A Review of Future Freight and Passenger Shipping Options for St Helena and Ascension Island

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1 Executive Summary

1.1 This review is required to provide a full range of options for freight and passenger services for both St Helena and Ascension Island, with recommendations for the most cost-effective options, and costed implementation plans for and implications of the recommended options. This Executive Summary addresses the principal objectives of the study, the assessment of traffic, and the identification and discussion of options.

1.2 The purpose of this Review is to provide a fully researched, evaluated and tested set of options to enable the St Helena Government to make an informed decision about the provision of freight shipping services (by sea and/or by air), and ship-based passenger services between St Helena and Ascension Island, following the commencement of air services - expected to commence in or shortly after 2012. This has required the identification of options for viable sea freight services for St Helena and Ascension, and a viable ship based passenger service between St Helena and Ascension.

1.3 St Helena trade demonstrates a very simple, static pattern. Annual volumes have declined slowly, and are now about 22,000 freight tons per year (excluding Ascension Island). The actual weight tonnage, including the tare weight of full and empty containers at 2 tonnes per TEU, is estimated at around 15,000 tonnes. Traffic has remained static against a background of explosive growth in world container trade, due in part to the to the island's declining and ageing population. Virtually all cargo consists of imports to St Helena, which exports very little, while cargo between the islands consists largely Saints' personal effects.

1.4 The UK accounts for about 40% of cargo in freight tonnes, but less than this in weight tonnage. South Africa accounts for the other 60%. Half of the UK traffic travels entirely on the RMS, and the other half is transhipped at Cape Town. Vehicles account for all break bulk exports from the UK, mostly travelling on the RMS. Other UK cargo is containerised. South African cargo has a higher proportion of break bulk, and is the source of lower value, heavy cargoes such as building materials and beer. These patterns have been fairly stable since 2000, although the itineraries operated by the RMS have varied.

1.5 While the airport is being built, and immediately thereafter, there will be an increase in traffic as larger quantities of consumables for the work force, building materials, and project cargo are imported. Later there will be an increase as the population is swollen by tourism and possibly imported hotel staff. After a period of higher activity, traffic should expand somewhat to serve tourism, and the long term forecast for 2028 is an increase in traffic to 30,000 freight tonnes, reducing freight rates by 30%. The main uncertainty about future volumes relates to the size and timing of these additional volumes, rather than the island's base cargo.

1.6 The capacity of a vessel likely to serve SH will be larger than freight volumes demand – because of sea keeping and safety considerations. The principal importance of volume forecasts is thus their impact on the freight rates which can provide a viable, sustainable service

1.7 On average, 1,728 Saints travel between St Helena and Ascension Island each year. The service is close to balance, with only 28 Saints using Ascension Island to fly to the UK and returning from Portland. Some Saints fly both ways, and therefore use

the RMS in both directions, but according to reports from St Helena Saints travelling to and from work on Ascension Island account for the majority of the inter-island movement. Tourists are also carried between the islands, but they are not included in these figures because it is assumed that they will take advantage of the St Helena air services.

1.8 The Visit Report defined thirteen options, which have been comparatively evaluated in order to identify practical and financially viable options for consideration by the St Helena Government. (Section 4)

1.9 Following this analysis, four different shipping services have been identified as best options. Two require the chartering of a cargo vessel for the proposed services, and the other two utilise other operators' existing services in a freight service contract (or Contract of Affreightment). The chartered vessel options have the benefit of security as the vessel is chartered for a fixed period for the defined services.

1.10 The two services utilising chartered vessels would provide separate dedicated services serving the Island communities, whereas the vessels in the service contract options would call at the islands as part of their scheduled (non-dedicated) service to other ports. It is impossible to justify a freight service just between St Helena and Ascension Island as the volume of traffic is minimal. Both dedicated services allow for cargo services to Ascension Island, but neither of the non-dedicated services can do this without incurring very large increases in costs.

1.11 Non-dedicated services were considered because they could reduce freight costs as compared with dedicated services. However, any saving has to be balanced against some uncertainty about the long term sustainability of the service as line operators may cease trading or lose interest in the St Helena cargo base.

1.12 Conventional chartering is believed to be a better option than either bareboat chartering (no crew) or the purchase of a new or second hand vessel, as it is significantly cheaper. Over a given period, and under given assumptions, chartering would generate freight rates of the order of 40% less than either bareboat charter or ownership. Chartering is cheaper than owning because no initial investment is required, charter rates available in the market do not adequately provide for capital replacement and large ship-owners can manage their fleets more cost effectively than a ship-owner with just one vessel.

1.13 The cost analyses of the two dedicated options presented here were therefore based on the assumption that chartered vessels would be used. If desired, the two dedicated routeing options could be operated using a vessel owned by SHG. This more costly alternative has not been presented here so as not to cloud the choice between routeing options, though the advantages and disadvantages of the ownership/chartering management options are discussed fully in the body of the Report. (Section 4.7)

1.14 Chartering also has other advantages. It is more flexible, so that if service demands on the vessel change over a period, a different type or size of vessel can be used. For example, a geared vessel (with crane) for Jamestown may be required early in the service period, but become expensive and unnecessary once the Rupert's Bay facility is available.

Option 1 - Contract of Affreightment - Europe Based

Route: Rotterdam – Immingham – Hamburg – Antwerp – Maputo - Richards Bay - Durban-Cape Town - Walvis Bay - St Helena – Vigo – Rotterdam

Frequency: 54 days (average)

1.15 The first option is a non dedicated vessel operating on a Contract of Affreightment service that currently operates a long haul service from Europe to South Africa. With sufficiently attractive terms agreed, the vessels on this service would call at St Helena on the northbound voyage from Cape Town to Europe. The vessels are deep sea vessels and have no constraints operating in the S Atlantic and, as they have their own cargo handling gear on board, would be suitable for discharging at anchor at Jamestown.

1.16 The specification of this service has been chosen to provide a low cost option. The low cost comes with the penalty of an inferior service quality – one chosen as being only just acceptable to Saints. As the Europe/South Africa service being used is weekly, a wide number of different ways of piggybacking on it are available, though any resulting improvements in service quality would come at significant cost.

1.17 Whilst the diversion cost of this European service provider is only an approximation, it is sufficiently attractive to warrant serious consideration as it could prove to be the most attractive financially.

Option 2 – Dedicated Service – Europe Based

Route: Portland – Cape Town – St Helena – Ascension – Portland

Frequency 55 days

1.18 The first dedicated service would be a chartered vessel service that commenced at Portland calling at Cape Town, St Helena and finally Ascension Island on the return leg to Portland. The main advantage of this option is that the cost of container transhipment through Cape Town would be eliminated, whilst a call at Ascension Island can be made northbound after the St Helena call. The UK to St Helena delivery time would be 33 days with a round trip time of 55 days. The vessel would also be able to offer a low value freight service between Cape Town and Portland to attract extra revenue and reduce costs to Saints, though this would only be possible if the operation were delegated to a professional manager, as is the existing service. AWS has consistently sought new revenue sources in order to minimise the need for subsidy but has failed because of various restrictions placed upon its operation by SHG and the very nature of passenger/cargo operation. If SHG chose to operate the service itself it would still need to employ the marketing and selling skills required, and this would very likely be less efficient.

Option 3 – Dedicated Service – Cape Town Based

Route: Cape Town – St Helena – Ascension – Cape Town

Frequency 21 days

1.19 This alternative dedicated service, though more expensive, provides double the frequency and could be preferred by some of the island traders, as it offers an arrival at Jamestown every 21 days with a round trip time of 22 days. This service would be a Cape Town to St Helena / Ascension Island shuttle.

Option 4 Contract of Affreightment – South Africa Based

Route: Cape Town - Walvis Bay – St Helena – Lobito – Luanda – Soyo – Malongo – Cape Town

Frequency: 30 days

1.20 This service is locally based (Cape Town - Angola) and operates small vessels on the service. The vessels are of a size that can safely operate in the South Atlantic and are equipped to load and discharge both containers and breakbulk cargoes with their own cargo handling gear at the Jamestown anchorage.

Summary of Options

1.21 Both of the Contract of Affreightment options are dependent on the service supplied by the line operator, as the carrier could decide to withdraw the service if it no longer suited its business plan. This can be mitigated to a certain extent by ensuring that the contract clearly specifies minimum notice times sufficient for an alternative service to be put in place.

1.22 The table below places the four options in order of indicative cost per freight ton, comparing them with the cost to Saints of the existing operation. All the estimates have been based on the lowest cost management option, which is the use of chartered vessels or existing services rather than vessel ownership. Other costs are a matter for the vessel owner, and it may be assumed that they have incorporated it in the charter rate or the cost of diversion, as appropriate.

Table 1 - Cost[1] per freight ton for each option

Service Option		Cost per Freight Ton (FT)	Frequency
	Existing operation	*$240 (£162)*	30 days
1	Europe based service contract stopping at St Helena northbound only	$175 (£118)	54 days
2	Dedicated charter vessel–Portland base	$229 (£155)	55 days
3	Dedicated charter vessel - Cape Town base	$263 (£178)	21 days
4	South Africa –Angola Base service contract	$ 385 (£260)	30 days

Source: WSP estimate
Exchange rate: Financial Times 16/01/09 1 $US = £1.48

Option advantages and disadvantages

1.23 All cost options are based on the assumption that chartered vessels or Contracts of affreightment are used. These contracts will require careful drafting to ensure that SHG objectives are met and to mitigate any risks. As the options refer to shipping services, it would also be possible for an owned ship to be used - reference is made to this management issue in the table below.

1.24 All options can be varied in some way to mitigate disadvantages, but only by increasing service cost. For instance, a low frequency can be mitigated by using a faster vessel using more fuel and at a higher charter rate. The risk of any operator wishing to withdraw from its rolling charter or COA service can be mitigated within a contract agreement. Descriptions of the options are given above and identify the key service features. These are not repeated below.

[1] Financial comparisons of the options with each other and with the RMS actuality in 2007 are made in terms of the prices paid for freight on a freight ton basis. In shipping, prices are called freight rates, or simply freight, but for convenience they are here called costs. They are costs to the buyer, and the word cost is more convenient than the phrase freight rate.

In economic terminology, the difference between cost and price is profit. The methodology used in the financial calculations of options, partly based on AWS data, implies the inclusion of profit in all cases. AWS is a private sector company and its total revenue is therefore presumed by definition to include profit. This profit appears as a 'cost' in AWS financial data sheets either as management fees or commissions to AWS.

All relevant AWS costs (that is, all costs apart from those strictly attributable to its role as shipowner's representative, such as crewing costs) have been used as appropriate in the calculations of implied freight rates for options. This has been done to ensure comparability. It is the only way in which these calculations could have been done given the nature of the data available. Transhipment costs are included where appropriate.

As the chosen option is likely to be a monopoly supplier there is a possibility that it would attempt to make excess, monopoly, profit. In this case the freight rate would be higher than cost including normal profit, and the argument of comparability would fail. For this reason we have proposed that all finances should be transparent and that SHG should monitor them, as it does with AWS at present.

The freight rate calculation for the existing service has been made by dividing freight revenue by total freight tons over the same 2007-2008 period, which by definition generates freight rate of cost to buyer. However, there is no capital replacement element in the resulting figure, so that it would appear not to be comparable with the charter rate element included in calculation of option costs. For this reason a capital element has been added, as it is assumed that charter rates do include a capital replacement element. The calculation is based on the purchase of a second-hand vessel for US$6 million with a seven year payback.

Table 2 - Advantages and disadvantages of each Option

Option 1 (Europe based service contract northbound only) Rotterdam – Immingham – Hamburg – Antwerp – Maputo - Richards Bay - Durban-Cape Town - Walvis Bay - St Helena – Vigo – Rotterdam Frequency 54 days Cost to customer $175 / freight ton		**Option 2** (Dedicated charter vessel–Portland base) Portland – Cape Town – St Helena – Ascension – Portland Frequency 55 days Cost to customer $229 / freight ton		**Option 3** (Dedicated charter vessel - Cape Town base) Cape Town – St Helena – Ascension – Cape Town Frequency 21 days Cost to customer $263 / freight ton		**Option 4** (South Africa –Angola Base service contract) Cape Town - Walvis Bay – St Helena – Namibia – Lobito – Luanda – Soyo – Malongo – Cape Town Transit time UK – St Helena - 30 days Cape Town – St Helena – 5 days Cost to customer $385 / freight ton	
Pro	**Con**	**Pro**	**Con**	**Pro**	**Con**	**Pro**	**Con**
General features							
No transhipment of UK cargo in Cape Town required	Low frequency Irregular service	Possible additional revenue from other trades	Low frequency	High frequency	Requires transhipment of UK cargo in CT	Medium frequency	Irregular service
Particular efficiencies associated with major niche container carrier	No certainty that option exists – there is a risk that carrier may decline to bid, This risk can neither be quantified nor mitigated.	Maximises volume and distance carried	Empty containers returning to Cape Town must go via UK	Ascension Island call		Particular efficiencies associated with secondary level operator Low risk that carrier may decline to bid, which cannot be mitigated.	Requires transhipment of UK cargo in Cape Town
Range of subsidiary options at added cost	No Ascension Island call	No transhipment of UK cargo in Cape Town required		Could use proposed Rupert's Bay berth			No Ascension Island call
	Could not use proposed Rupert's Bay berth	Ascension Island call					Probably could not use proposed Rupert's Bay berth
	SHG cannot impose crew preferences	Could use proposed Rupert's Bay berth					SHG cannot impose crew preferences
	Empty containers returning to Cape Town must go via UK	Good vessel utilisation					
	Service operated by only one provider (MACS)						Service operated by only one provider (Angola South Line)
Implications for consumers							
Options with higher freight rates result in higher prices and the payment of higher customs duties. Consumers will eventually have to pay for higher stocks associated with low frequency options, but this effect is small. There are no other risks specifically for consumers							
Implications for business							
	Higher stockholding costs		Higher stockholding costs	Lower stockholding costs		Medium stockholding costs	
				Risk of waste – this risk is significant for a very small trade sector, but can be mitigated by modifying option at significantly increased cost, or by importing time-sensitive cargoes entirely from South Africa		Low risk of waste – same as RMS	
Implications for government							
No own/charter decision required	Greater uncertainty, less control by SHG. Risk can be mitigated in terms of contract	If owned, absolute control by SHG	Own/charter decision required	If owned, absolute control by SHG	Own/charter decision required	No own/charter decision required	Greater uncertainty, less control by SHG. Risk can be mitigated in terms of contract
		If chartered, high degree of control by SHG	Minor risk of decreased certainty associated with charter, but can be mitigated in terms of contract	If chartered, high degree of control by SHG	Minor risk of decreased certainty associated with charter, but can be mitigated in terms of contract		
Higher revenue from import duties result from higher freight rates because most imports are on CIF (cost, insurance, freight) terms							
The first decision required of SHG will be whether it wishes to own a vessel in its own right, requiring significant work identifying and purchasing a vessel, and employing the necessary management staff and ship's crew. This option – together with the chartering option- gives a greater level of security of service. If it is decided to use a chartered vessel, there is the further decision of which route is to be selected. If the Cape Town – St Helena route is selected then a part time line manager will suffice, but because the Portland option offers additional freight carrying capacity, there will be a requirement for a marketing input to maximise additional potential earnings. In both cases a third-part operator could be employed as a subcontractor, but a shipping manager would still be required for liaison. This is close to the way in which the current service is handled through SHL and AWS. Owning or directly chartering a vessel precludes the possibility of using non-dedicated services, by definition. Alternatively, the decision may be to rely on the open market and approach the international shipping industry to tender for the service required. For this operation SHG will need to accurately specify the terms of an agreement and set out a tender on which potential operators can bid, and finally select and negotiate with a favoured supplier. For this it will require professional advice, and to employ one shipping manager for liaison. It does not seem necessary that SHG preselect a shipping option for this choice, as the market will have its own views of the optimum solution meeting the objectives of the tender document.							
Timing of Options							
Negotiations for this option should not take more than six to nine months to complete. However, as there is a likelihood of the line restructuring it's fleet, this may take longer depending on restructuring progress		The purchase of a new vessel will require a lead time of approximately 2 years for design and construction, prior to entering service. A second hand vessel should not take more than six to nine months to locate, survey and purchase. A period of about six to nine months should be allowed for negotiations with a vessel owner to enter into an agreement to charter a specific vessel		The purchase of a new vessel will require a lead time of approximately 2 years for design and construction, prior to entering service. A second hand vessel should not take more than six to nine months to locate, survey and purchase. A period of about six to nine months should be allowed for negotiations with a vessel owner to enter into an agreement to charter a specific vessel.		Negotiations for this option should not take more than six to nine months to complete.	

