, a layout based upon a scheme developed by the Harbour Master, several layouts produced by Scott Wilson during the initial feasibility study and a modified scheme developed during the public consultation period. These options are presented in an Options Review report.

### Options Considered

In developing the options, possibilities other than developing in the vicinity of the existing harbour at St Mary's were considered, including the off islands and locations on St Mary's outside the vicinity of St Mary's Pool.

#### Off Islands

None of the off islands have the infrastructure to support and provide the facilities required to support the mainland ferries. There are no support facilities available on the off islands, as St Mary's is the commercial hub and is where the majority of islanders live.

Many of the uninhabited islands are Sites of Special Scientific Interest (SSSI) and cannot be considered for any development. Any development on the inhabited Off islands (Tresco, Bryher, St Martins and St Agnes) would have a significant impact on their environment and would affect the SSSI either on these islands or adjacent to them.

Furthermore these islands do not have sufficient deep-water areas that could be considered for a new quay. No options were therefore considered for the off islands and all options were confined to St Mary's.

#### Locations on St Mary's outside the vicinity of St Mary's Pool

Options were sketched up for Porthcressa, Old Town and Porth Loggos (Newfoundland Point). These were the only potential sites appropriate for consideration for development of a new quay outside of St Mary's Pool.

These areas have no existing infrastructure to support a new quay. This would therefore require substantial investment to support a quay and as greenfield sites there would be significant environmental impacts.

Furthermore the wave climate would make it unlikely that a truly sheltered berth could be established. Significantly deeper water would minimise the requirement for dredging but would result in prohibitively expensive construction cost for a new quay. These options have not been considered further.

## Carn Thomas and Thomas Porth

These options within St Mary's Pool involve construction on areas of the protected eelgrass beds. This would attract significant objections from an ecological point of view.

Furthermore a large number of the existing moorings would be lost from these arrangements. The visual and environmental impact on St Mary's Pool together with the significant dredging quantities required (with resulting high capital and maintenance costs) make these schemes unattractive. These options have not been considered further.

## Assessment of Options

All of the options, with the exception of those discounted above, were assessed using a three stage method of appraisal: Stage 1 – Technical Assessment, Stage 2 – Functional Assessment and Stage 3 – Socio-Economic Assessment.

Stage 1 included key technical requirements that were deemed as minimum requirements and the options that scored poorly at this stage were eliminated. Similarly options were eliminated at Stage 2 that included key functional requirements deemed important. At the end of Stage 3, which included socio-economic benefits arising from the various options, no options were eliminated as the criteria was defined as beneficial although not essential.

The order of cost of the options was the last criteria considered and the capital cost and maintenance cost was assessed for those options that had not been eliminated by the end of Stage 3. Options that had significant additional cost (either capital or maintenance) without scoring comparably with lesser cost schemes were eliminated.

The completed Appraisal Table is included in the full options report. This method of appraisal was developed by the full Scott Wilson Team in consultation with all members of the Route Partnership. The resulting schemes were:

- Option 1A – Low Cost (Separate Vessels)
- Option 1B – Low Cost (Combined Vessel)
- Option 3A – Quay Extension
- Option 3B – Quay Extension Full Scheme
- Option 17 – Reduced Rat Island Full Scheme

A brief description of the five options is provided below, plus a table of key advantages and disadvantages is included as Appendix D.

Approximate "current day" order of costs have been established for each of the options and are included in the descriptions. It will be appreciated that at this early stage of study that the order of costs are crude and are for comparison of options. With the lack of information, particularly with respect

to ground and bathymetric conditions, assumptions have had to be made. This will contribute to the approximate nature of the cost estimate as will the assumptions that have had to be made concerning the form of construction.

Costs for the previous Beckett Rankine options were extracted from the Beckett Rankine Feasibility Study and simply adjusted for inflation from time of the report to current day prices. It should also be noted that in the absence of buildings, storage facilities, etc on the Beckett Rankine drawings, this may contribute to these schemes appearing more economic. It should be noted that the buildings element of the costs are not constant across all options and reflect only the buildings numbered on the drawings.

### **Option 1A – Low Cost (Separate Vessels)**

The option offers an improvement to the existing service, but only marginally. It does not provide a suitably deep or protected berth. The existing quay would be extended on the Rat Island side and widened, providing some additional working space and a new two-way vehicle route. This would enable the existing quay area to become a pedestrian dominated area. There would be no improvements for the inter island boats or fishing vessels. It only provides for one berth (which would be shared by the freight and passenger vessels). 24 hour berthing is also not provided. Protection would be required for the new quay wall. The cost of the option is estimated as £6.2 million.

### **Option 1B – Low Cost (Combined Vessels)**

The option is the same as Option 1A but it includes an extension to the length of the quay to accommodate the length of the combined vessel without overhanging. The existing passenger vessel overhangs by approximately 10 m but this situation would not be considered appropriate for a combined freight and passenger vessel. The cost of the option is estimated as £6.7 million.

### **Option 3A – Quay Extension**

This option provides for a larger extension and widening of the existing quay and dredging to enable 24 hour berthing. The larger quay would also provide better shelter for the berth. The increase in space would enable segregation of passengers and cargo and safer vehicle movements. The extended quay would need to be protected on the Rat Island side and the quay wall adjacent to the dredged area is likely to require strengthening. The option would not provide any dedicated berths for the inter island boats. The cost of the option is estimated as £12.8 million.

### **Option 3B – Quay Extension Full Scheme**

The option builds on Option 3A by increasing the area of reclamation on the west side of the existing quay, predominantly at the town end. It provides a sheltered berth, improved facilities for island boats and fisherman and also segregation of passengers and cargo. The area of dredging (although not to the full 3.5m proposed in Option 3A), is extended. Space could be provided for freight handling, sorting and storage,

overcoming one of the major issues identified. The cost of the option is estimated as £16.9 million.

### Option 17 – Reduced Rat Island Full Scheme

This option proposes major reclamation on the west side of the existing quay with a new protected berth for the passenger/cargo vessel. It provides space for all the required ancillary accommodation related to passengers and cargo. It significantly extends the existing quay area. The existing berthing area becomes available for inter island boats, fishing and visiting craft. This option allows for segregation of passengers and cargo. The cost of the option is estimated as £16.1 million.

## Summary of St Mary's Options

The existing quay facilities are in need of significant improvement to allow freight and passenger services to be maintained. Numerous options have been considered and seventeen options were drawn up for consideration. An assessment of options has been performed against a number of technical, functional and socio-economic criteria.

The short listed options are summarised in Table 9.4 and provided in the attached figures.

Table 9.4 - Summary of St Mary's Harbour Options

Option	Description	Capital Cost	Additional Annual Maintenance/ Dredging Cost
1A – Low Cost (Separate Vessels)	Suitable for separate vessels. 24 hour tidal access not provided.	£6.2m	£124,000
1B – Low Cost (Combined Vessel)	Suitable for combined vessel, with quay extension. 24 hour tidal access not provided.	£6.7m	£134,000
3A – Quay Extension	Suitable for both combined and separate vessels. 24 hour tidal access provided.	£12.8m	£285,000
3B – Quay Extension, Full Scheme	Suitable for both combined and separate vessels. 24 hour tidal access provided.	£16.9m	£377,000
17 – Reduced Rat Island Full Scheme	Suitable for both combined and separate vessels. 24 hour tidal access provided.	£16.1m	£332,000

## 9.5 Shortlisted Route Options

The discussion of options for transport services and transport infrastructure has led to various route options being considered for sea vessels and infrastructure development at Penzance and St Mary's.

In summary there are four vessel options, six Penzance Harbour options and five St Mary's Harbour options, in addition to the do-minimum. The possible option combinations between the harbour infrastructure and vessels are shown in Table 9.5.

As can be observed, there are many permutations of options, with the choice of vessel being important to which harbour option is necessary but in many respects the choice of option at St Mary's and Penzance is independent of each other. In order to arrive at a shortlist of options for the full appraisal and presentation in the bid, there has been a process of preliminary appraisal. This has been an iterative process, using:

- the transport model and cost-benefit analysis to assess which schemes are likely to have the most positive net present value;
- measurement against other government objectives for transport using the NATA framework to ascertain which options perform most strongly in terms of environmental impact, wider economic impacts, safety, accessibility and integration.
- The views of stakeholders as to which elements of the emerging schemes are essential, desirable, acceptable or unacceptable.

The outcome of preliminary appraisal was firstly to demonstrate that the additional benefits of a 20 knot vessel compared to a 15 knot vessel outweighs the additional costs (capital and operating). Therefore it was decided to only consider a faster, 20 knot vessel in the shortlisted options.

In terms of economic viability, the difference in benefits and costs of a combined vessel compared to separate vessels did not emerge as significant. It was decided therefore to include either a combined or separate vessels in the detailed appraisal to enable full consideration of the range of issues.

With regard to the harbour options, preliminary appraisal of the economic viability of the schemes led to the conclusion that capital costs needed to be minimised. There was a need to precisely determine the minimum requirements of the scheme and this was undertaken in conjunction with stakeholders.

Stakeholders have been consulted through the Route Partnership, with regard to the wide range of factors relating to each of the options. Views differ in some respects. However the overriding need to maintain safe effective links to the Isles has resulted in agreement and compromise on the key issues relating to each of the options.

**Table 9.5: Options Matrix**

HARBOUR OPTIONS		SEA VESSEL OPTIONS				
	Capital Cost	No passenger vessel, 2 <sup>nd</sup> Hand Freight Vessel only	Passenger Vessel (15 knots) and 2 <sup>nd</sup> Hand Freight Vessel	Passenger Vessel (20 knots) and 2 <sup>nd</sup> Hand Freight Vessel	Combined Vessel (15 knots)	Combined Vessel (20 knots)
Capital Cost		£4,750,000	£15,750,000	£16,100,000	£15,000,000	£15,350,000
<b>Penzance Harbour</b>						
Basic Threshold of Investment	£30,000	<b>Do Minimum</b>				
A1 – Low Cost 1 (South Pier Option)	£6,360,000					
A2 – Low Cost 2 (South Pier Option)	£8,770,000			<b>Option 1</b>		<b>Option 2</b>
A3 – Low Cost 3 (South Pier Option)	£9,010,000			<b>Option 3</b>		<b>Option 4</b>
B – Medium Cost (Inner Harbour)	£10,100,000					
C – Significant Cost (Outer Harbour 1)	£18,100,000					
D – Significant Cost (Outer Harbour 2)	£18,100,000					
<b>St Mary’s Harbour</b>						
Basic Threshold of Investment	£100,000	<b>Do Minimum</b>				
1A – Low Cost (Separate Vessels)	£6,200,000			<b>Option 1</b>		
1B – Low Cost (Combined Vessel)	£6,700,000					<b>Option 2</b>
3A – Quay Extension	£12,800,000					
3B – Quay Extension, Full Scheme	£16,900,000					
17 – Reduced Rat Island Full Scheme	£16,100,000			<b>Option 3</b>		<b>Option 4</b>

On the basis of stakeholder feedback, the low cost options in St Mary's (1A and 1B) and the low cost option in Penzance that addressed overtopping were considered appropriate for full assessment. A scheme which facilitated 24 hour berthing is also considered desirable by stakeholders and therefore as an alternative, it was decided to further assess the low cost option in Penzance with dredging. The option 17 for St Mary's was developed as a result of public consultations and delivers wider benefits. It was therefore included in the assessment with the low cost option in Penzance with dredging.

This has led to the shortlisting of four options for detailed appraisal. These are numbered in Table 9.5 and are summarised in Table 9.6.