Source – WSP

1.25 Lighterage is used at both St Helena and Ascension Island, and it costs over twice as much as stevedoring at all other ports called by the RMS. Lighterage at St Helena is estimated to have cost £420,000 ($840,000) in FY 2007-2008. This is $38 per freight ton. Options which allow berthing at the new facility at Rupert's Bay, if its characteristics are as proposed by Atkins - that is, the two dedicated options - would benefit significantly from this reduction in costs.

Table 2 - Cost difference (in $ / FT) with and without St Helena lighterage

	With lighterage	Without lighterage
Dedicated charter vessel–Portland base	$229	$191
Dedicated charter vessel - Cape Town base	$263	$225

Source: WSP estimate based on AWS data

1.26 One of the other options considered requires special mention - the use of the MOD FIRS vessel to Ascension Island for UK cargo, transhipping to the dedicated service linking Cape Town with St Helena and Ascension Island. A key difference of this option is that containers are transhipped at Ascension Island instead of Cape Town, which still needs to be called for South African traffic.

1.27 On examination, this option was rejected because transhipping at Ascension Island instead of Cape Town is significantly more expensive. Operational logistics would be difficult and uncertain, and the service quality would be significantly degraded.

1.28 It is useful for SHG to understand what the service options are, and how they might relate to each other in terms of the freight rate to Saints. However, unless SHG intends to provide a service with its own vessel, it does not need to decide which service provides the optimum price/quality mix. When the time for replacement approaches it should approach possible operators, some of whom are identified in this report, to make offers for the licence to operate the St Helena trade, including in its approach any parameters it considers essential. Section 7.1.10 indicates the lead time required for each option to implement these options (Table 33).

1.29 A passenger service between the islands is impossible to justify at current prices. The cost of providing any service is so high that fares would rise tenfold compared to the current situation. The best vessel and service options are:

- Chartering a small cargo vessel limited to 12 passengers. Two vessels would probably be required to meet current demand levels. The one way passenger fare would need to rise from a minimum of £270 (for Saints) to £1,175, but this would be the same for one vessel. No commercial operator would put on this service because of the substantial doubt that the required passenger numbers would be achieved. A commercial operator will require an SHG guarantee to cover any shortfall.

- Chartering a small passenger cruise liner operating three round trips, 4 times each year, with capacity for 110 passengers each way, would accommodate 1,320 passengers in each direction, i.e. a total capacity for 2,640 passengers annually – almost identical to the 2,642 passengers (including tourists) currently using the service. Full both ways, the fare on this service would be a minimum of £330, compared with the current

budget economy fare of £270. It would be extremely difficult to organise a service consisting of a series of trip charters, given the way these vessels are normally deployed, and substantial positioning costs would raise prices considerably.

Table 3 - Advantages and disadvantages of cargo and passenger vessels.

Cargo Vessel		*Passenger vessel*	
Advantages	**Disadvantages**	**Advantages**	**Disadvantages**
▪ Regular weekly service between islands ▪ Offers sufficient passage for present levels of passenger traffic ▪ No capital cost if chartered ▪ Minimum crewing required (if owned)	▪ No capability for peaks in traffic flow ▪ Basic no frills service ▪ Difficulty in identifying vessel ▪ May require standby vessel	▪ Cheaper than cargo vessel ▪ Better quality accommodation ▪ Could possibly offer faster service speed ▪ Offers sufficient passage for present levels of passenger traffic	▪ No regular service- only available 4 times each year ▪ Difficult to locate vessel when required ▪ Could have high positioning costs

Source: WSP

1.30 The possibility of using a fast catamaran or offshore crew boat were examined, but due to the distance between the islands these options would require a stand by vessel stationed at each end of the route for support or rescue duties, and as such are not feasible.

Implications for the various entities on St Helena and Ascension Islands

1.31 Depending on the decision taken by SHG regarding which option is chosen, the implications to the islands are varied (see Section 7). The individual consumers are less likely to be affected on a day–to-day basis other than the loss of the present regular sea service to Ascension. The goods available in the various stores will still – for the most part – be available, but at increased cost. The ability to travel easily between the islands by sea will be severely curtailed at best, or eliminated completely, thus affecting employment opportunities in Ascension and the Falklands unless the employers on these islands assist with the air travel costs.

1.32 Island traders on St Helena may benefit from a more frequent service (depending on the option selected by SHG) which will influence their ordering patterns, cash flow and stockholdings. The more regular and frequent the service, the greater the cost. Conversely, less frequent services will require that the traders maintain higher stock levels (and thus have more capital invested in stock), but the overall shipping costs will be less. Services from Cape Town to Ascension can only be undertaken by a long term charter operation as the alternative services would not divert to Ascension for the volume of traffic involved on that route.

1.33 The St Helena Government will be obliged to decide whether to act in its own right (or as SHL) as the vessel charterer (or the principal in a COA), or whether to devolve that responsibility to another company, co-operative or individual. Whichever entity takes on this responsibility, SHG will be required to act as the source of funds of last resort, as that entity will not initially have any track record in

the shipping industry and therefore a guarantor for the funds will be necessary. A line manager will have to be appointed to act as the interface between the carrier and the selected organisation to ensure that the chosen service option is undertaken effectively and efficiently. This line manager can be located anywhere, but it would appear more logical that Cape Town should be chosen as the operations centre as it is convenient to a large number of freight shippers and shipping activity.

2 Study Setting

2.1 The Present Situation

2.1.1 This Review is an assessment of the current situation regarding the transport of cargo to and from the islands of St Helena and Ascension. At the point after which the new airport is operational, all freight requirements will be met from either air or sea cargo transportation. Although the prime requirement of this document is to review the freight requirements for both islands, also included is a requirement to assess the transfer of passengers between St Helena and Ascension should air access to the latter island not be possible. In the interim period between the present date and the opening of the airfield, there will undoubtedly be an increase in the volume of freight required to be carried to St Helena. This review will also assess this potential increase and examine the carrying requirements to accommodate the potential increase.

2.1.2 At present, all freight services to St Helena, and a proportion of services to Ascension Island, are provided by the RMS St Helena (the RMS). Ascension benefits from an additional sea freight service from the UK by a vessel chartered by the MOD to supply the Falkland Islands and which calls at Ascension *en route* to the Falklands. There is also a limited airfreight service available via the RAF chartered aircraft that refuels at Wideawake airfield, en route to the Falklands. This airfreight service can also be used for fast transit of freight to St Helena, and if the scheduling of both the RAF flight and the ship coincide, goods can be received in St Helena within 4 days of leaving the UK.

2.1.3 The type of freight carried to both destinations by the RMS includes containers and break-bulk cargo of all types, with the exception of the bulk liquid fuel, although this has been carried by the RMS from time to time, either in bulk or in ISO tank containers on deck. The ship has a capacity for 92 containers including 16 reefer (or temperature controlled) units. There is capacity for about 2,000 tonnes of uncontainerised freight (depending on stowage factor) and the ship has two cranes each of 12.5 tonnes capacity that are coupled together in “Gemini” fashion to give a capacity of 25.0 tonnes for handling containers. There are two hatches and two holds each with a single ‘tweendeck giving stowage for general cargo.

2.1.4 The pattern of the freight service is not a simple and regular process, as the RMS undertakes a number of different configurations to the basic service to St Helena. In addition to the calls at St Helena and Ascension, the vessel calls from time to time at Walvis Bay, and on two occasions each year makes a voyage to the Port of Portland in the UK calling at the island of Tenerife (a refuelling stop). The RMS has also, on occasions, called at Vigo in Spain. The voyage routing that the vessel follows is based primarily on the passenger demand, which has an overriding priority on the freight service, and therefore to a certain extent the freight requirements of the service take second place. This is understandable as the requirements of passengers arriving from, and departing to, a wide range of destinations in Africa and Europe can be very dependent on flight connections that may not be easily rearranged at short notice.

2.1.5 Without undergoing a major refit, the vessel is drawing near to the end of her serviceable life and, as a result, service reliability has suffered further from unscheduled delays due to mechanical or other problems that interfere with good timekeeping. When the service is delayed for whatever reason, the port that is most

frequently affected is Walvis Bay, as bypassing this stopover generally makes it possible for the ship to recover lost time, enabling the vessel to return to the original schedule. Unfortunately, this has not given the service from Walvis Bay to St Helena any record of reliability for traders in that port wishing to trade with the St Helena.

2.1.6 The service interval for Jamestown when the vessel is operating in the S Atlantic service is approximately 14-16 days but this will vary if the vessel is calling at Walvis Bay, when the interval can be increased by two days. On the two occasions each year when the ship leaves the S Atlantic and returns to the UK the interval can be as much as 34 days.

2.1.7 The various fuels required on the island are delivered to the tank storage farm in Rupert's Bay in St Helena by a specially chartered tanker that makes a delivery to the island every three months. Ascension receives its fuel from two separate tankers, one of which discharges into the BBC tank storage farm and the other supplies the RAF Storage facility. The BBC fuel is used to supply the island's power station and also to supply the island's only service station. The RAF facility supplies the fuel for all the military requirements on the island, (both RAF and USAF).

2.1.8 The MOD freight service operates out of the military port at Marchwood on Southampton Water and is scheduled to arrive in East Cove, Falkland Islands every 35 days. The route taken by the vessel is Marchwood, Ascension, East Cove, Rio de Janeiro (for bunkers), before returning to Marchwood. Either on the outbound or homeward leg, the vessel may call at Gibraltar if the price of bunkers is more advantageous at that port instead of Rio de Janeiro. As the actual voyage time is 53-54 days on average it is necessary to employ two vessels on the service. There is therefore some considerable flexibility in the schedule.

2.1.9 Freight Services – St Helena

2.1.10 The RMS generally carries only 3-4 containers and less than 100 tonnes of freight to Ascension on each voyage from the South Atlantic. This freight volume will not justify the cost of a small freight vessel simply to provide this service except at higher freight rates. The basic daily charter cost of a small freight ship is approximately US $55,500 plus fuel and port costs, and an indicative voyage cost for a small vessel on the round trip from St Helena to Ascension of 1400 miles at 11 knots is given below. Prices would therefore need to be increased by over three times to sustain the service Additional costs would include fuel and port costs. The revenue generated on this sector would be very limited as a full line owned container will only generate US $ 1450 for the voyage.

Table 4 - Indicative Freight costs: St Helena – Ascension Island

Description of costs incurred	Unit Cost	# of Units	Total Cost
COSTS			
Charter Rates of small cargo vessel			
Rates for days at sea (1400 miles @11 kt)	5,500	5.3	$29,150
Rates for days in port	5,500	2	$11,000
Fuel			
Cost of fuel (MGO) at sea @ 7.5 tons/day usage	8,250	5.3	$43,725
Cost of fuel (MGO) in port @ 1 ton /day usage	1,100	2	$2,200
Port Costs			
Port costs St Helena (Dues & Cargo handling)	3,053	1	$3,053
Port costs Ascension (Dues & Cargo handling)	8,380	1	$8,380
Total Costs			**$97,508**
REVENUES			
Freight			
3 line containers Cape Town- Ascension	1,450	3	$4,350
1 line container St Helena – Ascension	1,450	1	$1,450
Tonnes freight @ average w/m	240	100	$24,000
Total Revenue			**$29,800**
Deficit			**-$67,708**

Source: AWS *estimate*

2.2 Types of Cargo

Containers

2.2.1 The present service operated to both St Helena and Ascension by the RMS carries mainly 20 ft (6m) containers. Containers complying with the ISO standard for containers are mainly 40’ or 20’ long, 8’6” high and 8’ ft wide. Although the ship is fitted for, and can lift, 40 ft units this is not done for a variety of reasons. The prime reason is that with the ship rolling at the anchorages, the control of these containers is extremely difficult when they are swung out over the ship’s side and could be dangerous, possibly resulting in injury to the stevedores and possible damage to the ship. In some instances, 40 ft units can be loaded to 32 tonnes gross, and therefore cannot be lifted by the ship’s cranes at that weight. In addition, the self propelled lighters at Jamestown are not large enough to carry them safely. It is understood that the US Navy landing craft on loan to the island is capable of carrying 40 ft units. However, 40ft containers can reduce the overall cost of freight as the handling rates at ports are generally less than twice the cost of a 20ft unit. For example the UK Terminal Handling Charge (THC) for a container being shipped to South Africa is US $ $90 for a 20 ft unit whereas a 40 ft unit is US$ 110. The sea freight is calculated by TEU (Twenty Foot Equivalent Unit) and is US $ $1,100 per TEU, so that the sea freight for a 40ft unit will cost twice as much as a 20ft unit. About 12 years ago some container lines would offer a sea freight rate of two times the TEU rate less US $ 100 (approx) per container but this is no longer the case on most services.

Fig 3 - Containers aboard barge Jamestown

2.2.2 The present practice is to limit the maximum weight of any container to 21 tonnes gross. Although 20 ft units can generally be loaded to 25 tonnes gross, the restriction in gross weight is again for safety reasons. The individual cranes on board the RMS each have a safe working load of 12.5 tonnes, and when operated in twin or "Gemini" role this is increased to 25 tonnes. In the event of an overloaded container being unknowingly presented to the vessel for shipment this could endanger either ship or crew.

2.2.3 The majority of the containers in operation on the route are general purpose or "GP" units, with a smaller number of refrigerated or "reefer" containers for temperature controlled commodities. There also a number of half height (i.e. 4' 0") units and a very small number of half-length units (10' x 8'6 x 8'). These units are generally utilised for specific cargoes, e.g. half heights for cooking gas cylinders. The ship is fitted with sufficient special electrical connection points for 16 temperature controlled containers.

2.2.4 Containers are discharged by the ship's crane using four separate lifting chains with a hook at each end that engages the container corner casting. This is not an accepted practice in large scale container handling operations, as containers are not stressed for lifting in this manner. A standard container lifting frame would normally be used, but in the unusual circumstances that the containers are handled at the anchorage the lifting frame could pose a greater hazard to the operatives than the risk of the container being damaged. The weight of the frame must also be included in the payload of the crane and this reduces the gross weight of the container that can be lifted without exceeding the safe working load of the crane.

Break Bulk Cargo

2.2.5 The term 'break bulk' covers all cargoes that are not shipped in bulk (such as petroleum, coal, grain iron ore, etc): are not semi bulks (piece cargo in high volume, such as steel, timber or cars): and are not unitised (in containers or trailers). Any of the named commodities *not* being shipped as a bulk cargo would also be categorised as break bulk.

2.2.6 The most common break bulk commodity carried by the RMS from the UK is the large number of unpacked cars. This may be up to 60 vehicles on the southbound voyage. Other goods in significant volumes include cement (in big bags), timber, and various palletised goods such as drums of lubricating oil. Personal effects are

occasionally shipped in this manner, although if packed in a container at extra cost, they are better protected from damage

2.2.7 On occasions, domestic animals are carried and there is a special animal locker under the fo'c'sle of the RMS for the larger beasts.

2.2.8 Various quantities of hazardous goods (acceptable under the IMDG Code for carriage on passenger vessels) are stowed according to the requirements of these Regulations.

3 Freight Service Demand

3.1 Introduction

3.1.1 St. Helena's main income is from the export of fish, coffee and handicrafts. St. Helena coffee is of very high quality but the production is quite small. Less than one-third of the island is suitable for farming or forestry. Principal crops are corn (maize), potatoes, and green vegetables, and some sheep, goats, cattle, and pigs are raised. There are no minerals and virtually no industry, but some locally grown timber is used for construction purposes. Fish, primarily tuna, is caught in the waters around St. Helena; some is frozen at a cold-storage facility in the vicinity, and the remainder is canned and sold on the island. About two-thirds of the island's budget is provided by the United Kingdom in the form of a subsidy; the remainder is raised from the sale of postage stamps and from customs duties and wharf fees.

3.2 Traffic Volume

3.2.1 Summary cost and revenue information on the operation of RMS St Helena and traffic tonnage figures are available for over five years. Data is not presented consistently and it has been a major task to simplify the material available. Some data is presented in terms of years, either calendar or financial, while other data is presented in voyage terms. One period, 2008-2009, is a budget forecast. The level of freight demand has shown a general downward trend of approximately 10% over the past 45 voyages, which is probably in line with the depopulation of the island over the period. On a voyage by voyage basis, the freight levels vary considerably. Over the past three years the actual tonnage has remained virtually unchanged with only minor fluctuations that may have been the result of various projects on the island.

3.2.2 It has however been possible to extract data relating only to St Helena, and to exclude Ascension Island and trades not involving the islands, because of the availability of data presented in terms of voyage legs. The only major change in the way the shipping operation has been carried out over the period accounted for by AWS has involved variations in vessel scheduling and port calls, as AWS tried various stratagems to increase traffic, and to focus the service. Otherwise the essentials of the service have remained the same. These are that all UK traffic, apart from vehicles, is containerised, with some containers carried from Portland to the islands directly and others carried from Tilbury or Immingham, or sometimes European ports, to Cape Town for transhipment onto the RMS for the final leg. South African traffic with St Helena in containers or break bulk is also carried on this leg. The same pattern goes for the return traffic, but empty leased containers would off-hire in Cape Town.

3.2.3 Imports consist of food, beverages, tobacco, fuel oils, animal feed, building materials, motor vehicles and parts, and machinery and parts. The only St Helena export traffic of note is fish, exported in reefer containers which are now transhipped at Cape Town. The small fishing vessels engaged in this are approximately 20 ft in length but operate at up to 20 miles offshore. There are no large offshore fishing vessels currently operating from St Helena. Virtually the entire output of the fishing industry is exported. Also included are returning containers, which are only included in revenue statistics if they are revenue earning, that is, they are privately owned containers. By

far the majority of containers operated are either owned by AWS or leased: these are only recognised in the databases when carrying cargo.

3.2.4 More information on the commodity make-up is included in section 3.3 below.

3.2.5 Freight data is measured in freight tons (FT). To ensure there is an equitable comparison for freight charges between heavy cargoes (i.e. lead) and light cargoes (i.e. light bulbs) freight rates are calculated either as deadweight or cubic cargo. The traditional comparator used to be 40 cubic feet of a light commodity to be equal to one deadweight ton of 2,240 pounds, and the higher rate being that used to calculate the freight rate for that specific commodity. With decimalisation, the comparator now used is that one cubic metre of cargo is equivalent to one tonne (i.e.1,000 kg) deadweight. Cars, for example, are a cube cargo and the freight rate is measured as approximately 11 freight tons, or cubic metres on average, as they actually weigh an average of about 1.5 tonnes. Containers are counted as 'weighing' 25 freight tons (deadweight 2.0 tonnes) whether they are full or empty. This accounts for much of St Helena's apparent exports.

3.2.6 Each year identified represents a number of days covering a complete number of voyages so that data is annualised when appropriate. Collapsing and simplifying the data reveals a very simple, static pattern. Annual traffic is declining slowly, as is the island's population, and is now about 22,000 freight tons per year.

3.2.7 Table 5 below is expected to conclude at a slightly higher level than FY 2007 - 2008 due to the addition of unusual project cargo. The figure shown represents the budget figure for financial year 2008-2009. The TEU equivalent is also shown, as most cargo is containerised, at the assumed 25 tons per TEU. The real weight, including the tare weight of full and empty containers at 2 tonnes per TEU, is probably about 15,000 tonnes of actual cargo.

3.2.8 Traffic has remained static against a background of explosive growth in world container trade. This may be accounted for by the fact that the island's population is ageing and declining: imports per head are likely to have increased slowly in actuality, but this cannot be proved. On 21 May 2002 the British Overseas Territories Act 2002 granted citizens of Saint Helena and its Dependencies access to full British citizenship. Largely as a result, the population of the island fell from the 1987 census figure of 5,644 to less than four thousand currently. The population had been falling anyway: the UN estimated its population in 2008 at 5,157. Since trade largely consist of consumer goods and food, population is the main determinant of trade volume. In 2003-2004, traffic (measured in revenue terms) fell by 18%.

Table 5 - St Helena traffic, excluding Ascension Island, per financial year

Financial year	2004/5	2005/6	2006/7	2007/8	2008/9
Freight tons/day	66	68	61	61	67
Freight tons/year	23,260	23,840	21,400	21,350	23,490
TEU equivalent/year	930	953	856	854	939

Source: AWS Statistics

3.3 Commodities traded and the St Helena supply chain

Major commodities

3.3.1 International trade data available from Her Majesty's Revenue and Customs (HMRC) has been used for the following analysis, and covers trade between the UK and St Helena. International trade data available from St Helena is available only at one-digit level, which does not give as good an impression of the goods traded. The detail of commodities carried is not a serious issue, as the general knowledge that most goods are containerised, and that cars are sourced in the UK and basic building materials such as cement from South Africa, is sufficient to define a service and appropriate vessel.

Table 6 - UK exports to St Helena: major commodities by value

HS	Definition	£000
85	Electrical machinery	9,676
87	Other vehicles	1,145
68	Articles of stone, plaster, cement, etc	965
90	Optical and photographic equipment	748
27	Mineral fuels	740
84	Non-electrical machinery	569
73	Iron and steel articles	414
94	Furniture, lighting, and bedding	226
39	Plastics and articles	183
30	Pharmaceuticals	166
44	Wood and manufactures	154
02	Meat and offal	141
19	Cereal products	125
61	Knitted or crocheted clothing	108
32	Colours and dyes	106
04	Dairy produce, honey	100
29	Organic chemicals	90
22	Beverages	82
24	Tobacco	81
48	Paper and paperboard	76
	Others	850
	TOTAL	**16,744**

Source: HMRC

3.3.2 The UK exported £16.7 million worth of goods to St Helena in 2005, with a total weight of 6,800 tonnes, of which one third was mineral fuel and therefore not carried by RMS. In freight tonnes the UK accounted for about 40% of St Helena trade: the figures suggest that it accounts for a somewhat smaller proportion in weight tonnes. The main weight cargo was building materials, with vehicles second – these two commodities accounted for 46% of UK exports once fuels are removed.

3.3.3 Meat and offal, and dairy produce are both major commodities by weight and value. Significant proportions of these commodities require chilling or freezing and are perishable cargoes. Perishable are discussed further below.

Table 7 - UK exports to St Helena: major commodities by weight

HS	Definition	Tonnes
27	Mineral fuels	2,672
68	Articles of stone, plaster, cement, etc	1,360
87	Other vehicles	536
90	Optical and photographic equipment	233
25	Salt, sulphur, earths, stone, plaster, cement	231
85	Electrical machinery	197
84	Non-electrical machinery	168
44	Wood and manufactures	146
73	Iron and steel articles	138
22	Beverages	121
02	Meat and offal	83
76	Aluminium and articles	80
19	Cereal products	75
04	Dairy produce, honey	73
20	Fruit and vegetable products	70
34	Surfactants, waxes, polishes	65
39	Plastics and articles	60
94	Furniture, lighting, and bedding	60
32	Colours and dyes	59
38	Miscellaneous chemical products	51
	Others	336
	TOTAL	**6,814**

Source: HMRC

3.3.4 UK imports from St Helena are very small: 77 tonnes valued at £874,000. Machinery and clothing dominate by weight.

Table 8 - UK imports from St Helena: major commodities by value

HS	Definition	£000
62	Other clothing	245
90	Optical and photographic equipment	175
84	Non-electrical machinery	149
71	Pearls	80
61	Knitted or crocheted clothing	75
85	Electrical machinery	45
83	Misc base metal articles	19
42	Leather goods	14
28	Inorganic chemicals	13
59	Industrial fabrics	13
69	Ceramics	8
98	Other products	7
32	Colours and dyes	6
48	Paper and paperboard	6
65	Headgear	4
58	Woven fabrics	3

Source: HMRC

Table 9 - UK imports from St Helena: major commodities by value (continued)

87	Other vehicles	3
64	Footwear	3
76	Aluminium and articles	2
52	Cotton	1
	Others	3
	TOTAL	**874**

Source: HMRC

Table 10 - UK imports from St Helena: major commodities by weight

HS	Definition	Tonnes
84	Non-electrical machinery	27
62	Other clothing	23
59	Industrial fabrics	7
83	Misc base metal articles	5
61	Knitted or crocheted clothing	3
85	Electrical machinery	2
42	Leather goods	2
90	Optical and photographic equipment	1
69	Ceramics	1
64	Footwear	1
71	Pearls	1
48	Paper and paperboard	1
28	Inorganic chemicals	1
76	Aluminium and articles	1
58	Woven fabrics	0
65	Headgear	0
94	Furniture, lighting, and bedding	0
52	Cotton	0
44	Wood and manufactures	0
87	Other vehicles	0
	Others	0
	TOTAL	**77**

Source: HMRC

Perishable commodities and sell-by dates

3.3.5 The term "perishable commodities" is generally used to identify a particular freight or commodity to which the term is obviously applicable in the context of a particular trade. In general, perishable commodities include goods subject to decay or deterioration over shipment time, or if exposed to adverse temperature, humidity or other environmental conditions. This customary definition includes all goods with a sell-by date, as beyond the sell-by date these goods are assumed to have deteriorated, but only insofar as the deterioration takes place within the relevant time period, including a reasonable shelf life. This might be four months.

3.3.6 In practice non-food items, and many food items such as honey or canned goods, have sell-by dates well beyond four months, so that their inclusion as perishables is not applicable in a logistics context.

3.3.7 Although perishables may be defined to include newspapers and high fashion goods these too are hardly relevant, and perishable commodities in the context of St Helena trade really applies to the main group of commodities that require refrigeration in transport, such as chilled or frozen meat and fish, dairy products, flowers, and some fruits, fresh vegetables, and pharmaceuticals. Meat and fish are mostly hard frozen, while chilled commodities include goods such as milk, yogurt, cheese, lettuce, tomatoes, and cucumbers.

3.3.8 Identifying the perishable element within trade statistics requires examination of commodities at a higher than two-digit level and would therefore require more detailed analysis. At a two digit level commodity HS 04: *dairy produce; birds' eggs; natural honey etc*: includes clearly perishable dairy produce and dry freight honey in jars. Nevertheless, all commodities possibly requiring refrigeration are shown in the Table below. It will be clear that dry freight predominates.

Table 11 - UK exports to St Helena 2005

	Commodity at 2 digit HS (Harmonised system)	£000	Tonnes
02	Meat and edible meat offal	141	83
04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	100	73
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	16	25
16	Preparations of meat, fish or crustaceans, molluscs or other aquatic invertebrates	63	30
17	Sugars and sugar confectionery	11	4
18	Cocoa and cocoa preparations	38	14
19	Preparations of cereals, flour, starch or milk; pastrycooks' products	125	75
20	Preparations of vegetables, fruit, nuts or other parts of plants	66	70
21	Miscellaneous edible preparations	50	36
30	Pharmaceutical products	166	7
	TOTAL	**776**	**417**

Source: HMRC

3.3.9 Probably, however, the chilled or frozen element of this trade amounts to 150-200 tonnes, worth £400-500,000, some 2-3% of both the weight and value of relevant total trade. Much of this is frozen rather than chilled. Although frozen cargo is perishable, as it would deteriorate at ambient temperature, it is not in the same league as chilled products, which degrade rapidly. It is mostly kept frozen continuously from the point of freezing to the point of sale and, indeed, beyond.

3.3.10 The UK has only a 40% share of the St Helena market in terms of freight tons, and clearly the most critical chilled products must be shipped from South Africa because of the much shorter transit time. South African trade statistics have not been examined to confirm this, but, as it is known from interviews that South African traffic is dominated by lower value commodities that could not bear the cost of shipping from the UK, while perishables tend towards higher values. It thus seems unlikely that the proportion of time-sensitive products shown would be significantly larger if all trade were considered.

3.3.11 The major potentially perishable food groups exported by South Africa rather than the UK are fruit and vegetables, such as apples and oranges. Although these commodities are shipped to the UK in refrigerated containers the transit time to St Helena is low enough for this to be unnecessary, so that in the St Helena context they are not classified as perishables. Vegetables such as potatoes and onions are also carried as dry freight.

3.3.12 Chilled products are high-cube: that is, each container carries a much lower tonnage of cargo than average. Consequently, the proportion of total cargo measured by volume is higher. This is demonstrated by the fact that on a typical voyage from Cape Town the RMS carries six loaded refrigerated containers out of 62 total units, or 12%. On average, three of these containers return from St Helena to Cape Town loaded with frozen fish.

St Helena supply chain

3.3.13 Island shops buy from wholesalers or other retailers, with Tesco being the principal single supplier. Because St Helena is an island and requires goods to be shipped, it differs from a village in being served by a few intermediary specialist forwarders. Individuals also place orders with these intermediaries who purchase on their behalf, or place orders directly, perhaps via the internet, with suppliers who are requested to deliver good to the intermediaries for consolidation into containers.