**Table 9.6: Shortlisted Options for Full Appraisal**

Option	Sea Vessel(s)	Penzance Harbour	St Mary's Harbour
Option 1	Passenger Vessel (20 knots) and 2 <sup>nd</sup> Hand Freight Vessel	A2 – Low Cost 2 (South Pier Option)	1A – Low Cost (Separate Vessels)
Option 2	Combined Vessel (20 knots)	A2 – Low Cost 2 (South Pier Option)	1B – Low Cost (Combined Vessel)
Option 3	Passenger Vessel (20 knots) and 2 <sup>nd</sup> Hand Freight Vessel	A3 – Low Cost 3 (South Pier Option)	17 – Reduced Rat Island Full Scheme
Option 4	Combined Vessel (20 knots)	A3 – Low Cost 3 (South Pier Option)	17 – Reduced Rat Island Full Scheme

## 10 Appraisal of Options

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### 10.1 Introduction

In accordance with guidance on the Appraisal Process (TAG Unit 2.5), the four shortlisted do-something options have been appraised in terms of:

- their achievement of Government objectives for transport, using the Appraisal Framework and the Appraisal Summary Table (AST);
- the ways in which the local and regional objectives are achieved;
- the ways in which problems are ameliorated; and
- supporting analyses of distribution and equity; affordability and financial sustainability; and practicality and public acceptability.

The supporting analyses of distribution and equity and affordability and financial sustainability are to be completed and will be submitted separately to the main document as Appendices.

Following the options appraisal under the four headings, the assessment of wider socio-economic impacts is provided in Section Eleven. Section Twelve distils the appraisal information towards a final appraisal summary and provides recommendations as to the way forward.

### 10.2 Achievement of Government Objectives

This section provides the Appraisal Summary Tables (AST) for each option, summarised from the NATA appraisal. Each AST is one page only in length and seeks to summarise the main impacts in comparison to the do-minimum. The AST displays the degree to which the five central government objectives of environment, safety, economy, accessibility and integration would be achieved (see TAG Unit 2.5). The AST allows a judgement to be made about the overall value-for-money of the options in achieving objectives.

The ASTs follow a brief overview of the main points arising from the appraisal.

#### 10.2.1 Cost Benefit Analysis

The Isles of Scilly Route Study's uniqueness as a multi-modal study has meant that the guidance on undertaking studies and appraising options has required adaptation and agreement with the DfT. A key aspect has been the transport model and the cost-benefit analysis. A spreadsheet model has been devised to model the observed choice of travel modes and assess the impact of scenarios on the three modes of travel. A technical note on the methodology for the cost benefit analysis will be provided separately as Appendix B.

The full cost benefit analysis is provided in electronic format. The Transport and Economic Efficiency and Assessment of Monetised Cost and Benefit tables for the options are provided as Appendix E. Table 10.1 summarises the results of the cost-benefit analysis.

**Table 10.1: Summary of Benefit Cost Results (2002 market prices, discounted to 2002)**

Economic Indicator	Scheme Results (£'000)					
	-	Option 1	-	Option 2	Option 3	Option 4
Present Value of Benefits (PVB, £'000)	-	£29,130	-	£37,619	£15,302	£24,847
Present Value of Costs (PVC, £'000)	-	£24,193	-	£24,947	£25,413	£26,074
Net Present Value (NPV = PVB-PVC)	-	£4,937	-	£12,672	-£10,110	-£1,227
Benefit to Cost Ratio (BCR = PVB/PVC)	-	1.20	-	1.51	0.60	0.95

It can be seen that in terms of Net Present Value, Option 2 is the best performing scheme, with a Benefit to Cost Ratio of 1.51. The combined vessel options perform more strongly than those with separate passenger and freight vessels, due mainly to the efficiencies in operating costs. Options 3 and 4 include provision for 24 hour berthing. It is recognised that the benefits of 24 hour berthing are not properly reflected in the scheme benefits, as they are difficult to quantify. The benefits on top of the quantifiable consumer benefits will be in summary:

- Ability to offer a more consistent timetable;
- Ability to offer a longer day trip to the islands; and
- Ability to offer two sailings per day.

The Benefit to Cost Ratios and costs to public accounts are based on assumptions at this stage as to how the costs would be borne by each of the public and private sectors. At present the delivery mechanisms for the options remain to be agreed given the complexities of the role of the private sector and issues of State Aid. The assumptions are that:

- Central government will be responsible for the costs of the vessel(s);
- Local government (Penwith District Council) will be responsible for the costs of Penzance harbour improvements; and
- The Duchy of Cornwall will be responsible for capital and operating costs of St Mary's harbour improvements.

## 10.2.2 Environmental Issues

The environmental assessment of options has focused on the most significant environmental impacts likely to result from the proposed harbour redevelopments in Penzance and St Mary's, including cultural heritage, townscape, landscape, biodiversity and water quality.

Options originally considered in St Mary's included both the redevelopment of the existing quay and Rat Island and creation of a new facility on Newford Island. The final options identified all centre on Rat Island. Options 1A and 1B represent similar proposals and include minimal reclamation in order to widen the existing access to the quay and provide an alternative location for fuel storage. Both options involve an extension to the existing quay in order to accommodate the new vessels proposed. The extension is some 10m longer with Option 1B, reflecting the extra berthing space required for a combined vessel. Option 17 represents major redevelopment and would require significant reclamation work. This option involves the creation of a new wider quay with additional harbour facilities.

Although Option 17 is much more extensive than Options 1A and 1B, English Heritage (EH) considers all of the options would have a major impact on the existing historic quay and the setting and views of a number of historic buildings within Hugh Town, including the Garrison and Star Castle. EH also feel that there would almost certainly be an impact on submerged archaeological deposits and maritime archaeology as the Isles of Scilly represent a 'drowned landscape' that was probably dry until the early Bronze Age. Due to the scale of the impacts and sensitivity of the receptors in the local vicinity EH believe that all three options would represent a Very Large adverse impact overall and have therefore requested the justification for the scheme is provided (a copy of the response from EH is included in Appendix I). The project team, however, do not agree with this assessment. Instead they consider the impact is moderate adverse. It has not yet been possible to discuss this issue with EH and agree the score.

As a result of the historic nature of Hugh Town, impacts on townscape are closely linked to those on heritage, as materials and form of the new proposals are likely to be at odds with the architecture of the Hugh Town area. Options 1A and 1B are therefore both considered to have a slight adverse impact on townscape whereas Option 17 would be moderate adverse due to the scale of the changes proposed.

Landscape impacts for the three options are all considered to be similar as the schemes would all introduce new landscape elements such as new walls and rock armour, that are out of character with the local context (part of the Area of Outstanding Natural Beauty) and result in the loss of existing inter-tidal features.

In terms of impact on biodiversity interest there is little difference between 1A and 1B as the area of disturbance is virtually the same. Option 17, however, would affect a far greater area of inter-tidal and sub-tidal habitat due to the scale of the proposals.

It is not expected that there would be a significant impact on water quality as a result of any of the St Mary's options.

The options that were considered in Penzance included redevelopment of both the North and South Piers. These have been reduced to two options involving extensions to the South Pier and Lighthouse Pier (A2, included in

Options 1 and 2, and A3, included in Options 3 and 4). The only difference between Options A2 and A3 is that Option 2 includes an element of dredging in order to allow 24 hr berthing.

At Penzance there are similar issues to St Mary's in terms of impact of heritage (the quay here is also listed) and townscape. However, the Penzance harbour area is less sensitive than St Mary's as there is not the same concentration of listed buildings and there has already been considerable development of the harbour area in recent years (including retail development and car parking provision).

The potential impacts of both options on heritage and townscape are considered to be large and moderate adverse, respectively. Although the dredging that would be required in options 3 and 4 has the potential to disturb maritime archaeology, it is not felt that this warrants a large adverse score for heritage for that option.

The potential landscape impacts of the options have been considered in the wider context of views across the bay from St Michael's Mount. Although both options include rock armour to the South and Lighthouse Piers and the introduction of new harbour buildings, the impact is considered to be localised and therefore both options have been given a neutral score.

Biodiversity impacts are also likely to be similar due to the disturbance caused to sub-tidal and inter-tidal habitats. The dredging requirement associated within Option 3 and 4 means that Options 1 and 2 are preferred on ecological grounds but as there is relatively little ecological interest within the immediate vicinity of the harbour this is not considered to be significant. The rock armour proposed may have a positive impact in terms of providing additional roosting habitat for bird species such as Purple Sandpiper but this is not certain.

The proposed works are within a low tidal energy environment and sheltered from the predominant and significant wave directions. Given this context and the limited extent of the proposals the works would not be expected to significantly affect water circulation. As for St Mary's, the options would not therefore be expected to have a significant impact on water quality in the long term.

In summary Option 1A or 1B at St Mary's would be preferred on environmental grounds, as included in scheme options 1 and 2. There are no significant differences in terms of environmental impact between these options. For Penzance, Option 2 would be preferred (as included in Options 1 and 2) as there is no dredging requirement and so impacts on heritage, biodiversity and local water quality are minimised.

Copies of other environmental consultation responses are included in Appendix J.

## 10.3 Achievement of Local and Regional Objectives

The local and regional objectives, leading to a set of objectives specific to the mainland to Isles of Scilly route, were set out in Section Five. The do-minimum and four options have been appraised to assess their contribution to achieving the route objectives. The appraisal is set out in the following five tables.

The assessment shows overall that the do-minimum would have a significant negative impact on the achievement of objectives. All of the options would have mainly beneficial affects, with the exception of impacts on the built and natural environment. The four options in fact perform similarly. The main differences between the four options are:

- transport economic efficiencies will be better achieved with a combined vessel (options 2 and 4);
- 24 hour berthing allows for the potential of a more consistent timetable and two sailings per day (options 3 and 4);
- the scheme in St Mary's (Options 3 and 4) provides an enhanced level of facilities for other harbour users and also provides regeneration opportunities with reclaimed land.

On the basis of the assessment, Option 4 best achieves the local route objectives but all options make a positive contribution in comparison to the do-minimum.

<b>Assessment of Achievement of Route Objectives: DO MINIMUM</b>			
<b>Objective</b>	<b>Sub-Objective</b>	<b>Qualitative Impact</b>	<b>Score</b>
<b>Environment</b>	To reduce the impact of transport modes on the environment by encouraging use of modes with low emissions and other environmental effects;	Loss of passenger service would place more passengers onto air modes, with higher environmental impacts.	Negative
	To sustain the built and natural environment;	Neutral	Neutral
	To provide a high quality journey between the Isles of Scilly and the mainland.	There would be no passenger service so overall quality of service by sea would not be affected.	Neutral
<b>Safety</b>	To improve safety and comfort for all travellers;	There would be no passenger service so safety and comfort for passengers would be less of an issue.	Neutral
	To ensure the safety and security of transport facilities;	Some minor improvements to safety and security of freight facilities	Positive
<b>Economy</b>	To contribute to an efficient local economy and to support sustainable economic growth;	Loss of some 15% of travellers to the islands.	Negative
	To ensure appropriate transport facilities are available for the day and staying visitor market on the Isles of Scilly;	Loss of passenger service will particularly affect day visitors and certain types of staying visitor.	Negative
	To alleviate the remoteness of the isles from the rest of the UK;	Loss of passenger service. Opportunities to travel to the IOS would be reduced. Freight costs would increase.	Negative
	To improve the reliability of passenger and freight services;	There would be no sea service to back up air travel in poor weather. Freight services will suffer from lack of income from passenger service to support harbour infrastructure.	Negative
	To improve the economic efficiency of modes of travel.	Positive. Would be higher utilisation of air services, making more efficient use of existing transport services.	Positive
<b>Accessibility</b>	To ensure that residents have access to services on the mainland;	Reduced travel options	Negative
	To ensure that the ports and airports serving the Isles of Scilly are accessible to those without access to a car;	Neutral	Neutral
	To ensure that modes of travel providing links to the Isles of Scilly are accessible to all including those with disabilities;	Neutral	Neutral
<b>Integration</b>	To promote the integration of sea and air travel and integration with other modes of transport;	Loss of sea mode, which is used in conjunction with air services in poor weather	Negative
	To ensure compatibility with the aims and objectives of the Cornwall Local Transport Plan and Structure and Local Plans;	Policies seek to support the Isles of Scilly ferry and freight services	Negative
	To ensure compatibility with wider regeneration policies and initiatives.	Policies seek to support the Isles of Scilly service and the tourism economy of Penwith and IOS	Negative
<b>Social Inclusion and Equity</b>	To assist in maintaining a viable and balanced community on the islands;	Will be increased freight costs affecting living costs and loss of tourism will also affect the viability of the community.	Negative
	To ensure that modes of travel are affordable to residents and businesses.	Residents will have to rely on more expensive air services. This will unduly disadvantage lower income groups. Freight costs will increase.	Negative