3.3.14 Intermediaries buy goods appropriately from manufacturers, wholesalers, or (often) retailers such as, notably, B&Q. Volumes purchased are so low that this is entirely normal. The system is adequate and works, and would not be modified by a change in the nature of the shipping service.

3.4 Forecast

3.4.1 While the airport is being built and immediately thereafter there will be an increase in traffic as larger quantities of consumables for the work force, building materials, and project cargo are imported, and later there will be an increase as the population is swollen by tourism and imported hotel staff. Not all of this traffic growth will be directly related to the airport, and this element will be carried on the RMS. Air cargo will consist of a wider range of foods, and is not expected to include any of the cargo currently transported by sea. Additional traffic will result from the upgrading of some of the existing facilities, clearing of land for the construction of new small hotels, guest houses, and the construction of additional small business units. SHDA proposes various developments to encourage the new and growing tourist market. The main uncertainty about future volumes relates to the size and timing of these additional volumes, rather than the island's base cargo.

3.4.2 Raw materials such as sand, cement, bricks etc. are seldom containerised and are typically moved on pallets, for bricks and building blocks, and in big bags for bulk materials. Timber for the construction industry is normally shipped in bundles of kiln dried or finished quality. The hold and 'tween deck stowage space on the RMS is relatively limited, so that consideration may anyway need to be given to increasing freight capacity on the Cape Town route, perhaps as the occasional single voyage charter. This will be more likely when the RMS is on one of its periodic UK voyages.

3.4.3 It is assumed that the airport will be built by 2013, and that sea freight volumes will rise to 23,000 FT in the year construction starts, rising further by 6,000 FT per year for the period 2012-2014 as hotels are built. Base volumes decrease gradually, but are supplemented by tourist related cargo towards 2028, when maximum forecast tourist volumes are in place.

3.4.4 The forecasts have been made in freight tons as this metric is used by AWS and a run of historic data, however inadequate, is available and relevant. AWS does not collect data in commodity detail, and there are no conversion factors between freight tons and tonnes at a detailed commodity level. The consultants decided to approach the forecasts in this way because the alternatives seemed to require more resources than could be justified to meet the objectives.

3.4.5 For example, one alternative would have been to collect detailed historic statistics at a commodity level from UK and South African Customs offices for St Helena and Ascension Island and forecast in tonnes, using an econometric model and estimates of St Helena and Ascension Island GDP growth rates.

3.4.6 As the change in volumes expected is due to a change in the nature of the St Helena economy, however, it is more important to assess the magnitude of that change, as has been done here. It was, however, decided that it would not be useful to forecast at a detailed commodity level because sufficient information is not yet available on the specific new development expected on St Helena as a result of the building of the airport. The quantity surveys of the materials needed, for instance for new hotels, cannot yet be done. Such quantity surveys would include, for instance, assessment of the amount of cement, sand, window glass and frames, electrical and sanitary fixtures, and so on that are required.

3.4.7 Some part of the new demand results from the requirement for consumables – specific foods, paper goods, electronic goods, furniture, clothing – required by building contractors working on the construction of the airport and new tourist facilities on the island, and not carried on the service operated by the airport developer. On a *per capita* basis, such forecasts could be approximated based on comparison with Saints' demands, but this is not easily done because the number of workers required for these purposes is hard to estimate.

3.4.8 The long-term overall forecast is in fact, based on the assumption that tourists and imported hotel workers will have similar *per capita* demands to Saints, so that volumes are increased by about one third from a slightly lower Saints' demand level. Again, while it would certainly be possible, given sufficient resources, to forecast demand for detailed commodities, perhaps by analysing and comparing a developed island tourist industry, the consultants decided that little would be added to the study results.

3.4.9 If commodity volumes cannot be forecast then neither can their modes (container / breakbulk) or other characteristics (perishable / dry freight, liquid /solid, hazardous / non-hazardous, etc). There is, however, clearly no reason to believe that in the long term the shares will be greatly different from the pattern identified previously, though in the short term construction work will increase the break-bulk proportion. Tourists will require more chilled and exotic products, and the small percentage of these will therefore increase, though some may be imported by air.

Table 12 - Freight tons per year

	2008	2013	2018	2023	2028
Freight tons/year	23.000	28,000	24,000	27,000	30,000
TEU equivalent/year	920	1120	960	1,080	1,200

Source: AWS estimates

3.5.10 Due to sea keeping and safety considerations, the size of vessel required to serve St Helena is much larger than demanded by forecast volumes, even if Ascension Island volumes are also added, so that the principal importance of volume forecasts are their impact on the freight rates needed to operate a viable, sustainable service.

3.5 Origins and destinations

3.5.1 Traffic is essentially divided into three types:

a. **UK direct traffic,** consisting of container imports and exports using the RMS calling at Portland. Some Portland traffic is transhipped at Cape Town, depending on vessel scheduling, but this complication is ignored in this analysis.

b. **South African traffic**, consisting of South African exports and imports, shipped on the RMS between Cape Town and Jamestown.

c. **Transhipment traffic**, containers shipped on the MACS service from Hull or with MOL from Tilbury to Cape Town for shipment on the RMS. Occasionally containers are transhipped to non-UK European ports, and these are included in this group.

3.5.2 The sum of South African traffic and transhipment traffic is described below as **Cape Town traffic**. The sum of UK direct traffic and transhipment traffic is described below as **UK traffic**. These additional distinctions are useful in analysing potential services in different ways. After a significant change in the nature of the shipping operation before 2005-2006, transhipment traffic settled down at around 20% of the total, at much the same level as direct traffic, leaving 60% for South African cargo. In absolute terms, South African volumes have tended to fall, and UK traffic to rise. UK traffic is therefore 40% of the total, and Cape Town accounts for 60%.

Table 13 - Annualised freight traffic to St Helena

FT per year	2002-5	FY 2005-6	FY 2006-7	FY 2007-8	*FY 2008-9*
UK direct traffic	5,850	2,300	4,210	4,370	*4,510*
South African traffic	16,300	17,470	14,050	13,250	*15,290*
Transhipment traffic	1,910	4,880	3,870	4,450	*4,480*
Cape Town traffic	18,200	22,350	17,920	17,710	*19,770*
UK traffic	7,760	7,180	8,090	8,820	*9.000*
Total	**23,260**	**23,840**	**21,400**	**21,350**	***23,490***
Shares					
UK direct traffic	24%	9%	19%	20%	*19%*
South African traffic	68%	71%	63%	60%	*63%*
Transhipment traffic	8%	20%	18%	20%	*18%*
Cape Town traffic	76%	91%	81%	80%	*81%*
UK traffic	32%	29%	37%	40%	*37%*
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Source: WSP analysis of AWS data

3.6 Ascension Island

3.6.1 Ascension Island/St Helena volumes are compared with the rest of St Helena traffic below for the sake of completeness. Ascension Island traffic largely consists of Saints' personal effects, and now accounts for some 5% of the major St Helena volume. The volume could prove important for some service deployments. Most Ascension Island traffic from the UK is now carried on the MOD vessel.

Table 14 - Freight to Ascension Island

FT per year	2002-5	2005-6	2006-7	2007-8	2008-9
SH /Ascension	2,090	1,270	850	1,210	1,170
St Helena other	23,260	23,840	21,400	21,350	23,490
Ascension share	**8.2%**	**5.1%**	**3.8%**	**5.4%**	**4.7%**

Source: WSP analysis of AWS Statistics

3.7 Revenue Analysis

3.7.1 Tonnage is more appropriate for forecasting because it is unaffected by price inflation, and revenue development over the period in constant prices may reflect attempts to compensate for increases in costs, notably the cost of bunkers. Nevertheless, revenue data is presented for completeness. UK inflation rates over the period have been used for the calculation of revenue in constant 2007 prices.

Table 15 - On-line Freight Revenue

Revenue £000	Part 2002/3	Part 2003/4	Part 2004	2004/5	2005/6	2006/7	2007/8
Freight Online Money Terms	1,535	1,707	919	1,739	1,899	2,191	2,209
Inflation index 2007 = 100	83.7	85.1	87.6	90.2	92.7	95.9	100.0
Annual growth rate %		-0.5%	-17.6%	19.1%	3.7%	13.4%	-4.9%
Annualised revenue constant prices	2,000	1,990	1,640	1,954	2,026	2,297	2,185
Annual growth rate %		-0.5%	-17.6%	19.1%	3.7%	13.4%	-4.9%
Revenue/FT, constant prices					80	103	102

Source: WSP analysis of AWS Statistics

3.7.2 The UK inflation index has been used because AWS is a UK based company and its revenue and other financial information is provided exclusively in sterling. Revenue arising from carriage of South African cargo is not differentiated from that arising from the carriage of UK cargo, some of which is transhipped at Cape Town from other carriers.

3.7.3 AWS online traffic includes trade between the islands, and this is the figure shown here. This traffic is very low value and the estimate of revenue per freight ton shown excludes this traffic.

3.8 Service Requirements

3.8.1 During the visit to St Helena in July/August 2008, meetings were held with the main traders in Jamestown to identify the type of service they required and its frequency. Two different attitudes to the future of cargo operations emerged. The Chamber of

Commerce and traders mostly insisted on a regular service to Cape Town only, assuming that transhipment of UK cargo would continue without increased cost, so that the service to customers would be unchanged. The general populace, however, favoured a regular connection with the UK as they believe UK product quality is higher than South African and that if a UK service was not provided they would lose access to UK-sourced goods. They believe that transhipped goods are considerably more expensive that those supplied direct from the UK on the RMS, but had no evidence to prove this belief. In fact the freight rates are the same - with the exception of cars shipped in containers from the UK and transhipped at Cape Town, rather than being shipped break bulk from the UK.

3.8.2 Traders would be satisfied with a service frequency anything between 21 and 42 days, but showed some preference for a 21 day service. The RMS making two UK trips each year disrupts their ordering procedures and makes it difficult for them to maintain a regular flow of goods to stock on their shelves.

3.8.3 Traders also complained that when cargo is transhipped from Europe via Cape Town, cargo misses the RMS sailing if the deep sea ship is delayed. Usually, this would result in a delay of about 21 days, but if the RMS has sailed for the UK, the delay can stretch to 42 days. Goods with a “best before” date can then be out of date before the RMS returns to Cape Town to load them. In addition to potential loss of the goods, the trader must pay an additional quay rental for storing the container in the port. If a delayed container contains spare parts or other urgently required equipment, the delay would very damaging to the buyer.

3.8.4 The RMS does not call at either island on a regular or consistent schedule, and the vessel’s schedule can also be adversely affected by adverse weather conditions in the South Atlantic. A regular service would help with stocking and avoid waste, a major concern to all of the trading companies as waste levels are unacceptably high because of shelf life limitations, especially for dairy products. The cost of waste must be recovered in higher prices.

3.8.5 Table 16 illustrates the variation in port rotation causing irregularity in the RMS service. Whilst these are typical there are other voyages which have different rotation of port calls.

Table 16 - Typical voyage pattern RMS St Helena

Example of Port Calls Voyage A	Example of Port Calls Voyage B
Cape Town	Cape Town
St Helena	St Helena
Ascension Island	Ascension Island
St Helena	St Helena
Ascension Island	Ascension Island
St Helena	Portland
Walvis Bay	Tenerife
Cape Town	Ascension Island
	St Helena
	Ascension Island
	St Helena
	Cape Town

Source: RMS St Helena future programme

3.8.6 With a small cargo vessel providing a shuttle service to the islands, and not carrying tourists, the need for sailing on a particular day becomes less important, permitting it to wait for a delayed deep sea vessel.

3.8.7 Some members of the Chamber of Commerce believed that a connection to Walvis Bay was required, because several companies there would like to connect directly with the island. They believe that low freight carryings from Walvis Bay in the past result from the irregularity of calls: the Walvis Bay call was always the first port to be dropped if the RMS was running behind schedule. Indicative costs for the inclusion of Walvis Bay in a voyage to St Helena are:

Table 17 - Freight costs Walvis Bay – St Helena

Source: **Item**	**Unit Cost**	**# of Units**	**Total Cost**
Charter cost			
No of additional days at sea (255 m @ 11kt)	$5,500	1	$5,500
No of days in port	$5,500	1	$5,500
Fuel			
Cost of fuel (MGO) per ton	$1,100	7.5	$7,500
Cost of fuel (MDO) in port	$1,100	1	$1,100
Port costs Walvis Bay	$11,360	1	$11,360
Total Costs			**$30,960**
Revenue			
Container rate Walvis Bay – St Helena AWS Line container	$3,744		
No of containers of **new** freight required to break even		**8**	

Source: WSP estimate

3.8.8 As diversion to Walvis Bay is likely to divert cargo from Cape Town, being shipped at a lower rate but at additional cost to the operator, it is unlikely that such a call could be justified. There is little reason to believe that calling at an additional port would increase St Helena demand.

3.9 Vessel/Service Determinants

3.9.1 The cargo type, volume, and origin and destination countries are the first determinants of the service. The analysis so far has identified the following.

- Short-term (2013) annual volume forecast is about 28,000 freight tons.
- Current volume is about 23,000 freight tons of which 40% is accounted for by the UK and 60% by South Africa.
- Cargo from the UK is virtually all export, and of its approximate 9,000 freight tons, 10% consist of cars carried break-bulk: the remaining 90% is containers.
- Of South Africa's 14,000 freight tons, break-bulk accounts for perhaps 1-2,000 freight tons, with the balance containerised. This is mostly export traffic from Cape Town as the only exports from St Helena are fish and empty containers.
- St Helena import flow is 20-22,000 freight tons, and this one-way traffic determines the minimum vessel size for the cargo. The weight of loaded and empty containers is a significant element in the traffic measured in weight tonnes.

- Most shipping markets demonstrate a seasonal peak in the period before Christmas. However, because all cars are carried on the two RMS calls in the UK per year, and because cars are carried in significant volume, the peaks are more closely aligned with the RMS calling pattern than with the seasons.

3.9.2 The minimum frequency acceptable to islanders is a 42 day service, calling about nine times per year. This suggests a vessel size of some 2,300 dwt. However, a vessel of this size could not operate safely in South Atlantic conditions, which demand a ship at least 90 metres long and therefore at least 3,500 dwt. A ship this size, which is still a very small ship in terms of deep-sea trade, will be adequate throughout the forecast period.

3.9.3 St Helena conditions require a geared ship unless a suitable berth is provided at Rupert's Bay. Small, geared ships are not as common as small gearless vessels, but several have been identified. Charter rates or second-hand prices are higher than for similar ungeared vessels, but these prices are determined by market conditions so that there is no simple relationship. The islanders appear to prefer continued service at Jamestown because the road from Rupert's Bay is poor and additional handling costs would be incurred which could easily eliminate any apparent cost advantage for gearless vessels. This analysis is therefore based on the assumption that a geared vessel will be required. Such a vessel is described in Appendix 1.

3.10 Matching service to demand

3.10.1 A number of options aimed at meeting the needs of the trading community and providing the optimum service at acceptable cost were tested. These are listed below, with each one examined in greater detail later in this section

3.10.2 The various options initially described in the Visit Report were - in no particular order of preference:

- Air freight -pure freight aircraft, belly hold of scheduled service
- Purchase of suitable vessel - new build
- Purchase of suitable vessel - second hand
- Spot charter -single voyage
- Charter of suitable vessel - time charter
- Charter of suitable vessel -bare boat charter
- Contract of affreightment
- Liner vessel from S Africa to S America
- Coastal vessel serving east coast of S Africa
- Long haul container ship Europe to Cape Town
- RMS as freight only operation with new engines
- RMS with freight and quality passenger operation with new engines

Other passenger options have since been added to the list, as well as the possibility of utilising the MoD FIRS service calling Ascension Island.

3.10.3 As these options were investigated it became clear that it would be better to analyse them under two headings, dedicated and non-dedicated services.

4 Freight Service Supply

4.1 Introduction

4.1.1 This chapter is divided into three main sections. The first lists and discusses dedicated and non-dedicated service options, where a dedicated service is one that is specifically designed to serve the islands as their primary function. Non-dedicated services are those which could incidentally serve the islands as part of their larger function.

4.1.2 A dedicated service is one that is designed specifically to meet the particular needs of the Islands cargo market. A non-dedicated service in practice is a service designed for some other trade but on which the Islands trade can be piggybacked. There are significant differences between these two forms of organisation, but one main reason for making the distinction was that there are a large number of apparently potential non-dedicated services, many of them suggested by Saints, and it was important to group them for analysis so as to identify the main advantages and disadvantages. It was only by separating out dedicated services, too, that the reason why one was cheaper than another could be clearly identified

4.1.3 Dedicated services require SHG to procure a vessel either by purchase or charter. If the vessel is purchased the life of the service provided may correspond to the life of the vessel. If a vessel is chartered this can also be true, but charter parties (contracts between SHG and the ship owner or operator) will be fixed for periods or six or 12 months, as that is how the market operates. The main issue for consideration at breaks will be charter rate, just as in any other leasing or rental market.

4.1.4 Non-dedicated services do not require SHG to procure a vessel as the required vessel(s) is (are) already serving an existing trade. SHG merely needs to contract with the operator to reserve space on the ship and to divert the vessel to St Helena. If SHG wants the vessel to also call at Ascension Island it may specify this, and if it wants islands called southbound as well as northbound it can specify this too. However, every additional requirement increases cost to SHG and decreases a potential operator's level of interest, as it increasingly impacts the operator's main trade. The arrangement is a type of contract of affreightment. It could be organised in the same way as a charter on a dedicated service, in six or 12 month intervals.

4.1.5 However, non-dedicated services are subject to external influences in a way that dedicated services are not. It is probable that a vessel charter for a dedicated service would continue for many years as long as owner and charterer agree on rates. Rates are not the only issue if a non-dedicated service is used, however, because the operator's loyalty is primarily to customers on the larger traditional main trade and his commercial interest is in serving them first. Main trade traffic could increase to a level which made it impossible to satisfy St Helena trade as well, and the operator may not consider St Helena trade large enough to put on an extra vessel. There could be other reasons leading an operator to wish to withdraw from a contract. He might find that the process of dealing with governments and their concerns takes up too much time, and is not worth the revenue obtained. He might also decide that his main trade no longer required geared vessels. Furthermore, as trades grow the size of vessel also grows, which means that the diversion cost increases and any relative benefit price against a dedicated service is gradually lost. SHG has no influence over these external factors.

4.1.6 Non-dedicated services are not freely available. While there are many suitable ships available for charter there is only one European service to South Africa using appropriate vessels available as a non-dedicated service. If the operator of this service is unwilling to divert his ships SHG will not have a serious non-dedicated alternative.

4.1.7 The British Government needed to provide a joint passenger/cargo service for St Helena and had little choice but to provide a purpose-built vessel. Because no other line was allowed to serve the island the islands were taken out of the global commercial cargo shipping industry. In other circumstances purely commercial interests may well have led to the islands being incorporated into some liner shipping company's services. A purpose-built vessel is no longer required, and St Helena might actually be a worthwhile addition to a non-dedicated service: the only way in which this can be tested is through open bidding.

4.1.8 The second section (para 4.4) discusses other options – those which are not service, but mode based. Air freight options are considered here.

4.1.9 The third section (para 4.5 and 4.6) considers costs, revenues and rates for the major dedicated and non-dedicated service options – costs and rates for the minor options are covered in the first section.

4.1.10 The fourth section (para 4.7) examines the main management options – whether to charter or buy a vessel.

4.2 Dedicated Service Options

- **UK Portland / Cape Town / St Helena / Ascension Island**

4.2.1 This option appears desirable because the proportion of UK traffic seems high enough for it to be worth avoiding transhipment, because it might allow trade to South Africa, and because Ascension Island could also be served. At 11 knots, and assuming two days in every port called, the round voyage would take 55 days and UK cargo would take 33 days to reach St Helena.

4.2.2 This is much the same as it takes Chinese cargo to reach the UK, and should be acceptable. There would be about seven voyages per year, calling every 52 days. Islanders have indicated that a 42 day frequency would be acceptable as long as it was regular, so they would need to compromise on this. Excluding Ascension Island would improve frequency with little impact on service viability, but would not greatly improve frequency. Vessel utilisation from Cape Town would be very high at about 85%.

4.2.3 Ascension Island could, in this and the following option, be served first on alternate voyages to improve its export/import frequency balance. Vessel utilisation on the long leg between Portland and Cape Town would be poor, but the schedule does not allow for calls at other ports (except possibly Walvis Bay, and this with a drop in frequency). The freight rate for a container to Cape Town is about £600 with Mitsui OSK Line (MOL), at twice the speed. As the southbound leg is the weaker sector, it would be difficult and not very profitable to compete for the cargo. However, there may be some possibility of picking up low rated cargo at say £300 per TEU.

- **UK Portland / St Helena / Cape Town / St Helena / Ascension Island**

4.2.4 This option improves time for UK cargo to St Helena and increases frequency options for UK but not South African cargo. It has no other advantages, and would increase voyage time by at least seven days.

- **Cape Town / St Helena / Ascension Island / Cape Town**

4.2.5 The round voyage would be 25 days for this option, on the same assumptions, allowing about 14 voyages per year and a better than monthly frequency. Vessel utilisation from Cape Town would be about 40%. This is a serious option but with the disadvantage that freight from the UK would need to be transhipped through Cape Town at an additional cost of £1,250 per TEU, or £600,000 per year (including cars, which will need to be containerised). Of course this additional cost will result in partial substitution of South African for UK goods. The containerisation of cars will double the present car freight rate.

- **Cape Town (possibly Walvis Bay) / St Helena / possibly Ascension Island**

4.2.6 UK cargo would be transhipped over Cape Town or Ascension Island, or moved on other southbound vessels positioning to South Africa for the fruit trade.

4.2.7 The first option might also carry cargo from the UK to South Africa, improving the economics of the service, or call at other ports in West Africa with the same objective. The third option clearly incorporates others. A non-dedicated ship would also need to be geared but would be larger and faster. In this case St Helena could be served as one port within a string, just as most liner trade ports are.

4.3 Non Dedicated Service Options

4.3.1 The main disadvantage of non-dedicated services is their uncertainty. St Helena could provide a line with desirable top-up cargo for a period, but its needs would always be subject to developments on the carrier's main trade. Any non-dedicated option which also required a dedicated service would inevitably, and by definition, be more expensive than a dedicated service alone.

- **Long haul geared container ship Europe to Cape Town**

4.3.2 A 1,700 TEU geared containership sailing between Europe and South Africa would cost perhaps US$100,000 per call taking into account charter cost, fuel, and stevedoring, (at early 2008 prices) and less if the cargo were treated as marginal (because there is space in the schedule and the ship must pass anyway). However, this is only about US$800,000 for a year's service on a 42 day frequency, well below the cost of a dedicated service even when management and stevedoring costs are added.

4.3.3 The main activity of the small German shipping company Maritime Carrier Shipping Company (MACS) is its multipurpose liner service between the United Kingdom/Europe and Southern Africa. The relevant service calls Richards Bay, Durban, Cape Town, Walvis Bay, Vigo, Rotterdam, and Immingham northbound, and the same ports plus Lisbon called southbound, with Cape Town called every 14 or 21

days and most other ports every 14 days. Seven vessels are used on the service, which has a round trip time of 70 days: the voyage from Immingham to Cape Town takes 25 days and Cape Town to Immingham 28 days.

4.3.4 Transit time from the UK would be over 50 days because of the way the MACS schedule works, but the low marginal rate might be seen as adequate compensation. The main disadvantage would be that unless there was a reasonably long term contract the carrier could decide that the service was not profitable enough and drop St Helena – it would be the first port call to be dropped.

4.3.5 There are a number of vessels operated by MACS of which the 18 knot geared *Diamond Land* is typical, and is a multipurpose container/ro-ro vessel, built 1981, 27.720 dwt, and with 1,200 TEU container capacity. Assuming that a vessel would call on a 42 day frequency in one direction only, northbound, there would be a 400 mile, one day, diversion to call St Helena, and two days in port, plus two days extra in other ports. This adds up to an opportunity cost of 5 days, increasing round trip time by 7% to 75 days. Assuming 100% vessel utilisation, annual capacity would only be reduced by about 400 TEU, significantly less than the apparent gain of 1,000 St Helena TEU. However, most of the paying gain would only be for the shorter trip from Cape Town to St Helena, so that capacity utilisation overall would be more significantly reduced, and higher rated European cargo would be substituted by lower priced St Helena cargo.

4.3.6 When the St Helena Government seeks tenders for provision of the service, MACS should be given the opportunity to tender.

- **Coastal vessel - West Coast of S Africa**

4.3.7 The possibility of diverting a coastal service from Cape Town to a West African port such as Luanda has been closely investigated, to include St Helena, every voyage or every alternate voyage as appropriate for the cargo volumes involved. The deviation would be four days within an existing round trip voyage time of ten days – that is, very significant.

4.3.8 There are few suitable short sea services plying the west coast of South Africa but the possibility of utilising one of these under a contract of affreightment was investigated. Meihuizen International in Cape Town were requested to provide indicative costs utilising one of their vessels that normally ply on the Angola South Line route on the South African coast between Cape Town and Luanda. At the time of quotation the rates quoted were an indication for a single voyage. Should this option be chosen for the long term delivery of cargo to the island then further negotiations would be required.

4.3.9 It may be that the requested rate would be reduced by negotiation, but certainly the diversion required of this vessel is far greater than that required for the MACS ship. Consequently, the rate requested results in a final cost of US$364 / FT, once operating costs such as stevedoring and the need for transhipment of UK cargo is taken into account.

4.3.10 Meihuizen International may well not wish to divert its vessels regularly, and without assessing how its schedule would have to be modified to take account of St Helena cargo it is not possible to identify how many calls per year would actually be on offer.

The proposal does not involve any calls at Ascension Island, and seems in all respects substantially inferior to others.

Fig. 4 - m.v. Lubava, Angola South Line

- **Liner vessel from S Africa to S America**

4.3.11 There are regular shipping lines that cross the South Atlantic on fixed schedules and call in West Africa. However, they would require transhipment of all St Helena cargo at a West African port, requiring identification of UK and South African services to that port as well as identifying the appropriate transatlantic service. This is implausible and would clearly result in higher costs than dedicated services.

4.3.12 An example is the Nile Dutch fortnightly service from Rio de Janeiro to Luanda which passes within 100 miles of St Helena outbound, but on the return to S America passes almost 1000 miles to the north. To use this service would require cargo to be shipped to Rio de Janeiro which would be extremely expensive, while empty containers from St Helena could not easily be returned for reloading. The possible use of one-trip containers would be expensive and result in the build up of empty containers on St Helena.

4.3.13 The monthly Delmas service from Luanda to Buenos Aires passes approximately 250 miles south of St Helena. All St Helena cargo would need to be transhipped to Luanda for loading to the deep sea vessel at considerable additional cost. The fortnightly Delmas UK – Luanda service from London could be used for UK transhipment containers to Luanda, but would require South African cargo to be shipped to Luanda for onward movement to St Helena, at significant additional cost.

4.3.14 A transatlantic service calling Cape Town with geared vessels and passing St Helena might be identified, but this is unlikely. There is a service from Rio de Janeiro to Cape Town that passes about 1000 miles south of St Helena, and continues around the world instead of returning westbound, again making the return of empty containers impossible.

4.3.15 The Grimaldi Lines 21 day service from Luanda to Santos again passes close to St Helena but, equally, cannot offer the return of empties.

- **Long haul container ship North America to Cape Town**

4.3.16 The fortnightly America Express Service is typical of the type of larger services currently operating across the Atlantic, in terms of vessel type, size and scheduling. It calls Newark, Baltimore, Norfolk, Charleston, Freeport, Cape Town, Port Elizabeth, and Durban, and passes about 70 miles from St Helena. One of the ships operating the service is the MSC Levina, a 43,140 dwt fully cellular containership with a 2,900 TEU capacity. This is a small / medium sized deep sea containership, but is unsuitable because it is not geared.

- **The FIRS option**

4.3.17 Anvil Point and Hurst Point are known as Falkland Island Resupply Vessels (FIRS) and are currently used by the Ministry of Defence for Falklands and Ascension supply. They are operated by DHL under the supervision of DSCOM, the MOD department that organises movements of personnel and equipment around the world.

4.3.18 Both are 25,000 dwt geared multipurpose ro-ro vessels fitted with a 40 ton crane on the starboard side of the weather deck that permits the overside discharge of containers without using the stern ramp. The stern ramp is used in Marchwood where the vessels load and also for discharge in the Falklands. The crane is primarily used in the operations at Ascension. There is also a side ramp on the starboard side for use in alongside operations.

4.3.19 The vessel departs Marchwood to arrive at Ascension 11 days later. Two days are scheduled for port operations in Ascension, followed by ten days at sea before arriving at East Cove. There are four days scheduled for this port before leaving for the UK. Depending on where the vessel stops for fuel (Rio de Janeiro or Gibraltar) the homeward voyage takes approximately 20 days. Because two vessels are needed to maintain the service there is considerable slack in the scheduling to permit deviations from the route from time to time. Frequency is approximately 39 days, but the ship does not follow a strict liner regime.

4.3.20 The capacity is approximately 400 TEU – depending on stowage- and 90 containers are within reach of the crane (two high). Historically the vessels have sailed less than half full on each voyage, so that even considering the return of empty units, which would have to be oncarried to the Falklands and thence on to Marchwood, there is no capacity problem if extra cargo were carried.

4.3.21 It would seem that the vessel is a natural candidate for the provision of a new St Helena service, as it would also bring additional cargo and revenue for the ship, and transhipment handling revenue for Ascension Island. The vessel could be diverted to call St Helena, but so far the MoD has been unwilling to consider diversion. It has, however, been happy to consider the transhipment option at Ascension, which would require our proposed dedicated South Africa service to operate the St Helena leg. Commercial cargo destined for St Helena has already occasionally been transhipped at Ascension onto the RMS.

4.3.22 It would seem that using the MOD vessel provides a simple and elegant solution, bringing a variety of benefits. However, there are some problems. Firstly, it is very expensive. General cargo is charged at £157 / FT, which at 2007 rates of US$2 = £1 is $314 for sea freight and loading - unloading at Ascension Island is another $800 - alone, and is far more expensive than the final freight rate estimated in our baseline service, even before the cost of transhipment is added. On this basis the option

should be immediately rejected. Nevertheless, the cost impact of using the service is considered below.