<b>Assessment of Achievement of Route Objectives: OPTION 1</b>			
<b>Objective</b>	<b>Sub-Objective</b>	<b>Qualitative Impact</b>	<b>Score</b>
<b>Environment</b>	To reduce the impact of transport modes on the environment by encouraging use of modes with low emissions and other environmental effects;	Reduced use of air modes compared to the do-minimum.	Beneficial
	To sustain the built and natural environment;	Adverse impact on built and natural environment from harbour infrastructure.	Negative
	To provide a high quality journey between the Isles of Scilly and the mainland.	Reduced journey time compared to existing and more comfortable ride. Improved waiting facilities.	Beneficial
<b>Safety</b>	To improve safety and comfort for all travellers;	More comfortable ride and shorter journey time.	Beneficial
	To ensure the safety and security of transport facilities;	Safer harbour through prevention of wave overtopping and segregation of passengers and freight movements.	Beneficial
<b>Economy</b>	To contribute to an efficient local economy and to support sustainable economic growth;	Protects and creates jobs in tourism and wider economy.	Beneficial
	To ensure appropriate transport facilities are available for the day and staying visitor market on the Isles of Scilly;	Provides ferry service, particularly important to day visitors and certain types of staying visitor.	Beneficial
	To alleviate the remoteness of the isles from the rest of the UK;	Provides ferry service in addition to air modes, with reduced journey time compared to existing.	Beneficial
	To improve the reliability of passenger and freight services;	Provides back up service to air modes in poor weather, although sailing will be restricted by tides, as at present.	Beneficial
	To improve the economic efficiency of modes of travel.	Neutral in comparison to existing provision. Maintains status quo of separate vessels.	Neutral
<b>Accessibility</b>	To ensure that residents have access to services on the mainland;	Provides service for 8 months of the year giving access to mainland, also with shorter journey time than existing.	Beneficial
	To ensure that the ports and airports serving the Isles of Scilly are accessible to those without access to a car;	Neutral	Neutral
	To ensure that modes of travel providing links to the Isles of Scilly are accessible to all including those with disabilities;	Improved access around the port area including better dropping off and waiting facilities.	Beneficial
<b>Integration</b>	To promote the integration of sea and air travel and integration with other modes of transport;	Ferry service will be available to co-ordinate with air services in times of poor weather. Improved interchange facilities at the harbours.	Beneficial
	To ensure compatibility with the aims and objectives of the Cornwall Local Transport Plan and Structure and Local Plans;	Policies seek to support the maintenance of the sea services.	Beneficial
	To ensure compatibility with wider regeneration policies and initiatives.	Policies and initiatives aim to develop the economy. Will free up some space at Penzance harbour for other recreational use/ regeneration.	Beneficial
<b>Social Inclusion and Equity</b>	To assist in maintaining a viable and balanced community on the islands;	Freight costs will be maintained at current levels with no increase in living costs. Tourism will be able to develop according to current trends.	Beneficial
	To ensure that modes of travel are affordable to residents and businesses.	Ferry service offers transport at lower cost to air modes. Freight costs will be maintained at current levels.	Beneficial

<b>Assessment of Achievement of Route Objectives: OPTION 2</b>			
<b>Objective</b>	<b>Sub-Objective</b>	<b>Qualitative Impact</b>	<b>Score</b>
<b>Environment</b>	To reduce the impact of transport modes on the environment by encouraging use of modes with low emissions and other environmental effects;	Reduced use of air modes compared to the do-minimum.	Beneficial
	To sustain the built and natural environment;	Adverse impact on built and natural environment from harbour infrastructure.	Negative
	To provide a high quality journey between the Isles of Scilly and the mainland.	Reduced journey time compared to existing and more comfortable ride. Improved waiting facilities.	Beneficial
<b>Safety</b>	To improve safety and comfort for all travellers;	More comfortable ride and shorter journey time.	Beneficial
	To ensure the safety and security of transport facilities;	Safer harbour through prevention of wave overtopping and segregation of passengers and freight movements.	Beneficial
<b>Economy</b>	To contribute to an efficient local economy and to support sustainable economic growth;	Protects and creates jobs in tourism and wider economy.	Beneficial
	To ensure appropriate transport facilities are available for the day and staying visitor market on the Isles of Scilly;	Provides ferry service, particularly important to day visitors and certain types of staying visitor.	Beneficial
	To alleviate the remoteness of the isles from the rest of the UK;	Provides ferry service in addition to air modes, with reduced journey time compared to existing.	Beneficial
	To improve the reliability of passenger and freight services;	Provides back up service to air modes in poor weather, although sailing will be occasionally restricted by tides. Passenger service could also be available in winter. Freight service enhanced to 6 days per week in summer.	Beneficial
	To improve the economic efficiency of modes of travel.	Reduced overall operating costs of the sea vessels compared to existing.	Beneficial
<b>Accessibility</b>	To ensure that residents have access to services on the mainland;	Provides service for 8 months of the year, and potential for all year round, giving access to mainland, also with shorter journey time than existing.	Beneficial
	To ensure that the ports and airports serving the Isles of Scilly are accessible to those without access to a car;	Neutral	Neutral
	To ensure that modes of travel providing links to the Isles of Scilly are accessible to all including those with disabilities;	Improved access around the port area including better dropping off and waiting facilities.	Beneficial
<b>Integration</b>	To promote the integration of sea and air travel and integration with other modes of transport;	Ferry service will be available to co-ordinate with air services in times of poor weather. Improved interchange facilities at the harbours.	Beneficial
	To ensure compatibility with the aims and objectives of the Cornwall Local Transport Plan and Structure and Local Plans;	Policies seek to support the maintenance of the sea services.	Beneficial
	To ensure compatibility with wider regeneration policies and initiatives.	Policies and initiatives aim to develop the economy. Will free up some space at Penzance harbour for other recreational use/ regeneration.	Beneficial
<b>Social Inclusion and Equity</b>	To assist in maintaining a viable and balanced community on the islands;	Freight costs will be maintained at current levels with no increase in living costs. Tourism will be able to develop according to current trends.	Beneficial
	To ensure that modes of travel are affordable to residents and businesses.	Ferry service offers transport at lower cost to air modes. Freight costs will be maintained at current levels.	Beneficial

<b>Assessment of Achievement of Route Objectives: OPTION 3</b>			
<b>Objective</b>	<b>Sub-Objective</b>	<b>Qualitative Impact</b>	<b>Score</b>
<b>Environment</b>	To reduce the impact of transport modes on the environment by encouraging use of modes with low emissions and other environmental effects;	Reduced use of air modes compared to the do-minimum.	Beneficial
	To sustain the built and natural environment;	Adverse impact on built and natural environment from harbour infrastructure.	Negative
	To provide a high quality journey between the Isles of Scilly and the mainland.	Reduced journey time compared to existing and more comfortable ride. Improved waiting facilities.	Beneficial
<b>Safety</b>	To improve safety and comfort for all travellers;	More comfortable ride and shorter journey time.	Beneficial
	To ensure the safety and security of transport facilities;	Safer harbour through prevention of wave overtopping and segregation of passengers and freight movements.	Beneficial
<b>Economy</b>	To contribute to an efficient local economy and to support sustainable economic growth;	Protects and creates jobs in tourism and wider economy. Also offers benefits for other harbour users and area of reclamation in St Mary's for other economic uses.	Beneficial
	To ensure appropriate transport facilities are available for the day and staying visitor market on the Isles of Scilly;	Provides ferry service, particularly important to day visitors and certain types of staying visitor. With 24 hour berthing can lengthen day visit and provide two sailings per day.	Beneficial
	To alleviate the remoteness of the isles from the rest of the UK;	Provides ferry service in addition to air modes, with reduced journey time compared to existing.	Beneficial
	To improve the reliability of passenger and freight services;	Provides back up service to air modes in poor weather, and no restrictions on sailing due to tides. More consistent timetable facilitated.	Beneficial
	To improve the economic efficiency of modes of travel.	Neutral in comparison to existing provision. Maintains status quo of separate vessels.	Neutral
<b>Accessibility</b>	To ensure that residents have access to services on the mainland;	Provides service for 8 months of the year giving access to mainland, also with shorter journey time than existing. Potential for two sailings per day from 24 hour berth facility.	Beneficial
	To ensure that the ports and airports serving the Isles of Scilly are accessible to those without access to a car;	Neutral	Neutral
	To ensure that modes of travel providing links to the Isles of Scilly are accessible to all including those with disabilities;	Improved access around the port area including better dropping off and waiting facilities.	Beneficial
<b>Integration</b>	To promote the integration of sea and air travel and integration with other modes of transport;	Ferry service will be available to co-ordinate with air services in times of poor weather. Improved interchange facilities at the harbours.	Beneficial
	To ensure compatibility with the aims and objectives of the Cornwall Local Transport Plan and Structure and Local Plans;	Policies seek to support the maintenance of the sea service.	Beneficial
	To ensure compatibility with wider regeneration policies and initiatives.	Policies and initiatives aim to develop the economy. Will free up some space at Penzance harbour for other recreational use/ regeneration and provide reclaimed land at St Mary's. Provides better facilities for inter-island boats and other harbour users.	Beneficial
<b>Social Inclusion and Equity</b>	To assist in maintaining a viable and balanced community on the islands;	Freight costs will be maintained at current levels with no increase in living costs. Tourism will be able to develop according to current trends.	Beneficial
	To ensure that modes of travel are affordable to residents and businesses.	Ferry service offers transport at lower cost to air modes. Freight costs will be kept at existing levels.	Beneficial

**Assessment of Achievement of Route Objectives: OPTION 4**

<b>Objective</b>	<b>Sub-Objective</b>	<b>Qualitative Impact</b>	<b>Score</b>
<b>Environment</b>	To reduce the impact of transport modes on the environment by encouraging use of modes with low emissions and other environmental effects;	Reduced use of air modes compared to the do-minimum.	Beneficial
	To sustain the built and natural environment;	Adverse impact on built and natural environment from harbour infrastructure.	Negative
	To provide a high quality journey between the Isles of Scilly and the mainland.	Reduced journey time compared to existing and more comfortable ride. Improved waiting facilities.	Beneficial
<b>Safety</b>	To improve safety and comfort for all travellers;	More comfortable ride and shorter journey time.	Beneficial
	To ensure the safety and security of transport facilities;	Safer harbour through prevention of wave overtopping and segregation of passengers and freight movements.	Beneficial
<b>Economy</b>	To contribute to an efficient local economy and to support sustainable economic growth;	Protects and creates jobs in tourism and wider economy. Also offers benefits for other harbour users and area of reclamation in St Mary's for other economic uses.	Beneficial
	To ensure appropriate transport facilities are available for the day and staying visitor market on the Isles of Scilly;	Provides ferry service, particularly important to day visitors and certain types of staying visitor. With 24 hour berthing can lengthen day visit and provide two sailings per day, also could provide service in the winter.	Beneficial
	To alleviate the remoteness of the isles from the rest of the UK;	Provides ferry service in addition to air modes, with reduced journey time compared to existing.	Beneficial
	To improve the reliability of passenger and freight services;	Provides back up service to air modes in poor weather, and no restrictions on sailing due to tides. Passenger service could also be available in the winter.	Beneficial
	To improve the economic efficiency of modes of travel.	Reduced overall operating costs of the sea vessels compared to existing.	Beneficial
<b>Accessibility</b>	To ensure that residents have access to services on the mainland;	Provides service for 8 months of the year giving access to mainland, also with shorter journey time than existing. Potential for two sailings per day from 24 hour berth facility and winter passenger service.	Beneficial
	To ensure that the ports and airports serving the Isles of Scilly are accessible to those without access to a car;	Neutral	Neutral
	To ensure that modes of travel providing links to the Isles of Scilly are accessible to all including those with disabilities;	Improved access around the port area including better dropping off and waiting facilities.	Beneficial
<b>Integration</b>	To promote the integration of sea and air travel and integration with other modes of transport;	Ferry service will be available to co-ordinate with air services in times of poor weather. Improved interchange facilities at the harbours.	Beneficial
	To ensure compatibility with the aims and objectives of the Cornwall Local Transport Plan and Structure and Local Plans;	Policies seek to support the maintenance of the sea service.	Beneficial
	To ensure compatibility with wider regeneration policies and initiatives.	Policies and initiatives aim to develop the economy. Will free up some space at Penzance harbour for other recreational use/ regeneration and provide reclaimed land at St Mary's. Provides better facilities for inter-island boats and other harbour users.	Beneficial
<b>Social Inclusion and Equity</b>	To assist in maintaining a viable and balanced community on the islands;	Freight costs will be maintained at current levels with no increase in living costs. Tourism will be able to develop according to current trends.	Beneficial
	To ensure that modes of travel are affordable to residents and businesses.	Ferry service offers transport at lower cost to air modes. Freight costs will be kept at existing levels.	Beneficial

## 10.4 Impact on Problems

The existing and future problems were set out in Section Eight and summarised in Table 8.8. This section examines the impact of the do-something options on the problems in comparison to the do-minimum.