4.3.23 The cargo is entirely marginal, so that MoD would make a profit at any rate above handling cost. A commercial ship owner would look at competing rates and set his price below that, winning the cargo and making a marginal profit. It would be easier to do this if the cargo was differentiated, which could be done if the ship were diverted. A commercial ship owner would also consider this, as transhipment costs are eliminated, and there is sufficient time in the schedule. The marginal cost would then be fuel consumed, as the vessel is anyway on a 12 month charter and has spare days. The permission to include St Helena in the routing would of course require consultations and approval between the various government departments involved.

4.3.24 The impact on the economics of the whole service to St Helena must be considered, and it is different in the transhipment and direct call cases.

4.3.25 In the transhipment case, the shuttle would pick up Cape Town UK transhipment cargo at Ascension Island instead, so that its volume carrying would be the same. To maintain its revenue base and ensure that the freight rate to Saints was not increased it would need to charge the same for the St Helena / Ascension Island leg as it does for Cape Town / St Helena. Moreover, MoD could not charge more than £50 /FT, around one third of its current rate, as this is the effective rate on the UK/South Africa route.

4.3.26 In the direct call case, the viability of the shuttle is destroyed as it loses 40% of its cargo base and a higher proportion of its revenue. To survive it would need to put up its rates for South African cargo significantly. Saints do not, however, have to pay for transhipment of UK cargo, so that there may be a point at which the overall result is positive. The impact then could be much cheaper shipping rates for UK cargo, and much higher rates for South African. It seems unlikely that Saints will be happy with this result, as 60% of their cargo is from South Africa.

4.3.27 In conclusion, it does not seem that use of the MoD ship is a viable alternative.

4.4 Other options

- **RMS St Helena as freight only operation with new engines**

4.4.1 At the time of production of this Review, there were indications that a programme to re – engine the RMS may be undertaken. If this were to be the case, this would give the vessel considerable increase in life expectancy as the hull is understood to be in reasonably good condition for the age of the vessel. It would be not unreasonable to anticipate at least a further ten years operation before the full life end of the vessel. This being the case, with the vessel could be re classified as a cargo ship and as such not permitted to carry more than 12 passengers. As it would be operating as a straightforward cargo vessel the number of crew would be substantially reduced (possibly 14) instead of the 57 that are currently employed. In addition there would be no requirement for the second relief crew that is currently employed. The terms and conditions for the new manning levels would be based on international scales.

4.4.2 Using data derived from RMS voyages, when RMS is a larger ship than required for cargo only, produces higher cost estimates than are appropriate for fuel, port entrance, crew, provisions, and probably repairs and insurance. Modifying AWS data to match this option suggests ownership costs of around US$3 million per year, against the modelled charter cost of US$1.9 million for a smaller ship. Taking higher fuel costs into account this would result in a freight rate of around US$287 / FT for the RMS to provide the baseline service.

4.4.3 The cost may be a little exaggerated because with new engines repair costs may not be quite as high as they were in 2007-2008, which has been used for this calculation. A saving of over US$1 million, or over a third, seems unlikely, however, and there continue to be major disadvantages to SHG in being a ship-owner (the direct cost of SHL Line to the Crown Agents is not included in this assessment). The cost of new engines is also not considered in this assessment.

- **RMS with freight and quality passenger operation with new engines**

4.4.4 An extension of the above would be to make a considerable investment in refurbishing the passenger accommodation of the RMS to considerably upgrade the passenger facilities to a high degree of luxury for 12 passengers, and market the experience as a luxury cruise to St Helena. The vessel would operate as the prime supplier of freight to the island but with some additional income from the high quality accommodation being available to offset the operating cost and thus maintain freight costs to a minimum.

4.4.5 This option requires a separate study of the viability of a cruise service from the UK or from Cape Town alone and the costs for upgrading the vessel in the way described, so as to identify whether it would in fact be able to cross-subsidise the freight service. This is outside the remit of the present study. The opinion that it would not, may, however, be expressed.

- **Air freight**

4.4.6 The construction of an airport suitable for the operation of the Boeing 737 range of passenger aircraft also allows flights by heavy freight aircraft such as the Lockheed L 100 (the civilian variant of the military C 130 Hercules range of heavy freight aircraft). These aircraft are large enough to carry a standard ISO container, and very little island freight is so large that it would not fit inside the hold of this aircraft.

4.4.7 The RMS currently carries an average 65 tonnes of cargo daily. As the payload of the C130 is approximately 20 tons, about 1,200 flights each year, or 3 flights per day, would be required to handle the volume. This traffic density, and high aircraft operating costs, makes it inconceivable that aircraft could serve the islands' needs. However, urgent supplies might occasionally use aircraft.

4.4.8 The volume of freight that can be carried in the hold of a Boeing 737 aircraft varies according to a number of factors including sector length, fuel capacity and passenger load factors. The sector length required on the southern Africa to St Helena flight means that aircraft would always need to carry a full fuel load. As the sector is a long over sea flight the aircraft may need to operate at less than full passenger capacity, leaving no spare payload capacity for freight. If the plane is not full of passengers a limited amount of freight can be carried, up to the maximum tonnage available on aircraft of this type without a full fuel load of about five tonnes.

4.4.9 Aircraft are used to carry very high value cargo, such as an extended range of chilled fruit and vegetables, mostly for tourists, medical supplies, and urgent mail or packages. The availability of air freight will have no measurable effect on the market for the ship service as it will be significantly more expensive, and the nature of cargo demand is such that these rates could not be paid.

4.5 Costs, Revenues & Rates

Freight Cost / Revenue relationships and assumptions

4.5.1 In comparing route option costs, the same assumptions were used in each case, to ensure a valid comparison. Variations in total costs and cost per freight ton are thus purely the result of the route variations that define the different options. Options are all intended to be sustainable, a fundamental and clear requirement of the TOR.

4.5.2 For the services to be sustainable these costs must be recovered - this means that total revenue must equal total cost. The costs per freight ton identified for each option are therefore the prices Saints will need to pay for the service option to be sustainable.

4.5.3 Different options have different total costs and different costs per freight ton. These costs per freight ton are sometimes more than Saints pay currently, and sometimes less. We have not carried out an exhaustive study of Saints' price elasticities, and recognise that the assumption that revenue equals cost implies a revealed price elasticity of unity. We do not believe that this assumption is seriously in error as traffic volumes have not varied much despite transport costs having increased sharply in recent years. The value of this UK cargo is thus about US£4,000 per freight ton, as compared with an increase in shipping costs from the estimated existing $240 per freight ton to $385 in the highest cost option. Thus transport costs are a small of total costs of goods and a relatively produce small impact on prices. Data for UK exports indicate that approximately 9,000 freight tons is valued at £17 million (US$ 34 million) free on board: that is, excluding shipping costs.

4.5.4 There are therefore no unstated or additional financial implications for SHG arising from any of the options. SHG has merely to ensure that the service is provided and that freight rates cover and do not exceed all costs. Options have been selected and illustrated as commercially sustainable options paid for by the customers of the shipping providers, without subsidy, assuming no political interference in commercial decisions on the setting of freight rates.

The need for a freight rate benchmark

4.5.5 In order to allow comparison of the options with the current RMS service, a standard of comparison related to this service was required. The benchmark chosen was revenue per freight ton because both revenue and freight tonnage data was available from AWS for all service legs. Revenue per freight ton and the data from which it is derived is the firmest information from AWS available from all available statistics.

4.5.6 However, current rates are for a subsidised shipping service. Worse, the subsidy is designed merely to cover the difference between revenue and costs, allowing no profit element and therefore no element of capital replacement. As the consultants

were merely intending to use it as an easily comprehensible benchmark this should not have been a problem: however, because it was unsustainable, it was seen as misleading. A sustainable revenue per freight ton figure has been used to reflect the costs of a non subsidised service including a capital replacement factor.

4.5.7 Because the freight rate comparison was made using real data for chartered vessels consideration of capital replacement was not needed, as this was to the account of the shipowner, and it could be assumed that he would only accept a charter rate including a capital replacement factor. Whether he did or not would, however, be of no concern to SHG.

4.5.8 The RMS is, however, an owned and not a chartered vessel, so that even if it is conceded that the rate charged is comparable with market conditions using an entirely different and far less specialised sort of ship, the issue of capital replacement still needs to be taken into account in identifying the freight rate that Saints should have been paying. For this reason a capital replacement factor for an appropriate vessel (but not a passenger/cargo vessel) was estimated and added as a required additional rate per freight ton to the revenue per freight ton calculated. This is then the benchmark against which option costs could be compared.

Freight option cost calculation

4.5.9 Since none of the options evaluated required SHG to own a vessel or involve itself with ownership costs the issue of capital replacement does not figure: it is a matter for the shipowner only. No special profit to provide for capital replacement needs to be assumed. Each option therefore has a total cost that must be covered by revenue to be sustainable, and total cost and revenue are thus the same thing.

4.5.10 The TOR required descriptions and costings for viable alternative shipping services, that is, services which could operate without subsidy ie at a price that covered all costs. The price / cost given is therefore the breakeven price – if the price cannot be achieved the service will not be viable.

4.5.11 There are no additional financial implications to SHG as long as it charges the breakeven price or allows the service operator to do so. The net financial position for each option is zero because that is what viability demands. There is an assumption in all cases that the breakeven price can be achieved without a decline in volume.

4.5.12 Each option is viable at the cost/price per freight ton calculated. That is, it requires no subsidy, there is no hidden cost or next cost, there are no separate financial implications, and the position shown is a breakeven position. Table below shows the volume, total cost/total revenue, and cost/price per freight ton.

Table 18 Cost Comparison of the Selected Options

Options	Cargo Volume Freight Tons (base: FY 2007)	Total Cost incl. Normal Profit = Total Revenue	Cost per Freight Ton = Freight Rate per Freight Ton	Net financial position	Subsidy or hidden additional cost to SHG
Option 1: Contract of Affreightment - Europe based *(Para 4.32)*	22,320	$3.91 million (£2.64m)	$175 (£118)	Breakeven	Zero
Option 2: Chartered Service - Europe based *(Para 4.2.1)*	23,500	$5.38 million (£3.63m)	$229 (£155)	Breakeven	Zero
Option 3: Chartered Service - Cape Town based *(Para 4.25)*	23,500	$6.18 million (£4.17m)	$263 (£177)	Breakeven	Zero
Option 4: Contract of Affreightment - SA based *(Para 4.37)*	22,320	$8.59 million (£6.13m)	$385 (£260)	Breakeven	Zero

Exchange rate: Financial Times 16/01/09 (£1 = US$1.4)

Passenger options

4.5.13 The approach taken to the analysis of passenger services was identical to that taken for freight, except that fares are used for the benchmark comparison. The same problems of ignoring the subsidy and taking no account of the need for capital replacement apply, but these do not affect the conclusion that viable passenger services are unlikely as the cost per passenger in any option is extremely high, and probably unacceptable.

Vessel costs

4.5.14 Because the RMS is an owned vessel St Helena has not needed to respond to any changes in the charter market over recent years, though increases in fuel costs had an impact on freight rates as BAFs (bunker adjustment factors) were imposed. The islanders already accept the sort of variations in market prices and transport costs faced by the rest of the world for fuel, and if a vessel is chartered rather than owned they will also need to accept variations in charter rates, though these have tended to be less dramatic.

4.5.15 Historic charter rates and second-hand prices are shown below for two appropriate vessel types. The data has been derived from Clarkson's time series and checked against a range of specific vessels meeting our criteria for a St Helena cargo service. Charter rates for a 350 TEU vessel, of a type suitable for a St Helena service, hovered around US$4,000 per day between 1999 and 2003, when they rose sharply to around US$6,500 per day in 2004/2005 before slipping back to US$5,800 in 2007 and an average of US$5,400 in 2008, with rates falling gently so far. Charter rates were thus falling at a time when bunker prices were increasing sharply. The charter rate figure used in our estimates is US$5,500 per day.

Table 19 - Time Charter Rates: 6-12 months US$/day (average for period)

Year	350 TEU geared container ship US$	725 TEU geared feeder container ship US$
1999	4,167	5,346
2000	4,276	6,392
2001	4,000	6,200
2002	3,946	5,788
2003	4,463	6,650
2004	6,488	9,888
2005	6,479	12,775
2006	6,292	9,817
2007	5,779	9,054
2008 1st Qtr	5,650	8,600
2008 2nd Qtr	5,567	8,267
2008 3rd Qtr	5,367	7,950
2008 Oct/Nov	5,100	7,500

Source: Clarksons

Vessel capacity:
340/365 nominal TEU; 220/240 TEU at 14 tonnes/TEU; 3,750/4,750dwt.
700/750 nominal TEU; 430/450 TEU at 14 tonnes/TEU; 7,500/8,500dwt

4.5.16 These ships usually use intermediate fuel oil (IFO) for the main engines and marine diesel oil (MDO) for auxiliaries. In port or at anchorage less IFO is used than when under way at sea, though the same tonnage of MDO per day is generally used throughout.

4.6 Service costs - Dedicated services

4.6.1 If a dedicated service is provided the annual cost of a regular liner service will be much the same whatever its routeing and whatever its utilisation. The charter cost will be the same, and the cost of bunkers the same provided the vessel is not idle. The volume carried will be the same by definition. The only difference would arise from variations in the number of days in port, or the need for costly transhipment. A local service between Cape Town and St Helena / Ascension Island will cost much the same as a service from Portland, though it would have higher frequency and lower vessel utilisation. The key difference is that the UK service carries all the cargo all the way, whereas the local service must pick up transhipped containers at Cape Town, and will therefore need to bear the cost of transhipment. Since a dedicated service costs the same whatever its routeing it makes sense to carry as much cargo as possible as far as possible to maximise revenue and minimise freight rates. A UK service may involve different and probably increased container and container positioning costs, but these are trivial in comparison with vessel costs.

Baseline dedicated service

4.6.2 This section estimates the cost of operating the baseline service described earlier, which has the following key characteristics:

- **Service schedule:** UK Portland / Cape Town / St Helena / Ascension Island / Portland

- **Vessel:** Chartered 5120 dwt geared single deck general cargo vessel, length 98.9 metres, daily bunker consumption at sea: 7.80MT IFO + MDO 1.0MT at 11.0 knots.

4.6.3 The data used for the cost model comprises market data for charter rates and bunker prices, and AWS data for operating costs such as stevedoring. Cost assumptions are made in cases where AWS data is not appropriate for the model because costs depend on ship characteristics, (such as vessel size).

4.6.4 The modelled cost determines the freight rate required for a given annual cargo volume, and is compared in this analysis with the effective freight rate achieved by AWS for the same cargo volume carried on the RMS service in 2007, which was 240US$/ FT (including capital replacement cost). It is only possible to make analyses on a freight ton basis due to the shortcomings (for these purposes) of the AWS data.

4.6.5 The estimates reflect particular assumptions and cannot be precise, though they are certainly enough to identify the approximate freight rate variation from that achieved by AWS. Charter rates vary according to the particular vessel chartered and its specific characteristics, its availability, and its age, as well as conditions prevailing in the general market. The other key constituent of cost, the cost of bunkers, normally accounting for about a third of daily operating cost, has proved extremely variable, doubling between August 2007 and May 2008, and currently below 2007 levels. Finally, all calculations are hugely affected by variations in exchange rates, so that the recent fall in sterling may have entirely wiped out the benefit of bunker price falls.

4.6.6 In addition to charter vessel and bunker costs, the charterer is responsible for operating costs, divided into variable (depending on volume) and fixed costs. This input has been partly calculated from the AWS databases and covering the following:

- **Variable costs:** stevedoring, commissions and agents' fees, and container leasing

- **Fixed costs:** AWS data was used for freight marketing costs. Port dues and anchorage fees are also fixed costs, varying slightly according to the number of port calls, but since the vessel used for this analysis is smaller than the RMS the AWS figure could not be used, and annual cost was assumed at US$100,000. Similarly, the AWS figure for management applied to an owned vessel and is not appropriate for the management of a charter service, so that, again, a cost of US$100,000 was assumed.

4.6.7 With these modifications taken into account in the baseline cost model, in 2006-2007 annualised these costs together would have amounted to £1.24 million and in 2007-2008 to £1.28 million. The budgeted figure for 2008-2009 would have been £1.31 million. Costs refer to all RMS carryings, which includes cargo unrelated to St Helena, but this makes little difference, as this traffic is very small. The key cost variable assumptions, as of August 2007, for the baseline service between the UK and the islands are:

- **Charter rate:** US$5,800 per day.
- **Bunker costs:** FO US$346 per ton, MDO $545 per ton.
- **Annualised volume at both islands:** 23,500 FT

It is assumed throughout that two days are spent in port for each call, and that the operating year, allowing for accidents, dry docking, repairs, etc, is 350 days long. The resulting figures for the baseline UK service are:

Table 20 - Baseline UK service

Item	Output
UK – St Helena transit time	33 days
Round trip	55 days
Voyages / year	6.5
Two-way capacity / year	62,000 freight tons
Annual cost	$ 5.39 m
Cost per FT	$ 229

Source: WSP estimate

4.6.8 Based on 2007-2008, (which covered 368 days), the annual revenue per FT achieved by RMS was £120 240 when capital replacement cost is added($176). The baseline dedicated service would thus cost less than the actual price paid by islanders once capital replacement is included.

4.6.9 The shares of different cost elements in the cost structure of the proposed dedicate annual Portland service is shown below:

Table 21 - Annual Service Cost Elements

Item	Percentage of total cost
Vessel charter	36%
Bunkers	17%
Variable costs	40%
Fixed costs	7%
TOTAL	100%

Source: WSP estimate

4.6.10 The significance of variable costs may seem surprising, but there is little scope for reducing them, as 54% of variable cost is accounted for by stevedoring and 26% by container equipment costs.

4.6.11 Service revenue could be increased by carrying UK cargo destined for South Africa, and indeed the vessel rotation selected was chosen precisely to increase the chances of winning this traffic The 2007 rate for this move was about $1200 per TEU, significantly less than any service to St Helena because of economies of scale on the UK-South Africa route. If 1,000 UK containers per voyage destined for South Africa were carried southbound at $800 per unit, two-thirds of the market price to compensate for the significantly slower transit, revenue would be increased by $800,000. This volume would be at the limit of the ship's capacity, and it is not known whether it is achievable in the market, but this baseline service is the only one which offers even the possibility of additional revenue from non-island traffic.

4.6.12 There is no reason why low-rated cargoes such as containerised ores, and even break-bulk cargo, should not also be carried from South Africa to the UK, further improving the economics of the ship operation. The northbound leg on this trade is stronger, but this is mainly because of refrigerated cargo which would generally require faster transit than the proposed service could manage, even if the vessel had reefer slots.

4.6.13 The impact of variations in bunker prices is far larger than that suggested for the dedicated service (excluding capital replacement this figure is $176). The increase in bunker rates between August 2007 and May 2008 would have had the following effect on the baseline service, taking the continuing fall in charter rates into account:

- **Charter rate:** $5,400 per day
- **Bunker costs:** IFO $737 per ton, MDO $1180 per ton

Table 22 - Result of increased bunker prices

Influence of bunker price	US $
Annual cost	$ 6.3 m
Cost per FT	$ 268

Source: WSP estimate based on c*urrent world prices* (various sources)

4.6.14 To cover the increase in bunker costs without additional subsidy, AWS would have needed to increase the bunker surcharge by $39 per FT, and the cost to islanders in 2008 would have risen to $215 per FT compared with $175 (excluding capital replacement). The argument is academic, of course, because bunker prices collapsed as a result of the global financial and economic crisis.

4.6.15 The cargo volume in this analysis included St Helena / Ascension Island traffic. There would be no advantage in removing Ascension Island from the service as the small volume and associated revenue would be lost while service cost would be much the same. St Helena would receive more calls each year but deliveries would be no faster and the freight rate would be higher.

4.6.16 Walvis Bay could be included in the itinerary, adding three days to round trip time, extending transit times for other cargo, and reducing frequency. It is not conceivable that additional cargo would be available, and revenue for the same cargo volume would be reduced because the rate chargeable from Walvis Bay would be less than that from Cape Town, as distance is less. Volumes have been low allegedly because the service has been unpredictable, but if they increased because of greater predictability it would be entirely at the expense of Cape Town or Portland, and the shipping service. Total St Helena demand for goods seems unlikely to vary according to the number of ports called, and it also seems unlikely that a call at Walvis Bay would encourage St Helena export trade in a way that Cape Town cannot.

Dedicated service linking Cape Town with St Helena and Ascension Island

4.6.17 This section assesses the effects of operating a dedicated service, again as described earlier, which uses the same vessel and with a service schedule linking Cape Town with St Helena and Ascension Island. At a detailed level this estimate undervalues costs because fixed costs would be higher – more ports are called – and bunker prices are undervalued, as bunkers in Europe are 10-25% cheaper than in Cape Town. On the other hand, the tonnage of bunkers used would be lower as more time is spent in port. These elements do not much affect the overall conclusion.

4.6.18 UK cargo would be transhipped from a much faster vessel at Cape Town, giving a much faster transit time as long as the two vessels involved matched their timing at Cape Town, which has not always happened with the RMS. Moreover, call frequency would be much better, at 22 days.

4.6.19 The cost of transhipment at £1,250 per container, applying to the 40% of cargo sourced in the UK, has been incorporated into the annual service cost in the table below. Transhipment would be required for all UK cargo, whereas at present the RMS carries a share. This cost is entirely responsible for the local service being $34 per FT more expensive than the baseline service.

4.6.20 The table below and subsequent tables show the UK St Helena transit time in days. This is the time taken between loading in the UK and discharging in St Helena. Transit time is an issue for shippers of time-sensitive goods. The frequency is represented by the round trip time.

Result: local service at full time operation

Table 23 - Dedicated service linking Cape Town with St Helena and Ascension

Item	Output
UK – St Helena transit time	21 – 42 days
Round trip	22 days
Voyages / year	16.2
Two-way capacity / year	54,000 Freight Tons
Annual cost	$ 6.19 m
Cost per FT	$ 263

Source: WSP estimate

4.6.21 The local vessel is hugely underutilised, but examination of the possibility of adding local trades has not identified a plausible trade. AWS attempts to create coastal trade with the same objective, for instance to Walvis Bay, have not succeeded. Using a smaller, slower ship cannot solve the problem because it would be unsafe in South Atlantic conditions.

4.6.22 If all cargo originated in South Africa no cost would be incurred for the transhipment of UK cargo. Because of this, the average freight rate would be slightly less than in the base case service, at $223 per FT. However, customers pay different rates for different legs, and the rate for South African cargo is in practice less than that paid for UK cargo whether carried on the RMS or transhipped, because the distance moved is less. Consequently, the rate for the shuttle service assuming no transhipment would be 40% higher than is actually paid by islanders now. This increase corresponds with the increase faced for the baseline service for all cargo as presently constituted.

4.6.23 RMS freight revenue by main leg in 2007 is shown below.

Table 24 - Freight revenue (freight rate) by voyage sector

Voyage sector	$ / FT
UK - St Helena	$ 257
Cape Town - St Helena	$ 122
St Helena - Ascension Island	$ 134

Source: WSP estimate based on AWS data

4.6.24 The service cost would be reduced if frequency were reduced to the same level as the direct service because the vessel would be idle for more than half the time, reducing bunker expenditure, but nothing else. This would also reduce the freight rate as indicated below, but only by $20 / FT.

Result: local service at part-time operation

Table 25 - Reduced service costs

Item	Output
UK – St Helena transit time	21 – 63 days
Round trip	22 days
Voyages / year	6.5
Two-way capacity / year	60,000 freight tons
Annual cost million	$ 5.70 m
Cost per FT $	$ 243

Source: WSP estimate

Maritime Carrier Shipping Company option

4.6.25 MACS were contacted to obtain an estimate of their charge for a diversion northbound, and received the following reply from Richard Nellor of MACS UK - "As a very rough guide, I am advised that you should work on a figure of USD 200,000 per monthly northbound call. Obviously, after a detailed evaluation, we would be in a position to quote a more precise figure. Our schedule is very tight for time currently, but by 2012 this could change, especially as we are re-tonnaging our fleet in 2010. I suggest that when you have more firm proposals, you contact our Managing Director in South Africa, Felix Scheder-Bieschin email *Felix@Macship.com*."

4.6.26 If, as seems likely, the service is restructured in 2012 when it is re-tonnaged with larger vessels, greater capacity will be provided and MACS will be more interested in the cargo available from St Helena. For the purposes of this study it is reasonable to consider a service more directly comparable with the baseline service, offering a 46 day frequency at Cape Town, and testing the impact of a northbound only and a service calling both northbound and southbound, at twice the diversion cost.

4.6.27 In the northbound-only case, cargo from the UK would need to call at Cape Town and southeast African ports before returning to discharge at St Helena, after South African traffic is picked up at Cape Town, but even so its transit time would be better than in the baseline case because the MACS ship sails at 18 knots. There is therefore little reason to consider the more expensive two-way alternative and its extremely fast transit for UK cargo. An advantage of the option is that no expensive transhipment is required.

4.6.28 The contract would need to be for a rolling six month period, renewable with three months notice on either side, to allow St Helena to put in another service if MACS became dissatisfied with the contract. This uncertainty has been discussed in the context of piggy-backing the St Helena trade on an existing service.

4.6.29 In the analysis, all other costs were assumed to be the same as in the baseline case, as there is no reason to see why they should be different. Even so, and as expected, a northbound one-way service is by far the cheapest option, resulting in a freight rate even lower than offered by the RMS. The two-way option, if available, is not sufficiently cheaper than the baseline case to merit consideration, given the disadvantages of a non-dedicated service.

4.6.30 Although MACS is a small operator in container industry terms, it is large as compared with SHL, and it operates with a fleet of more efficient vessels at more efficient terminals. It can take advantage of the economies offered by membership of the container shipping industry. These scale and efficiency economies relate to all

aspects of vessel operation, and consequently its operational costs are significantly lower than SHG with its single vessel. Lower operational costs may therefore result in a service even cheaper than indicated here.

Table 26 - MACS service costs

Indicative costs for long haul container vessel	Northbound one-way only	Two-way (north & south bound)
UK – St Helena transit time	28 days	10 days
Annual cost	$ 3.85 m	$ 5.16 m
Cost per FT	$ 175	$ 235

Source: WSP estimate

Meihuizen International option

4.6.31 The indicative costs supplied for the sector from Cape Town to St Helena for the vessel m.v. “Angola Express” were:

Table 27 - Indicative cost of Contract of Affreightment

Freight Load Basis	Cost per unit US $
Container rate	4,300
Break bulk rate	216 per freight ton
Bunker surcharge	22.5%
Subject to a minimum ocean freight per voyage of US$ 175,000	

Source: Meihuizen International

Result: South Africa - Angola service

Table 28 - Angola service costs

Item	Output
UK – St Helena	35 – 65 days variable
Round trip	30 days variable
Voyages / year	12 variable
Annual cost	$ 8.56 m
Cost per FT	$ 385

Source: Meihuizen International

4.6.32 Angola South Line operates small vessels on an irregular service from Cape Town mainly to Luanda, Soyo and Cabinda, with other ports included on inducement. The service is approximately every 30 days, variable due to delays in Luanda. Addition of St Helena would add 12 days – 30% - to the length of the round trip. The irregularity of the possible service would make this option unpopular with St Helena traders.

The FIRS option

4.6.33 This section was intended to consider the use of the MOD FIRS vessel to Ascension Island for UK cargo, transhipping to the dedicated service linking Cape Town with St Helena and Ascension Island. The difference is that containers are transhipped at Ascension Island instead of Cape Town, which still needs to be called for South African traffic.

4.6.34 There is substantial time available in the dedicated service schedule, so that it would be possible to allow the vessel to wait an additional six days on each voyage, reducing its frequency to 30 days and 12 sailings per year. The MOD service is approximately 30 days, but is irregular. Again, there is time for the dedicated vessel to wait. However, this would certainly destroy the regularity of the dedicated service’s

schedule, which is one of its main advantages and is the major service feature required by St Helena traders.

4.6.35 UK cargo transhipped to the dedicated service would need to be transported to St Helena via Cape Town, where South African traffic would be loaded. Its transit time would therefore be extended several days beyond the extension required even for the Portland dedicated service. If the schedule were changed so that Ascension Island were called first by the local dedicated service, then UK traffic would be delivered in about 17 days and South African in about 14 days, as compared with the direct six days. The loss of a relatively quick service for this traffic would have implications for time-sensitive traffic and lead to some dispute.

4.6.36 Shipping and handling transhipment containers at Ascension Island on the FIRS service would cost $7,400 compared with $2,500 at Cape Town. Excluding handling costs, the cost of shipping containers to Ascension Island is $6.600 compared with $1,200 to Cape Town. Stevedoring and related services in Cape Town, however, cost more than at Ascension Island. Cape Town is an expensive port.

4.6.37 Shipping is the more significant item, and the difference here is due to the difference between a small inefficiently operated vessel and a major container line operating a large vessel at a container terminal able to take advantage of a range of economies of scale. The MOD cost of $6,600 to Ascension Island is actually lower than the RMS cost of about $7,200 to either island.

4.6.38 There are no cost advantages to the dedicated service in using Ascension Island rather than Cape Town.

4.6.39 To compete, MOD would need to reduce its price for transhipment containers to less than $1.200 as compared with $6,600. Even if this were possible after negotiation the loss of quality is far too great to consider. The MOD vessel could also be removed for military use at any time.

4.7 Charter or Buy a Vessel - Management Options

4.7.1 This section considers the advantages and disadvantages of owning against different charter options. The options are described first, and the financial analysis follows.

Vessel Purchase

4.7.2 Owning a vessel offers the greatest service security, particularly if also operated by SHG, as reliance on an outside operator primarily motivated by commercial return may risk service withdrawal. Another advantage of owning is that the vessel cost is known and predictable (apart from the cost of bunkers).

4.7.3 The advantage of a dedicated service using a vessel owned (or, equally, chartered) by the St Helena government and managed privately is that the island has total control of the operation, and can easily choose whether to subsidise the service or not, and to implement these decisions.