### **Environment Problems**

#### *Noise and vibration impacts of aircraft*

This was judged to be a moderate problem affecting all islanders and residents within the vicinity of the airports and heliport. The problem would be exacerbated in the do minimum with no ferry as the number of air flights is anticipated to increase. The do-something options would all have a largely neutral effect on the problem.

#### *Emissions impact of aircraft*

This was judged to be a moderate problem with a global effect and local air quality impact. As with noise, the problem would be exacerbated in the do-minimum with no ferry as the number of flights could increase. The do-something options would all have a largely neutral effect on the problem.

#### *Poor journey ambience by sea vessel*

This is a serious problem at present affecting all sea passengers. In the do-minimum situation there would be no ferry, so it would not be an issue. All of the do-something options propose a vessel which is able to give at least as stable a ride as the existing vessel, but with a journey time of under two hours compared to the existing 2 hours 40 minutes. Evidence provided by the naval architects highlights two hours as being a critical time, beyond which the incidence of sea sickness increases. Moreover the vessel will be of modern design with the latest stabilisation techniques. In addition, all of the options assessed propose passenger waiting facilities, thus improving the ambience of the waiting time at the harbours.

#### *Journey ambience by helicopter and fixed wing affected by noise and vibration*

This was judged to be a relatively slight problem, but it would worsen in the do-minimum with more passengers on the route using air services.

### **Safety**

#### *Operational and health and safety issues within Penzance and St Mary's harbours*

These issues were assessed as being serious and affecting all harbour users. All of the do-something options aim to improve the segregation of the freight and passengers and thus the operations of the harbours. They would all also restrict overtopping of the harbour walls by waves, which would be a significant safety benefit. Options 3 and 4 also provide more area and better organisation of space to enable more efficient harbour operations.

### *Security issues within ports and harbours*

The security issues were assessed as affecting all travellers but being a relatively slight problem. There would be some improvement in the do-minimum with the better security measures protecting freight services and proposed improvements at St Mary's Airport. In terms of passenger baggage security, all of the do-something options propose an improved situation with a baggage collection area rather than baggage having to be left on the quayside.

## **Economy**

### *The cost of freight carriage*

This was assessed as being a serious problem affecting all island businesses and residents. The problem would be significantly worsened in the do-minimum with the cost of the replacement freight vessel having to be borne (including debt charges) by the consumers. This would lead to a rise in the order of 50% in average costs of freight carriage per tonne. The problem would be assisted relative to the do-minimum in the options, with some assistance in the costs of the freight vessel meaning that there would not be a need to raise additional freight revenues. The competitiveness of the Isles of Scilly economy would thus be assisted in the options (although it would be similar to the existing situation).

### *Sailing timings and restrictions constrain freight delivery*

Assessed as a moderate problem affecting businesses requiring short lead times, this would be assisted in the options as follows:

- There would be no change in option 1 compared to the do-minimum;
- In option 2, with the combined vessel, there would be a freight service six days per week in the 8 month period from March to November. There would be no change in the winter months;
- In option 3, with 24 hour berthing available for the freight vessel at St Mary's, timings would be less restricted by the tides;
- In option 4, with 24 hour berthing at both harbours and a combined vessel capable of making two sailings per day (although due to loading/unloading times only one might be freight), there would be much greater flexibility in the provision of the freight service.

### *Method of freight handling and storage lead to exposure to elements and damage*

Freight handling by the new vessels would be a crane operation, but using the most sophisticated techniques. All options provide a freight handling building and external secure storage areas to address the problems.

*Tidal Restrictions restrict the length of time spent on Scilly by day visitors, making the sea journey a disproportionate part of the day*

There would be no change in options 1 and 2. In options 3 and 4, 24 hour berthing would allow more flexibility in the timetable and the ability to sail twice per day.

*Reliability of fixed wing and helicopter services*

In the do-minimum this will be exacerbated as there will be no back up service in poor weather or in the event of technical problems. In all options there would be back up and potential for additional sailings would be enhanced in options 3 and 4.

*Economic efficiency of Sea Operations*

This problem would be reduced in Options 2 and 4 with a combined vessel.

### **Accessibility**

*Poor level of access to Land's End and Newquay Airport*

This problem would be more important in the do-minimum with a greater number of people using fixed wing services. There would be no change under the options.

*Access for the disabled at the harbours*

This will be improved in the options with better dropping off and waiting facilities.

### **Interchange**

*Poor quality of freight interchange at the harbours*

All options provide a freight handling building and external secure storage areas to address the problems.

### **Social Inclusion and Equity**

*Higher transport costs for non-local trips compared to UK mainland*

This would be exacerbated in the do-minimum with no passenger service and higher freight costs. All options would improve the situation.

Table 10.2: Assessment of Impact on Problems

Problem	Do Minimum	Option 1	Option 2	Option 3	Option 4
Noise and vibration impacts of aircraft	Negative	Neutral	Neutral	Neutral	Neutral
Emissions impact of aircraft	Negative	Neutral	Neutral	Neutral	Neutral
Poor journey ambience by sea vessel – passenger facilities at harbours and comfort of trip	Neutral	Beneficial	Beneficial	Beneficial	Beneficial
Journey ambience by helicopter and fixed wing affected by noise and vibration.	Negative	Neutral	Neutral	Neutral	Neutral
Operational and health and safety issues within Penzance and St Mary’s harbours	Slight Beneficial	Beneficial	Beneficial	Beneficial	Beneficial
Some security issues within harbours and the airports	Slight Beneficial	Beneficial	Beneficial	Beneficial	Beneficial
The cost of freight carriage has impact on competitiveness of Isles of Scilly exports and costs of imports to residents and businesses.	Negative	Beneficial	Beneficial	Beneficial	Beneficial
Sailing timings and tidal restrictions pose constraint to effective freight delivery.	Neutral	Neutral	Slight Beneficial	Beneficial	Beneficial
Methods of freight handling and storage lead to exposure to elements and damage.	Neutral	Beneficial	Beneficial	Beneficial	Beneficial
Tidal restrictions restrict the length of time spent on Scilly by day visitors, making the sea journey disproportionate.	Neutral	Neutral	Neutral	Beneficial	Beneficial
Fixed wing aircraft and helicopter services are subject to reliability problems due to weather conditions and greater propensity to technical difficulties than sea vessels.	Negative	Beneficial	Beneficial	Beneficial	Beneficial
Economic efficiency of sea operations affected by seasonality of operations and the separation of freight and passenger sea vessels.	Negative	Neutral	Beneficial	Neutral	Beneficial
Poor level of access to Land’s End Aerodrome and Newquay Airport.	Negative	Neutral	Neutral	Neutral	Neutral
Access for the disabled problematic in St Mary’s and Penzance Harbours.	Neutral	Beneficial	Beneficial	Beneficial	Beneficial
Passenger interchange facilities poor in St Mary’s and Penzance Harbours.	Neutral	Beneficial	Beneficial	Beneficial	Beneficial
Quality of freight interchange poor in harbours.	Neutral	Beneficial	Beneficial	Beneficial	Beneficial
Higher transport costs for non-local trips compared to the UK mainland and no public subsidisation for these trips	Neutral	Beneficial	Beneficial	Beneficial	Beneficial

## 10.5 Supporting Analyses

### 10.5.1 Distribution and Equity

This analysis is to be supplied separately as Appendix F.

### 10.5.2 Affordability and Financial Sustainability

This analysis is dependent on further discussions regarding delivery mechanisms and funding levels for the project. The supporting analysis will be supplied separately as Appendix G.

### 10.5.3 Practicality and Public Acceptability

This section provides the supporting analysis with regard to issues of practicality and public acceptability, structured in accordance with the guidance in TAG Unit 2.5.

#### **Feasibility**

A 'Harbour Revision Order' will be necessary for the port infrastructure works at both ends of the route. This will involve a statutory consultative procedure, and any objections will necessitate a public inquiry. However, the proposals have been constrained to the bare minimum requirements for improvement. Subsequently the scope for any fundamental objections is significantly reduced.

#### **Enforcement**

Apart from the health and safety, and statutory requirements for sea vessel and harbour operations, no specific enforcement measures are required. However, the service will be overseen by Local Authorities; Isles of Scilly Council, Penwith District Council and Cornwall County Council to ensure that the service is run in a manner which serves the community interests.

#### **Area of Interest**

The 'Route Partnership' overseeing development of this project is made up of :

- Isles of Scilly Council
- Penwith District Council
- The Duchy of Cornwall
- Cornwall County Council
- Isles of Scilly Steamship Group
- British International Ltd

Links to the Isles of Scilly operate through co-operation between these key stakeholders, all of whose activities and inputs have a direct bearing on the services.

### **Complexity**

The 'Matrix of Options' in Section 9 illustrates the various elements which have had to be considered to arrive at options that are acceptable to the stakeholders and are deliverable.

A high degree of iteration has taken place with development of the vessel(s) and both harbour proposals. Within each of these areas of work, a wide range of factors had to be considered in relation to whether the required outputs were being achieved.

### **Time-scale**

The timescale for delivery is driven by the following:

- Objective 1 time scales (if deemed necessary for funding). Construction needs to commence before 2006. Financial completion required by 2008.
- Freight vessel has an operational life until 2009, and will then need to be de-commissioned.
- Scillonian passenger vessel has an operational life until 2014 (perhaps 2009 depending on condition surveys).
- A replacement vessel needs to be in place before the existing vessels are removed from active service.

### **Phasing**

There are long lead in times to all elements of the proposals as well as the statutory consultative processes.

Early decisions are necessary in advance of some of the detail design, to commit resources in time for delivery within the Objective 1 time frame.

A staged approval process could be adopted, but it would need to take into account the delivery timetable for Objective 1 eligibility, and the operational life of the existing vessels.

All of the elements of work are complementary and need be delivered within the same programme dates.

### **Partitioning**

The proposals comprise of three distinct units of work, two harbour proposals (Penzance Town and Isles of Scilly St. Mary's) and the sea vessel(s). The sea vessel(s) replacement will need to be in place before the existing vessels are de-commissioned or sold off.

The harbour proposals and vessel design and development processes will be project managed separately, but with co-ordination between the three programmes of work.

## **Complementarity**

All three elements of the proposals (the two harbours and vessel), are complementary. The design parameters for all three elements have had significant impacts on each other and continued development will require constant co-ordination and checks.

## **Conflicts**

The proposals, as developed, are consistent with other modes of transport and other mainland berthing options. Potential areas of conflict have been identified in relation to competitive impacts. These areas are being discussed with the relevant bodies. The outcome of these discussions will not impact on the proposals, but on the means by which they are delivered and managed.

## **Political nature of policies and proposals.**

There are wide ranging impacts related to the proposals. There is a strong likelihood that some form of action will be required to address the social and economic impacts of a decline in the sea link services to the Isles of Scilly. The Political will and public support is strong.

There are of course aspirations for more extensive proposals than have been put forward, but there is a general acceptance from the Partnership that these 'ideal' schemes do not provide the best ratio of agreed outputs to costs.

The proposals are consistent with the aims and objectives of the Isles of Scilly Council, Penwith District Council, Cornwall County Council, the County Structure Plan, the Local Transport Plan and Regional Planning and Transport Guidance.

Penwith District Council and the Isles of Scilly Council have formally endorsed the proposals as partners to the County Council as lead applicant.

## 11 Appraisal of Socio-Economic Impacts

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This section of the report provides a full analysis of the economic and social impacts of the options, undertaken by GHK Consulting.

### 11.1 Economic Impacts of the Options

#### 11.1.1 Causes of Economic Impact

The different options have the potential to affect the economies of the Isles of Scilly and Penwith in different ways. The following causes of economic impact can be considered:

- Tourism in Scilly - Changes in the number of visitors to the Isles of Scilly, affecting overall levels of visitor spending and giving rise to impacts on the Scilly economy.
- Tourism in Penwith – Effects of Scilly visiting patterns on visitors staying in Penwith, and associated economic impacts.
- Freight Impacts – Changes in the cost and volumes of freight, and their impact on importers and exporters in Scilly.
- Impacts on the Transport Sector – Effects of the options on sea and freight transport operations.
- Impacts of Visiting Yachts and Cruise Ships – Effects of harbour developments on ability to receive visiting vessels and impacts on the economies of Scilly and Penwith.
- Impacts on Harbour Businesses, Penzance – Effects of harbour developments on existing operations and the potential economic impact of opportunities to develop new operations.
- Impacts on Harbour Businesses, St Mary's - Effects of harbour developments on existing operations and the potential economic impact of opportunities to develop new operations.
- Impacts on Scilly's Fishing Industry – through the provision of adequate and safe harbour, fish handling and storage facilities.
- Construction Impacts – Temporary impacts resulting from the construction work in both harbours.

It is important to note that these impacts may not be given equal weight in the appraisal process. For example DfT have indicated that they are primarily concerned with economic impacts of transport investments only, i.e. items 1-4 in the list, and will not consider temporary construction effects. Furthermore, the options that have been proposed and costed relate primarily to transport improvements. While they may free up space for potential future development of marine, leisure and commercial operations, these opportunities have not been specified or costed, and any economic

impacts might be regarded as an indirect potential impact rather than a core benefit of the proposals.

### 11.1.2 Options Assessed

The analysis focuses primarily on the difference between the do minimum and do something options. While comments are made where possible about differences in impact between the do something options, in many cases this has not been possible, for example because no evidence is available about effects on passenger numbers, or because the options are insufficiently specified to allow detailed analysis of impacts. Nevertheless, the analysis enables the overall scale and potential of different impacts to be examined, to enable further more detailed analysis if necessary.

### 11.1.3 Units of Measurement

Different options are assessed in terms of their impact on employment, as this provides a convenient common accounting framework, is closely correlated with changes in expenditure and GDP, is the main unit of measurement used by the DfT, and best matches the availability of data.

However, while safeguarding employment is important, increasing average incomes is a more important objective than creating new jobs, especially in Scilly. Estimates of employment impacts are therefore backed by assessments of impacts on GDP.

### 11.1.4 Tourism in Scilly

Figures from Hyder's model give latest forecasts of visitor numbers under the Do Minimum and Do Something scenarios as follows. These figures relate to trips between Penwith and St Mary's only, and exclude longer flights, and Tresco flights, which Hyder considers to represent a separate market, unaffected by the current proposals.

There is a significant reduction in visitor numbers in 2010 and 2020 under the do nothing scenario, although a significant proportion of ferry passengers transfer to other modes. However, this compares with significant growth under the do something options. As a result there is a net loss of 32,000 visitors to Scilly in 2010, 2020, 2030 and 2039. Almost 80% of the lost visitors are day-trippers.

**Table 11.1: Visitor Numbers under Do Minimum and Do Something Options, Penwith to St Mary's Routes**

<b>Do Minimum:</b>	2003	2010	2020	2030	2039
Business	4787	3,934	4,251	4,502	4,746
Residents	4787	4,325	4,779	5,150	5,528
Day trippers	35963	21,643	22,786	23,922	24,948
Long stay	59833	85,300	92,640	99,690	106,268
<b>Total Visitors</b>	<b>105,370</b>	<b>115,201</b>	<b>124,456</b>	<b>133,264</b>	<b>141,489</b>
<b>Do Something:</b>	2003	2010	2020	2030	2039
Business	4787	5,143	5,512	5,805	6,088
Residents	4787	5,220	5,689	6,072	6,461
Day trippers	35963	46,712	47,850	48,983	50,005
Long stay	59833	89,856	97,331	104,548	111,256
<b>Total Visitors</b>	<b>105,370</b>	<b>146,931</b>	<b>156,381</b>	<b>165,408</b>	<b>173,809</b>
<b>Difference:</b>	2003	2010	2020	2030	2039
Business	0	1209	1261	1303	1342
Residents	0	895	910	923	933
Day trippers	0	25070	25064	25061	25057
Long stay	0	4556	4691	4858	4988
<b>Total Visitors</b>	<b>0</b>	<b>31,730</b>	<b>31,925</b>	<b>32,144</b>	<b>32,320</b>

Source: Hyder cost benefit model. Note: figures refer to visitors from Penwith to St Mary's only and exclude Tresco helicopter and longer flights

Based on current levels of spending per trip, visitor expenditure can be estimated as follows. The figures are in constant (2001) prices, but assume 2% per annum real growth in visitor spending.

Under both the do minimum and do something scenarios, overall visitor expenditure rises consistently to 2039. However, there is a decline in day visitor spending to 2020 under the "do-minimum" scenario.

Under the do something options, there is stronger growth in visitor spending, with increases in expenditure by day-trippers as well as staying visitors. As a result, the do something options result in additional visitor spending of £2.0 million in 2010 and £2.6 million in 2020.

**Table 11.2: Visitor Spending under Different Options, Penwith to St Mary's Routes**

<b>Do Minimum:</b>	2003	2010	2020	2030	2039
Business	£99,608	£94,032	£123,861	£159,894	£201,434
Day trippers	£748,318	£517,296	£663,901	£849,629	£1,058,936
Long stay	£16,309,566	£26,708,619	£35,359,101	£46,382,952	£59,089,414
<b>Total Spend</b>	<b>£17,157,492</b>	<b>£27,319,947</b>	<b>£36,146,863</b>	<b>£47,392,475</b>	<b>£60,349,784</b>
<b>Do Something:</b>	2003	2010	2020	2030	2039
Business	£99,608	£122,923	£160,592	£206,170	£258,393
Day trippers	£748,318	£1,116,510	£1,394,172	£1,739,708	£2,122,513
Long stay	£16,309,566	£28,135,291	£37,149,558	£48,643,175	£61,862,816
<b>Total Spend</b>	<b>£17,157,492</b>	<b>£29,374,723</b>	<b>£38,704,323</b>	<b>£50,589,053</b>	<b>£64,243,722</b>
<b>Difference:</b>	2003	2010	2020	2030	2039
Business	£0	£28,891	£36,731	£46,276	£56,958
Day trippers	£0	£599,213	£730,271	£890,079	£1,063,577
Long stay	£0	£1,426,672	£1,790,457	£2,260,223	£2,773,402
<b>Total Spend</b>	<b>£0</b>	<b>£2,054,776</b>	<b>£2,557,460</b>	<b>£3,196,578</b>	<b>£3,893,938</b>

Note: figures refer to visitors from Penwith to St Mary's only and exclude Tresco helicopter and longer flights

Employment resulting from tourism spending has been estimated using multipliers from the South West Tourism report, "The Value of Tourism to the South West Economy, 2001". The multiplier includes the direct, indirect and induced effects of tourism spending.

Estimated employment increases steadily under both the do minimum and do something scenarios. It grows more rapidly under the do something scenarios, creating an additional 41 FTE jobs by 2010 and 43 FTE jobs by 2039 (Table 11.3).

**Table 11.3: Changes in Employment on Scilly (FTE) as a result of changes in Visitor Numbers on Penwith to St Mary's Routes**

	2003	2010	2020	2030	2039
Do Minimum	389	539	585	629	671
Do Something	389	580	627	672	714
<b>Difference</b>	<b>0</b>	<b>41</b>	<b>41</b>	<b>42</b>	<b>43</b>

### 11.1.5 Tourism in Penwith

A snapshot survey by Hyder Consulting of passengers on all modes found that 22% of parties visiting the islands also stayed in Penwith as part of their visit, spending an average of 4 nights in the district. These are likely to include a combination of visitors to Penwith, who also visit Scilly for a day as part of their holiday, and visitors to Scilly, who stay in Penwith en-route to or from the islands. It would therefore be misleading to attribute all of the money spent by these visitors to the Scilly visit.

Of those visitors surveyed on the Scillonian, some 31% had stayed in Penwith, with this proportion varying from 27% for visitors staying on Scilly and residents to 37% for day-trippers.

It seems reasonable to assume that any expenditure in Penwith by staying visitors to Scilly and Scilly residents is attributable to trips to and from Scilly, and would be reduced if the number of visits to and from the islands were to decline. These respondents spent an average of 3.5 nights in Penwith.

On this basis, it can be estimated that there will be a change of 945 Penwith bed-nights per 1000 change in the number of staying visitors and Scilly residents.

Current estimates are that Penwith currently receives 741,000 staying visitors, who spend a total of 3.71 million nights, spending £175 million per year and supporting a total of 4340 FTE jobs (South West Tourism, 2003). This equates to a total of £47,100 expenditure and 1.17 FTE jobs per 1000 visitor nights.

It will be assumed that there will be a change in employment of 1.11 FTE jobs per 1000 staying visitors to Scilly as a result of the different transport options.

For day visitors to Scilly, it is likely that the majority who stay in Penwith will do so irrespective of whether they visit Scilly. However, a minority of visitors are likely to make dedicated day trips to Scilly, staying in Penwith on the way, or are motivated to stay in Penwith by the prospect of making a day trip to the islands as part of their stay. A conservative assumption might be that 20% of nights spent in Penwith by day visitors to Scilly can be attributed to the prospect of visiting the islands.

Hyder's survey found that day-trippers to Scilly, who used the Scillonian and stayed in Penwith, spent an average of 5.5 nights in Penwith. On this basis, it can be estimated that there will be a change of 407 Penwith bed nights per 1000 change in day visitors to Scilly. On this basis it is assumed that there will be a change of 0.48 FTE jobs in tourism in Penwith per 1000 change in Scilly day visitors.

Using these ratios, tourism employment in Penwith attributable to visits to Scilly is estimated as follows (Table 11.4).

**Table 11.4: Scilly Dependent Tourism Employment, Penwith (FTE)**

	2003	2010	2020	2030	2039
Do Minimum	86	107	116	124	132
Do Something	86	125	134	142	150
<b>Difference</b>	<b>0</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>

It is estimated that 86 FTE tourism jobs in Penwith are currently dependent on visits to Scilly. This number grows under the do something options, creating a net 18 FTE jobs in Penwith between 2010 and 2039, compared to the do minimum.

### 11.1.6 Freight Impacts

Freight transport adds significantly to business costs on the Isles of Scilly and impacts on both importers, especially the tourism industry, and exporters (especially flower growers). Route and harbour developments have the potential to impact on the costs of both transporting and handling freight.

Sources of impact include:

- Costs of freight transport;
- Costs of freight handling and storage;
- Costs of damage and loss of freight;
- Regularity, quality and reliability of service, and impacts on key industries.

The proposed harbour developments include investments in new facilities for freight handling and storage. These are expected to facilitate handling and reduce the value of freight lost or damaged by inadequate storage facilities. However, the Isles of Scilly Steamship Company indicate that it expects that any overall cost savings are likely to be minor. Annual claims for freight damage currently total less than £10,000 per annum. Overall handling costs are unlikely to change significantly without significant process changes (e.g. containerisation), the scope for which is limited given the diversity of freight carried. There will also be benefits through more regular freight movements (e.g. in the case of a combined vessel operating daily).

Hyder predicts a significant increase in freight transport costs under the do minimum scenario, which would involve the freight service being provided on a commercial basis (i.e. also meeting capital costs of the vessel).

Current costs of operating the Gry Maritha total XXXXX per year, an average cost of XXXX per tonne. However, these do not include capital costs. Investment in a new second hand vessel would raise annual costs by XXXX to XXXX, or XXXX, while investing in a brand new vessel would

raise annual costs by XXXX, or XXXX. Thus the do minimum would impose additional costs of £0.7 million to £0.9 million on Scilly's economy. This is equivalent to between 2.5% and 3.2% of Scilly's GDP.

This will increase the costs of goods to businesses and individuals, increasing the costs of living, the cost of visiting the islands, and the costs of exports from the islands.

The direct impact of these extra costs on the tourism industry is estimated at £0.35-£0.5 million, or between 1.3%-1.8% of overall tourism revenue. The impact of such a price increase is difficult to predict, in the absence of information about the price elasticity of demand for tourism in Scilly. It is quite possible that the extra costs would be absorbed by visitors. However, if demand reacted in proportion to the increase in the cost of visiting the islands, this would result in the loss of up to 10 FTE jobs.

The effect on the flower industry is potentially more significant. Current cost structures mean that many flower businesses are currently unviable, as the main flower industry is struggling to compete in a highly competitive and unsupported global market. The current freight service is barely adequate to allow this industry to meet the demands of its major customers (the multiples) whose other suppliers producing flowers in the southern hemisphere are forcing the agenda with the delivery times and product costs they are able to offer (faster and cheaper than the product from the islands). Transport costs are significant, accounting for around 25% of the grower's sales price. Increased sea freight costs could add 4-5% to the costs incurred by flower growers, accelerating the decline of the industry.

In addition, issues regarding the regularity and reliability of the freight transport service are crucial to the future of the sector. At present the Gry Maritha runs only three times per week, restricting the ability of flower growers to reach their markets. Use of air transport to carry flowers is more expensive and constrained by capacity.

Since it is difficult to know how many of the estimated 125 FTE jobs in flower growing on Scilly will be lost in the near future irrespective of freight impacts, the effect of freight costs and services is hard to predict. However, it is clear that a faster, reliable, daily service would help to safeguard the future of the industry. The future of the industry also has significant implications for Scilly's tourism sector, which depends on the maintenance and management of the islands' rural environment.

The effects of the do something options depend crucially on the pricing structure adopted for the new vessel. If a new freight vessel was provided but required to cover its capital costs, then the costs of freight transport to the islands would increase as under the do-minimum. If, however, the service continued to be subsidised to the extent that it was not required to cover capital costs, freight costs could be held down. In this sense, the route development options themselves are less significant than the pricing policy adopted – there is no difference in the overall costs, but decisions over who bears them affect the economic impact of the service.

The main source of potential overall cost savings lies with the efficiencies to be gained by providing a joint vessel. Figures provided by Hart Fenton indicate that a combined vessel could provide annual savings of £298k-£469k in operating costs, which, if allocated proportionately between freight and passenger services, could reduce the annual operating cost of the freight service by £120-190k, bringing overall annual cost savings of £9-14/tonne to Scilly residents, visitors and businesses. This would be expected to safeguard up to 3 FTE jobs.

Though the effects of freight changes are difficult to predict, it is likely that the do something options will safeguard between 0 and 75 FTE jobs, depending on the vessel option and pricing structure adopted. The greatest benefits arise from the provision of a combined (and subsidised) vessel.

### 11.1.7 Impacts on the Transport Sector

The Isles of Scilly Steamship Group currently employs 137 staff, or around 125 full time equivalents. These divide as follows (Table 11.5).

**Table 11.5: Employment in Isles of Scilly Steamship Group**

Operation	FTE Jobs
Scillonian (crew and catering)	XX
Gry Maritha	XX
Freight handling (including inter-island launch)	XX
Marine engineering	XX
Administration (sea transport)	XX
Sales and marketing (sea, air)	XX
Sea passenger registration	XX
Skybus	XX
<b>Total</b>	<b>125</b>

The IoSSG's air transport operations support 55 FTE jobs and sea transport 70 FTE jobs, of which approximately half (35 FTE) are supported by the passenger service and half by the freight service. The air transport jobs are scattered between a variety of locations, since Skybus flights operate from Southampton, Bristol, Exeter and Newquay, as well as Land's End.

British International employs 54 people in the winter and 68 in the summer.

Under the do minimum scenario, we would expect similar levels of freight related employment (either in the Steamship Group or a commercial operator). However, all jobs dependent on the Scillonian (approx 35 FTE) would be lost. This will be partly compensated for by increased

employment in helicopter and Skybus operations, which are also relatively more labour intensive compared to the number of passengers carried.

Estimates of future employment have been made, based on Hyder's forecasts of visitor numbers by mode. The estimates build in scale effects, by assuming that employment in each mode grows at 50% of the rate of growth of visitor numbers (Table 11.6).

**Table 11.6: FTE employment in passenger transport services**

	<b>2003</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2039</b>
Do Minimum	120	134	141	147	153
Do Something	120	144	151	158	164
<b>Difference</b>	<b>0</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>

There is growth in employment under both the do minimum and do something options. Growth is greater under the do something options, because of the larger increase in visitor numbers and the retention of jobs in the sea passenger service.

## 11.1.8 Effects of Visiting Yachts and Cruise Ships

### St Mary's

Given constraints in accommodation capacity, visiting yachts offer an opportunity for tourism growth. St Mary's Harbour currently has 50 moorings for visiting yachts, and South West Tourism estimates that visiting yachts spent 3,000 nights in Scilly in 2001, spending £79,000. This supports approximately 2 FTE jobs. The different options for the harbour affect yacht moorings in different ways: under Option 1 they remain unchanged; while under Option 17 there is capacity to provide up to 10 more moorings. Demand is highly seasonal and the economic impact of these changes depends on the extent to which it is constrained by capacity. However, the net impact on employment is unlikely to exceed 0.5 FTE gained/lost.

Cruise ships are estimated to bring 5,600 visitors to Scilly each year, spending up to £280,000 in the local economy and supporting around 6 FTE jobs. Tresco currently receives most visits. Health and safety issues provide something of a constraint on St Mary's – ships are unable to use their own tenders and must use local boatmen. Improved quay layout and provision of pontoons (under option 17) may encourage more cruise ships to visit St Mary's. Securing an additional 5 cruise ship visits could attract additional spending of £50,000 per year, supporting an additional 1 FTE job.

## Penzance

Penzance has moorings for 250 resident and 50 visiting pleasure craft, and receives 1400-1500 visiting yachts per season. On the basis of an average stay of 2 nights and an average spend of £30 night (from South West Tourism figures), estimated expenditure by visiting yachts is put at £84,000 per year, supporting 2 FTE jobs. The different harbour development options are not expected to have a significant impact on the capacity to accept visiting yachts, and the Harbourmaster expects increased competing provision locally at Newlyn and Penlee Quarry to constrain demand.

Penzance currently receives up to 4 cruise ships per year, which bring annual spending of approximately £40,000 to the local economy, supporting about 1 FTE job. Harbour developments could have a positive but limited effect in improving access for cruise ships. Assuming a doubling of the number of cruise ships visiting Penzance (an optimistic scenario), an additional 1 FTE job would be expected to be create.

## Impacts on Harbour Businesses, Penzance

The following businesses are currently located in Penzance Harbour:

- Dry Dock Company
- Penwith Marine Services
- Waterside Meadery
- A commercial diving and salvage company.

Collectively these businesses support a total of approximately 75 FTE jobs, including contractors. In addition, management of the harbour itself supports an additional 5.5 FTE jobs.

The largest employer is the Dry Dock Company, which employs 40 permanent staff and regularly employs between 10 and 30 contractors from outside the area (often from overseas) who stay in local B&Bs. At times there may be up to 100 people working on the site.

The Dry Dock Company and Penwith Marine Services would both welcome more space for expansion.

Hyder has indicated that the different development options involve relocating the existing marine businesses, but that little additional marine workspace will be created. However, by freeing berthing space (as with a combined vessel), there will be some creation of new space for use by the marine sector. There may be impacts on the operations of existing businesses, e.g. resulting from access and health and safety considerations.

Each of the do something options free up a gross area of approximately 1350 m<sup>2</sup> for leisure and retail development (gross area), which would enable provision of a net area of around 600m<sup>2</sup> of additional building floor

space. The Meadery might also be demolished and redeveloped under any of the options, with no net gain in floor space. If this additional land were redeveloped, it would be expected to support around 20 new FTE jobs. Provision of a café within the new visitor terminal could also support a small amount of additional employment (up to 3 FTE jobs).

In conclusion, the harbour developments would be expected to have a broadly neutral impact on marine industries and provide space for the creation of up to 25 FTE jobs in leisure and retail premises. It is important to note that the latter is an estimate of the gross potential impact, not taking into account displacement effects – net impacts will be lower if, as seems likely, such premises attract spending that would otherwise have taken place elsewhere in Penwith. It is also important to note that these developments have not been included in the costings for the harbour development options.

## Impacts on Harbour Businesses, St Mary's

Businesses on St Mary's Quay include:

- A hotel
- A fuel handling and storage firm
- A sailmaker
- An engineering company

Collectively these businesses provide 10-15 FTE jobs. 2 people are employed in the management of the harbour. These activities are expected to be safeguarded under each of the options.

The development option 17, is expected to provide additional space for development. This could house 1-2 retail units or winter storage and workspace for off-island boats. There would be a small additional impact on employment (maximum 5 FTE jobs).

## Impacts on Fishing Industry, St Mary's

Scilly has 32 fishing vessels, of which 2 are full time fishing boats and the others seasonal inshore boats fishing with pots for crab and lobster – which is generally seen as sustainable. Size limits restrict entry of larger fishing vessels to Scilly waters, and byelaws also prevent scalloping, which damages seabed ecosystems.

There are health and safety concerns regarding movement of fish containers from fishing boats onto the Scillonian by the ship's crane. An Objective 1 bid has been made to invest in a new chill room and ice-making facilities to assist storage and transport of fish. Other potential projects include investing in a mobile crane on the quay, and a new storage facility for pots and nets. Upgrading the quay might enable visiting boats to land fish on St Mary's for transportation to the Mainland, though there is an economic constraint in that fish transported to Newlyn in this way are treated as over-landed and receive lower prices than those landed direct.

There are also additional costs in handling etc. Some Newlyn fishermen land to have a drink at night, but do not unload catch.

Most crab is sold directly to Harvey's, crab merchants in Newlyn. There is believed to be unexploited potential to sell locally caught fish on the islands.

Fishermen face greater costs than those on the mainland – diesel costs 30p per litre compared to 17 pence per litre at Newlyn, due to the cost of shipping it to Scilly.

Though Atlantic Consultants estimated that the sector employs 20-30 people, most of these are very part time jobs, amounting to perhaps 10 FTE jobs. Atlantic estimated that the sector typically exports £2-3k per week to the Mainland, and up to £5k-6k per week at peak times.

The do-something options will help to safeguard the future of the fishing industry, by alleviating health and safety concerns and providing improved space and facilities for boats, fish handling and storage.

It is likely that 5-10 FTE jobs in fishing would be safeguarded under the “do something” options.

### 11.1.9 Summary of economic Impacts: Do Something vs Do Minimum

The net effect of the investments would be to support an additional 76-186 FTE jobs in Scilly and Penwith in 2010 and 2020, compared to the “do-minimum.” The majority of these are new jobs, though jobs in fishing, tourism and flower growing on Scilly would also be safeguarded (Table 11.7).

**Table 11.7: Net effect of “Do Something” Options on Employment (FTE)**

Type of Impact	2010	2020	2030	2039
Tourism on Scilly	41	41	42	43
Tourism in Penwith	18	18	18	18
Freight impacts	0-75	0-75	0-75	0-75
Transport employment	10	10	11	11
Cruise ships/yachts	2	2	2	2
Harbour businesses, Penzance	0-25	0-25	0-25	0-25
Harbour businesses, Scilly	0-5	0-5	0-5	0-5
Fishing, Scilly	5-10	5-10	5-10	5-10
<b>Total</b>	<b>76-186</b>	<b>76-186</b>	<b>78-188</b>	<b>79-189</b>
Of which:				
New jobs	71-101	71-101	73-103	74-104
Safeguarded jobs	5-85	5-85	5-85	5-85

The greatest impacts relate to options that involve a combined vessel and subsidised freight service.

The impact on GDP in Scilly and Penwith is estimated in Table 11.2. The “do-something” options are estimated to add between £1.9 million and £4.5 million to GDP in 2010, rising to £3.4 to £8.2 million in 2039, compared to the “do-minimum”. These estimates assume a baseline rate of growth in productivity of 2% per annum.

**Table 11.8: Net Effects of “Do Something” Options on GDP**

	2010	2020	2030	2039
Minimum	£1,852,872	£2,258,640	£2,825,724	£3,420,297
Maximum	£4,534,659	£5,527,724	£6,810,720	£8,182,735

This is equivalent to 0.3-0.7% of the combined GDP of Penwith and the Isles of Scilly. The estimated effect is unsurprisingly greatest in Scilly, raising GDP by between 4% and 9%.

### 11.1.10 Differences between Do Something Options

The differences in quantifiable economic impacts between the do something options are limited under the above analysis, based on the model findings that there are no differences in passenger numbers between the different options. In addition, none of the different options is expected to generate major additional impacts in terms of the extent of harbour development permitted.

However, despite difficulties in quantification, there are significant differences between the do-something options that could result in potentially significant economic benefits. For example, the options that enable 24 hour berthing allow increases in the numbers of sailings between Penzance and St Mary’s. This enables two sailings to be made per day if there is a demand for this, and also increases the capacity to move visitors to and from the islands when bad weather prevents air transport. While the potential impacts on visitor numbers have not been modelled, 24 hour berthing could bring significant benefits to the local economy by increasing visitor numbers.

Further benefits result from the introduction of a combined vessel, which frees up harbour space for other uses. This could be of particular benefit to the marine industries in Penzance. More importantly, a combined vessel would allow more frequent transportation of freight to and from the Isles of Scilly (on six days rather than three), bringing benefits to local businesses, and, most importantly, flower exporters. A more frequent freight service is seen as crucial to the future of flower growing on Scilly.

There are also minor differences in economic impacts between options in terms of their capacity to handle visiting yachts and cruise ships.

In summary, though variations in impact are difficult to quantify, the greatest economic impacts are expected to result from options that involve:

- 24 hour berthing; and
- A combined freight and passenger vessel.

## 11.2 Social Impacts of the Options

### 11.2.1 Introduction

The proposals have the potential to have profound social impacts, across a range of criteria. These can be broadly grouped according to:

- Direct impacts resulting from changes in transport options and harbour developments
- Indirect impacts resulting from changing travel patterns and their impact on the economy and environment.

Direct impacts result from:

- The range of **travel options** available to visitors and Scilly residents;
- The **cost of travel** to and from the islands, and its impact on Scilly residents;
- The **cost of freight transport** and its effects on Scilly residents;
- The implications of travel costs and options on the **mix of visitors** to Scilly;
- The effects of harbour developments on **access** to the quays and hence to the islands;
- The effects of harbour developments on **provision of key services** on Scilly;
- The effects in terms of access for Scilly residents to **services on the Mainland**.

Indirect impacts include:

- Effects of the economic impacts of the project on the **population** of Scilly and Penwith;
- Effects of population changes on **housing and services**;
- Effects of changing visitor numbers on the **community and environment** of the Isles of Scilly.

## 11.2.2 Travel Options

Currently residents and visitors to Scilly are able to choose from three main travel modes when moving to and from the islands, i.e. the ferry, helicopter and fixed wing services.

Under the do minimum scenario, the ferry option would be lost, and travellers would be forced to choose between fixed wing and helicopter services.

Currently, some 41,000 return trips are made to and from Scilly by sea each year, accounting for some 30% of journeys. Some 58% of these are day-trippers, 37% are staying visitors, and 5% are Scilly residents or business visitors.

Cessation of the ferry service would require passengers to make an alternative (and less favoured) choice of travel mode on these 41,000 journeys, or not to make the trip. Hyder forecasts that this will result in a 22% decline in travel between Penwith and Scilly in 2010 in the do-minimum option, compared to the do something options. 56% fewer day visits, 19% fewer business trips, 14% fewer trips by Scilly residents and 5% fewer staying visitors are forecast. There would be a 15% decline in the total number of trips between Scilly and the Mainland.

The reduction in travel options would be expected to have greatest impacts on certain groups in society, notably:

- Low income groups, by removing the lowest cost travel option;
- People who have a fear of flying (which various studies estimate to represent 7-20% of the UK population).

Furthermore, the ferry service provides an important back up to air services, especially during foggy conditions when flights are unable to operate. This has important implications in enabling residents and visitors to travel between the mainland and Scilly at these times.

## 11.2.3 Cost of Travel

Standard adult fare rates on the Scillonian are currently £32 for a day trip, £60 for a saver fare and £78 for a fully flexible fare. These compare with equivalent rates of £84 (day), £93 (saver) and £122 (flexible) on the helicopter and £75 (day), £85 (saver) and £109 (flexible) on the Skybus from Land's End.

Clearly the Scillonian is by far the lowest cost option in each case. Under current fare structures, cessation of the ferry service under the do minimum option would raise the cost of a day tip by at least 134%, a saver return by at least 42% and a flexible return by at least 40%. The Scillonian Travel Club plays a further important role in promoting low cost travel for locals.

Cost increases could be greater than this, if a reduction in competition led to higher priced airfares. Alternatively, greater economies of scale might be

expected to exert downward pressure on prices. Hyder's cost benefit analysis assumes constant prices under the different options.

These price increases are expected to have negative social implications, for example by discouraging lower income groups from visiting Scilly and making it more difficult for Scilly residents on lower incomes to travel to the Mainland. Travel to the Mainland is essential for most residents, who currently make an average of 2.5 return trips each year, for example to access essential services and to visit relatives and friends.

Scilly residents already experience financial disadvantages compared to other island communities because of the high cost of transport links. The differences in fares and costs per mile are discussed in Section Eight.

## 11.2.4 Cost of Freight Transport

The people of the Isles of Scilly are heavily dependent on the import of goods to sustain their lives, and any changes in the cost of freight transport could have substantial implications for the cost of living on the islands. For example, Council officials estimate a 20% mark-up on the cost of food compared to the Mainland, and a mark-up of at least 100% on the cost of building. The price of basic, bulky and low value commodities (including basic foodstuffs) is disproportionately affected by freight charges.

Section 11.1.6 estimated that rises in freight costs under the do-minimum scenario are likely to be equivalent to around 3% of GDP. Low-income groups, and people engaged in vulnerable economic activities such as flower growing, will be most sensitive to these changes.

## 11.2.5 Visitor Mix

The higher cost of travelling to and staying on the Isles of Scilly under the do-minimum option can be expected to alter the social mix of visitors, with less affluent visitors being more likely to stop visiting Scilly. As a result Scilly is likely to become a more exclusive holiday destination, with relatively fewer but on average more affluent visitors. At the same time, however, greater exclusivity has potentially profound impacts on the ambience, environment and culture of the islands. This is an issue of some concern, as consultations indicate that there is already a perception of considerable inequality among the population. The "do something" options, involving continued provision of a ferry service, are expected to lead to a larger numbers and a broader social profile of visitors.

The Isles of Scilly Tourism Strategy identifies the need to maintain a mix of visitors to the islands. While identifying the wealthy retired, wealthy empty nesters and couples with two incomes and no children as the primary market segment, middle incomers, less well off groups and well off families with young children form an important secondary segment. This combination of segments is deemed to offer the greatest potential for the medium term development of the Isles of Scilly tourism sector. The "do

minimum” option can be expected to affect the secondary market segment the most adversely.

### 11.2.6 Access

A key consideration is that of the ease of use of the harbours, for the population as a whole, and especially for particular groups such as the elderly, disabled and groups of schoolchildren. Key current issues are a lack of dedicated facilities for the disabled on the quays, and health and safety concerns resulting from multiple uses (by Scillonian and inter-island passengers, freight and associated services), with significant congestion at times and limited space to segregate different users, and to separate passengers from freight and vehicles.

Harbour improvements are necessary for the Penzance/St Mary’s ferry service to continue in future, but also important in enabling people to travel in safety and comfort between St Mary’s and the off-islands.

There are currently no dedicated facilities for the disabled on the quays, which can be difficult to negotiate. The ship itself is accessible however, with staff assisting passengers with disabilities up the gangway and there is a stair-lift on board between levels for wheelchair users or those whose walking distances are limited.

Assessments by Scott Wilson and Hyder compare disabled access and the provision of visitor facilities under the different harbour development options. On St Mary’s, each of the shortlisted “do something” options offers significant improvements in the provision of visitor facilities, the separation of freight and passenger services, and the separation of passengers and vehicles, compared to the “do-minimum”. However, options 1a and 1b compare poorly compared to option 17 in terms of allowing disabled access for the inter-island vessels.

All options provide improved facilities for visitors (including indoor waiting areas) and meet higher basic health and safety standards by separating passengers from freight and vehicles. The Outer Harbour option is more accessible to vehicles and involves a much shorter walk than the South Pier option, so is likely to be more accessible to the less mobile. The former also offers benefits in terms of reduced congestion, facilitating access to the emergency services.

### 11.2.7 Provision of Key Services on Scilly

As well as supporting freight and passenger services between Scilly and the Mainland, St Mary’s Harbour plays an essential role in the provision of services to the four other inhabited off islands, which have a combined population of over 500. Inter-island ferry services are crucial for access to shops, business services, education, healthcare and employment, to enable tourists to visit the off islands and to link with air and sea services to the Mainland. The quay is used by essential services such as the ambulance, and provides a facility for other emergency services (e.g. in the

event of a cargo ship sinking or passenger ship being evacuated, both of which have occurred in recent years).

Nursery education is provided on St Mary's, primary education at one federated school with locations on each of the 5 islands, and secondary education on St Mary's. There are high rates of adult learning (40%), which centres on St Mary's. A key issue relates to health and safety on the quays. Many children move between the off-islands and St Mary's for their education, including foundation stage children, primary school children attending specialist classes, secondary school and adult learners, and health and safety issues cause the Council some concern.

All of the short-listed "do something" options are expected to facilitate significant improvements in inter-island ferry services. In addition, all will improve safety on the quay by separating inter-island passengers from freight and vehicles.

## 11.2.8 Access to Services on the Mainland

Scilly residents frequently need to travel to the Mainland to access essential services, including post-16 education, and specialist health and business services.

There is no post-16 education on the Islands, and students need to travel to the Mainland. Students receive a grant from the Council towards cost of travel by Scillonian in summer and helicopter in winter, on the assumption that they travel three times per year. As the costs of education on the mainland are only part-funded, there is some concern that this causes disincentives to post 16 education and that any increase in cost could discourage this. Apart from the cost of travel (about £15 single for travel club members), the Scillonian is also convenient for students carrying a large amount of luggage.

The Combined Universities of Cornwall are exploring the concept of introducing a foundation degree on the islands.

Transport of training professionals from the mainland, and staff for training courses on the mainland, tends to take place by air because of the time costs of travel by Scillonian. Similarly specialist professionals – e.g. psychologists, social workers, solicitors, police – travelling to the islands tend to fly because of the time taken to reach Scilly by boat. A faster ferry service could be expected to provide a more viable option for professional travellers than the current service.

## 11.2.9 Indirect Impacts - Population, Housing and Development

There is concern to avoid over development on Scilly, to safeguard the quality of the environment. This concern is partly for economic reasons, because of the recognition of the importance of the environment to the islands' tourism industry. For example, the Local Plan recognises that the islands' economy relies on their unique character and environment.

The population of the Isles of Scilly increased by 7.2% in the ten years 1991-2001, with population growth on the islands exceeding that experienced in Penwith (5.7%) and in the South West region (5.1%) in this period.

This population growth has introduced new pressures on housing, in particular, which is in short supply on the islands, with new development constrained by environmental concerns. The problem is exacerbated by very high rates of second home ownership (23%). The ageing population increases the problem further, increasing the challenge of finding homes for islanders, and especially key workers. Housing is very expensive relative to local incomes, and as a result young people are forced to leave the islands. Cost and scarcity of housing means that social housing is important – there are 113 council properties, 33 housing association and further Duchy properties – out of a total housing stock of 1152 homes.

The restricted housing stock limits the available workforce on the Isles and is one factor that means the community finds it hard to retain younger families, with consequent impacts on the viability of schools and other services. The adequate supply of decent, affordable housing is seen as central to the survival of the communities, so the Local Plan seeks to maximise the use of the existing housing stock to meet their needs.

Given the cost and scarcity of housing on the Isles, there are some examples of commuting from the Mainland, though this is constrained by the cost. Though daily commuting is unlikely to occur on a large scale, the provision of a faster ferry service could play a role in helping Mainlanders to access work on Scilly.

In stimulating economic development on Scilly, all of the options must have regard for the need to avoid over-development and excessive population growth. The do-something options will help to safeguard employment and enhance GDP without introducing excessive development and population pressures. At the same time it is important to ensure that the islands make most efficient use of their existing infrastructure and housing stock.

## 11.3 Conclusions

The transport of freight and passengers by sea is of immense importance in sustaining the economy and communities of the Isles of Scilly, and also has important socio-economic benefits to Penwith.

Investing in the sea transport route is expected to bring significant additional benefits to the economy of Scilly and Penwith, with net effects of 76-141 FTE jobs and between £2.3 million and £4.2 million in GDP by 2020.

The “do something” options also have profound social benefits, especially in helping to maintain the communities of the Isles of Scilly, promoting social inclusion and enhancing access to services on the islands and the Mainland.

## 12 Summary of Appraisal and Recommendations

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### 12.1 Summary of Appraisal

The previous two sections have detailed the appraisal of the four do-something options in terms of achievement of government objectives, achievement of local and regional objectives, amelioration of problems and the wider socio-economic impacts. At the end of this section a series of sheets are attached for each option, which are:

- A one page description of the option;
- An AST for Central Government objectives;
- A summary of the achievement of local and regional objectives; and
- A summary of the impact on problems.

### 12.2 Recommendations

The four options considered all comprise investment in the sea vessels together with improvements to harbour infrastructure at Penzance and St Mary's.

There are two alternatives for the vessels presented in the options – either investing in separate passenger and freight vessels or in a combined vessel to serve both purposes. The cost benefit analysis has demonstrated that the combined vessel option is preferable, giving a higher Benefit to Cost Ratio and Net Present Value. The assessment of wider economic impacts concludes that the combined vessel would be advantageous as it would benefit island industries, particularly flower growers, by offering a freight service six days per week for eight months of the year.

The preference for the combined vessel is also matched by the stakeholders, who see the combined vessel as desirable to the separate vessel option, as it offers operational efficiencies, as well as freeing up berthing space in the harbours for other uses. In terms of other objectives of the environment, safety, integration and accessibility, there is little difference between the two vessel options. Overall therefore, it is recommended that a combined vessel would best serve the Isles of Scilly link.

Two alternatives for the associated harbour infrastructure have been presented in the options. The first includes low cost options at both harbours that improve freight and passenger interchange and prevent overtopping of the quays by waves (in options 1 and 2). The second (in options 3 and 4) is a low cost option for Penzance which also provides 24 hour berthing, together with significant investment in St Mary's harbour. The significant infrastructure at St Mary's would provide 24 hour berthing as well as optimise wider benefits for all harbour users.

The lower cost infrastructure at both harbours (included in Option 1 and 2) is the recommended way forward. The higher cost scheme (included in options 3 and 4) is negative in terms of Net Present Value and has a Benefit to Cost Ratio of below one. While it is recognised that the cost benefit analysis does not quantify the benefits of 24 hour berthing, it is considered that in terms of providing the transport link, it is difficult to justify the additional expenditure. Moreover, consultations with environmental stakeholders indicate that there are concerns with any infrastructure development, particularly at St Mary's and a strong justification will be required to develop anything other than the minimum scheme.

It is therefore recommended that the Preferred Option is Option 2, compromising the combined vessel together with the low cost schemes at both harbours.

The Next Best Option is considered to be Option 1, compromising the separate vessels with the low cost harbour schemes. This is the next best scheme in terms of the results of the cost benefit analysis and it is recognised that there are factors of deliverability that remain to be considered which may influence the Preferred Option.

A least cost option is not presented separately. The Preferred Option is also the Least Cost Option. The preferred option comprises a basic minimum threshold of investment to meet the future requirements of the link. Options with a lower cost were considered (as set out in Section Nine) but do not, in particular, address safety issues of overtopping of quay walls by waves. Consequently lower cost options are not considered to be acceptable by stakeholders.

## 12.3 Sensitivity Testing

For the preferred option with the best economic performance (i.e. Option 2), the sensitivity of its Net Present Value (NPV) has been tested with respect to the following variables:

- The percentage increase in the average ferry fare (for day trips and long-stay trips);
- The one-way ferry trip time; and
- The percentage of day-trippers who will switch mode (rather than abandon their trip to the Scillies altogether) if the ferry ceased operation.

The resultant NPV for Option 2 resulting from changes in each of these variables is shown in Figures 12.1 to 12.3.

Figure 12.1: Sensitivity to Ferry Fare Increase

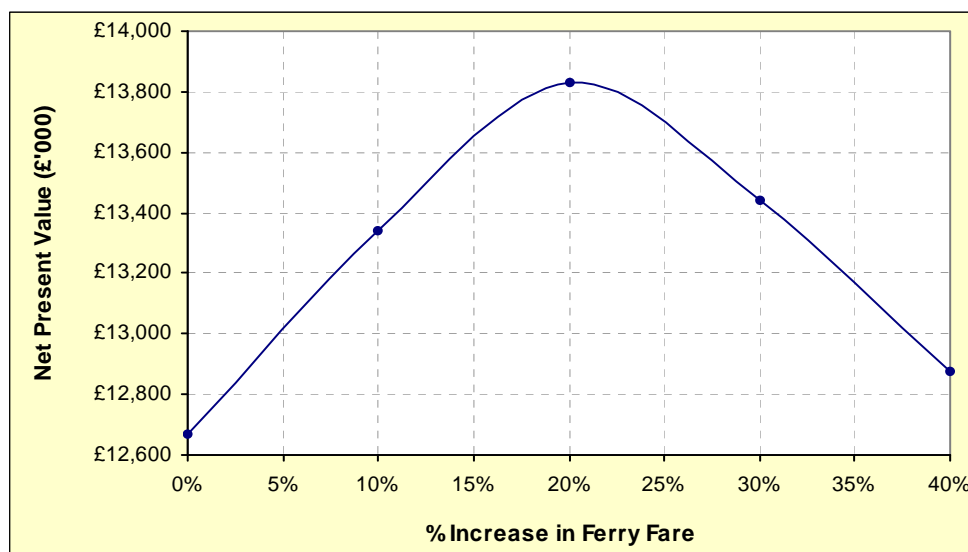
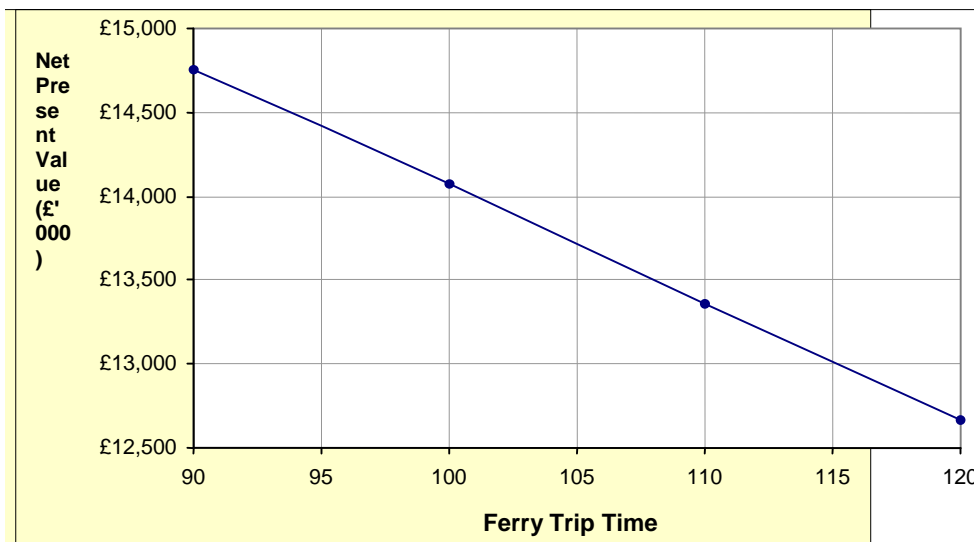


Figure 12.1 suggests that there is some scope for a modest increase in ferry fares. The modelling indicates that an increase of 20% above the current average fare would optimise the option's overall economic performance, increasing the NPV from £12.7 million to £13.8 million. It is noted that this does not necessarily represent the optimal financial performance of the ferry service, which would seek to maximise revenues net of operating costs, rather than the net community benefit.

Figure 12.2: Sensitivity to Ferry Trip Time

Figure 12.2 suggests that every 10 minutes saving in perceived journey

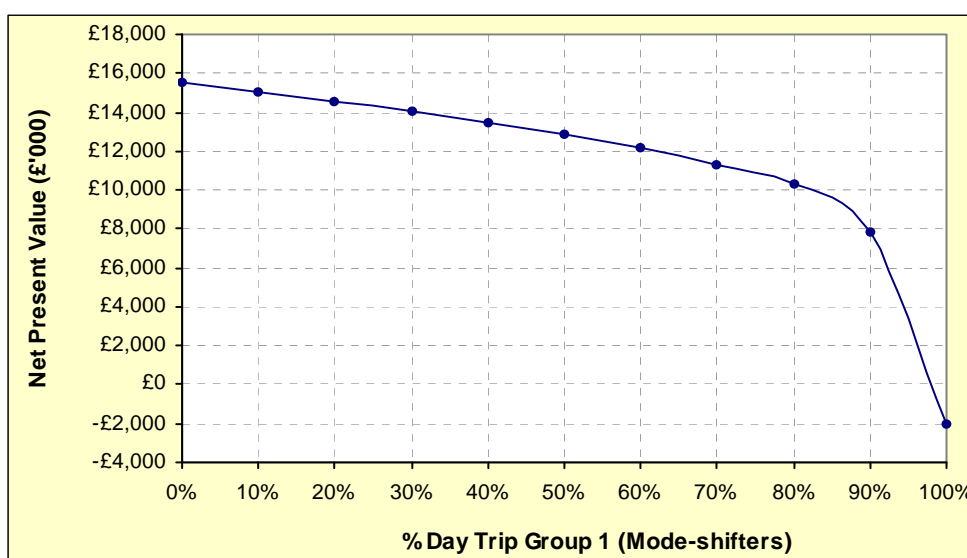


time to the islands yields a net benefit of around £0.7 million. This Figure may be useful in assessing the monetary value of otherwise non-monetised benefits. For example, if the improved comfort of the new vessel was judged to be equivalent to a perceived travel time saving of around (say) 30

minutes, then the ‘comfort factor’ could be equated to a net benefit of around £2 million.

The final figure 12.3 shows the impact of differing assumptions regarding the proportion of day-trip passengers who would simply change mode if the ferry ceased operating (rather than cease to travel to the islands). The day-trip market is seen as being the most sensitive to changes in ferry operation, and the extent to which this market will be lost (and not simply change modes) if the ferry ceases service is of particular interest. The figure indicates that the overall option economics are not unduly affected unless the proportion of mode-shifters exceeds 80%. At this point, the benefits of the ferry service tend to be heavily outweighed by the revenue losses to the competing modes, to the extent that the net benefits of the service diminish rapidly.

Figure 12.3: Sensitivity to Proportion of Day Trippers who will Change Mode



It should be emphasised as a final comment, that all of these results derive from the demand model developed for the study, which in turn has been calibrated from very limited information of travellers’ stated responses to service changes. If this lack of comprehensive stated preference data is considered critical, further, detailed survey work may be warranted to ensure the robustness of the benefit-cost analysis.

## 12.4 Risk Analysis and Optimism Bias

As agreed with the DfT, the analysis of risk and optimism bias will be undertaken following bid submission and be supplied separately as Appendix H.