4.7.4 The disadvantage of owning is the initial capital outlay the higher cost of vessel operation, and the additional cost of staff to oversee the operation. As an owner, SHG would be responsible for crewing costs, comprising officers' salaries, crew

wages, and crew expenses, as well as vessel operating costs, comprising vessel repairs, vessel spares, survey costs, stores, victualling provisions, insurances, administration costs, management fees, and some other more minor costs. It would be possible for SHG to appoint a ship management company to undertake all of the administrative activities involved in the operation of a vessel, but this would of course add to the operating costs.

4.7.5 Buying a new vessel has the advantage that it can be precisely specified to match St Helena requirements exactly. This may have been necessary when a specialist passenger cargo vessel was required, but is not necessary for a cargo vessel as appropriate vessels are available second-hand.

4.7.6 Buying a new vessel would require either the production of a specific and accurate design and construction specification, or the acceptance of a standard vessel design. A purpose built vessel would be considerably more expensive in both delivery time and cost. Standard vessels are produced by a number of yards in different parts of the world, with China being the cheapest at present. The time taken from the initial approach to a yard, to completion date would be approximately 18 - 24 months. Indicative costs for a 4,000 dwt vessel of approximately 90m in length would be US $10-12,000,000 from a Chinese yard.

4.7.7 Several international brokers specialise in the sale of small vessels, and a suitable vessel would not be difficult to find. Buying second-hand is much cheaper than buying new, but the cost of ownership is still high. A good second hand vessel 3-4 years old would cost $4-5 million. The selection process required to identify and assess a suitable vessel, arrange a complete survey could take some time. Its location will also impact the overall cost of the selection process, as international travel will be required to visit each vessel. Fig 4 shows the MV Ascension employed on the USA – Ascension service for the USAF. This ship is used by the USAF to service its Wideawake facility on Ascension Island, just as the MoD uses the Anvil Point and Hurst Point for Ascension Island and the Falklands.

Fig 5 - MV Ascension employed on the USA – Ascension service for the USAF

Vessel Charter– single voyage (spot charter)

4.7.8 A spot charter is the hire of a ship for a specified voyage to carry a cargo from a loading port to a discharging port. The ship-owner is responsible for providing the crew and paying ship operating expenses while the charterer is responsible for

paying the voyage expenses, which include fuel costs, port expenses, agents' fees and any additional insurances required. The sourcing of suitable vessels at the required time can be extremely difficult, and it is understood from agents in Cape Town that that the number of vessels available for charter from that port is extremely limited. A vessel procured from another port will incur the cost of delivery and redelivery to the original port, which adds considerably to a single voyage cost.

Vessel Charter - time charter

4.7.9 A time charter is one under which a ship-owner hires out a ship for a specific period of time. Again, the ship-owner is responsible for providing the crew and paying ship operating expenses while the charterer is responsible for paying the voyage expenses. Typically the charterer is responsible for any delay at the loading and discharging ports

4.7.10 A time charter is the most flexible arrangement as the vessel is in effect under the control of the charterer for the duration of the charter period, and will undertake such voyages that are agreed in the charter party at the direction of the charterer. In the case of St Helena the voyages included in the charter party would include at least Ascension, Cape Town, Walvis Bay and Jamestown.

4.7.11 A line manager will need to be employed to take daily operating control of the vessel's movements. This manager could be either an established ship management company, such as Andrew Weir, or an individual with ship management credentials. In either case a management fee will be paid, and a reporting system established to ensure that the operation is carried out to the satisfaction of the entity responsible for the payment of the charter fees. Determining the identity of this entity is discussed in Section 7.5. This is likely to prove the best way to operate a dedicated service.

4.7.12 The advantage of a conventional time charter to SHG is that there is no capital outlay, and as the owner is responsible for all maintenance, crewing etc. only a simple contract between the ship owner and island is required. Taking a time charter exposes islanders to the vagaries of the charter market, but these are not very significant compared with variations in exchange rates and bunker prices, to which the islanders are still exposed, though they are cushioned by the subsidy.

Vessel charter - bare boat charter

4.7.13 In a bare boat charter, the ship-owner is paid a fixed amount of charterhire, for a certain period of time, during which the charterer is responsible for ship operating voyage expenses and additionally for the management of the ship including crewing. This type of charter is becoming less common as ship-owners are reluctant to give up operational control of their vessels to others, and prefer to have their own crew on board looking after their interests. As bareboat charters are not generally preferred by ship-owners the daily hire cost is not usually much less that that under a conventional time charter. The crew for such a chartered vessel would need to be provided by an established management company, whose fees would add to the basic cost of the crew.

4.7.14 The advantage of taking a time charter on a bareboat basis may be that Saints can still be employed as crew. However, this arrangement is usually for long periods, such as ten years, because ship-owners would regard it as a purely financial arrangement, and would seek full payback. Rates would have to cover the

contribution to capital, so that the financial impact on SHG would be the same as if it were the vessel's owner, as shown below, and far more expensive than a conventional time charter. Bareboat charter would also increase the need for management and the involvement of public servants, as in the case of owning.

Contract of Affreightment

4.7.15 The main purpose of a contract of affreightment (COA) is to oblige a carrier to lift a fixed or determinable quantity of cargo of a specified type over a given period of time. Usually, the COA is not limited to one particular vessel, but operates as a series of voyage charters. Freight is payable on the quantity of cargo transported and the carrier bears the risk of delay en route. Given the nature of the contract, a COA is almost always tailor made to meet the specific needs of the parties concerned. COAs enable the ship-owners to be flexible and allow the vessels to be fitted into a pattern of trade that maximises laden as against ballast distances and allows such arrangement to be concluded at very competitive rates of freight. As a result, COAs contain very few standardised terms, other than the individual voyage charter terms that govern each lifting once the vessel has been tendered for loading. The charterer is liable for payment whether or not the cargo is ready for shipment at the specified time, sometimes resulting in significant losses to the charterer if he fails to fulfil this requirement. This type of arrangement such usually uses an existing regular service between two or more ports already serviced by the carrier.

Table 29 - Advantages and disadvantages of COA

Advantages	Disadvantages
▪ No investment in vessels required ▪ Carrier providing service will have a number of vessels available ▪ No involvement in daily operation of vessels	▪ Contract documentation can be very complicated and detailed ▪ Shipper must commit to volume of cargo each voyage or face penalty ▪ Shipper has no control over scheduling of vessels ▪ Length of individual contracts tend to be less than 12 months

Source: WSP

4.7.16 There is a constant flow of geared refrigerated vessels sailing southbound to bring fruit from South Africa to Europe, and these vessels already seek general cargo, notably cars, for the weak southbound leg. It is conceivable that brokers could be employed to charter space in such vessels on a trip or liner (guaranteed regular) basis to St Helena, and such space would undoubtedly be very cheap indeed. However, this would only meet the UK traffic requirement, and would result in the loss of cargo to any local dedicated service, whose freight rates would need to be raised to compensate.

4.7.17 One of the main options identified in the service analysis is the MACS northbound option. If the transit time for UK cargo identified for that service were considered inadequate this option could be considered as a supplement, as long as sufficient volume was on offer. There would be no effect on the main service as the diversion cost proposed is not cargo volume specific, and indeed MACS could prefer UK cargo to be handled in this way as it would relieve capacity pressure on its vessels. The option could also supplement any other non-dedicated service.

4.8 Financial Analysis of Management Options

4.8.1 A time charter would be cheaper than an owned vessel as owners have to accept rates too low to make an adequate contribution to capital, as described below. A chartered ship would also be one of a fleet benefiting from all the economies of scale not available to a “singleton”. These economies of scale relate to all aspects of vessel operation because, for instance, the costs of qualified technical, operational, and financial staff are distributed across the fleet, insurance may be lower because off the operators’ reputation, supplies can be bought in bulk, and so on. Consequently the operational costs faced by a ship-owner with a large fleet will be significantly lower than those of a ship-owner with just one. A time charter also gives the flexibility to change the ship as the requirement changes.

4.8.2 Recent charter rates have been insufficient to cover owners’ replacement costs. The type of vessel under consideration for the dedicated services would earn the owner around $6,000/day, or $2.1m pa, as a time charter rate. The owner is responsible for vessel operating costs when under charter, and these fall within the range $3,000 to $4,000/day, or $1.1m to $1.4m pa The balance is the contribution to profits and capital cost, and is within the range $0.7 - $1 million per year. At best, this would buy a second-hand vessel costing $4 million on the same assumptions on return as are made below. However, the size, type, and quality of second-hand vessel assumed elsewhere as being appropriate for the services under consideration would cost around $6 million. Thus, the contribution to capital costs in recent charter rates is insufficient to cover owners’ replacement costs for an equivalent vessel.

4.8.3 The capital cost for SHG would be some $12.5 million for a new ship, or some $6m for a 10 years old ship. On a 7 year payback [circa 15% IRR] the capital element for the new vessel is $1.75m pa / $5,000/day. For the second hand ship the capital element is $1.5m pa / $4,300/day.

4.8.4 The operating cost of an SHG vessel would be well over $2m pa [circa $6,000/day], compared with the fleet owner’s $3,000 to $4,000/day or 1.1m to $1.4m pa because its fleet would consist of just one vessel and cannot take advantage of, the significant economies of scale available to fleet owners. Adding this operating cost element to the capital replacement element of $5,000/day for a new ship or $4,300/day for a second-hand vessel produces a time charter equivalent for an SHG owned ship of $11,000/day for a new ship and $10,300 for second-hand, compared with the current market rate of $6,000/day.

4.8.5 Given that the charter rate plus operating costs account for two-thirds of the total cost of a chartered service – the balance is bunkers – this suggests that the freight rate faced by shippers would be at least 50% higher for an SHG owned than for a chartered vessel. A service managed by a professional operator and based on chartering a vessel rather than on SHG ownership would result in lower costs for shippers and greater convenience for SHG itself.

5 Passenger Sea Service Options

5.1 Introduction

5.1.1 Following construction of the airport the introduction of air services between St Helena and Ascension may be delayed, so that other ways of providing a regular connection need to be examined. This may be difficult and expensive. The level of traffic and the route length mean that a service may not be easily provided at an acceptable price. At present the RMS provides a service at varying intervals and the number of passengers carried on each sector can vary considerably. The Christmas holiday period makes a major difference to the volume of passenger carryings.

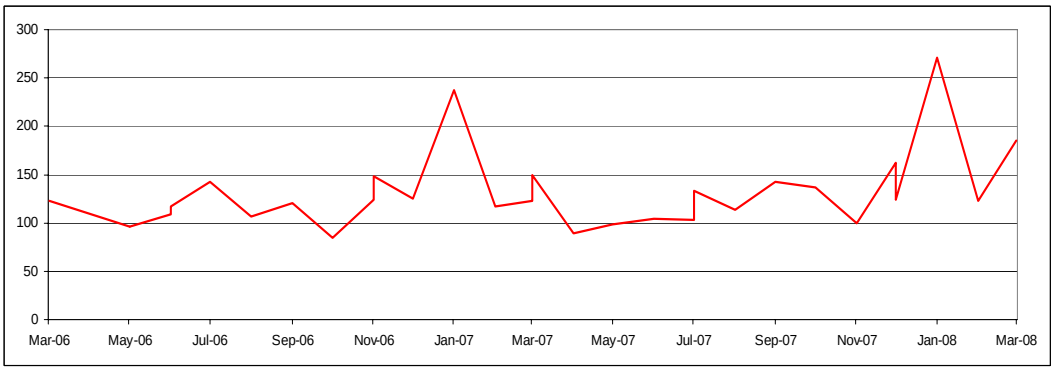

Chart 1 - Total Passenger Carryings between St Helena and Ascension by RMS St Helena

5.1.2 The average carrying of Saints between St Helena and Ascension over 29 voyages is 69 passengers, with an average of 62 passengers travelling in the opposite direction. On a monthly basis this averages 73 travelling from St Helena to Ascension and 71 travelling southbound. The majority of these passengers are travelling to Ascension for employment – either on Ascension or the Falkland Islands. Only 2.5% are en route to the UK

5.1.3 To provide a service that would cater for this annual number of passengers there are basically two options. One would provide a regular service over the year, whilst the other would provide say, four voyages at three monthly intervals.

5.1.4 The existing fare structure between St Helena and Ascension is dependent on the level of cabin accommodation. There are basically two separate structures, one being at a budget level and the other at premium level. The fares are based on each individual cabin and the budget level accommodation ranges from £241 to £294 (average £270) for the voyage. The premium accommodation ranges from £436 to £774 (average £619). It is assumed that in future, the service will be required for Saints travelling to and from Ascension purely for employment reasons, and therefore these travellers will wish to keep travel costs to a minimum. By comparison, an air fare from St Helena to Ascension via Cape Town and the UK would cost in the region of US$4,790 (£2,660 at US$1.8= £1) made up from the following sector costs.

Table 30 - Notional air fares St Helena – UK via S Africa

Sector	Cost
St Helena – Cape Town (Estimate)	$1,200
Cape Town – UK	$1,800
UK Ascension	$1,790
Total	**$4,790**

Source: British Airways, AWS

5.2 Regular service

5.2.1 A regular service could be provided by a small cargo vessel with accommodation for 12 passengers, and at a speed of 14 knots would be able to provide a regular service every 5 days, thus providing a monthly carrying capacity of 72 passengers in each direction. This would require 6 round voyages each month throughout the year. However, this would not be suitable for the annual surges at the Christmas period, and so bookings would be required well in advance to ensure that passengers were assured of their date of travel.

5.2.2 A vessel that would be suitable for this operation would be relatively difficult to locate, as small cargo vessels do not in general have this level of accommodation for passengers. The daily charter rate of such a vessel would be higher than for a normal cargo vessel of this size due to the level of passenger accommodation and would probably be approximately US$10,000 with additional costs for fuel and port costs.

5.2.3 Whilst this level of passenger traffic could be handled on a one ship operation, it would be difficult to support the vessel for maintenance as there are no shore based facilities at either island. It may therefore be prudent to consider two vessels to provide this service. The increase in price from £270 (for Saints) to a minimum £1,306 is likely to have a substantial dampening effect on demand.

Table 31 - Passenger costs by cargo vessel

Item	Unit Cost	# of Units	Total Cost
Charter			
Charter cost/days at sea (700 miles @ 14knots)	$10,000	2.1	$21,000
Charter costs days in port	$10,000	0.4	$4,000
Fuel & Other			
Fuel- days at sea @ 14 tons/day	$1,100	2.1	$2,310
Fuel in port day @ 1 ton/day	$1,100	0.4	$440
Port costs	$470	1	$470
Total voyage costs (one way)			**$28,220**
No. of Passengers		12	
Cost per passenger (one way) US $			**$2,352**

Source: WSP estimate

5.2.4 However, one class of vessel that could have the accommodation would be a small ro-ro vessel such as a second hand car ferry which often has accommodation for up to 75 passengers, in addition to a crew of about 20. These vessels also have the speed to maintain schedules. However they tend to be rather larger than the RMS being about 120 – 140 metres in length. As a result the operating costs will be even greater than the general cargo ship described above. A ship such as this could be fitted with a crane on deck suitable for lifting containers and this would further assist

in delivering containers from St Helena to Ascension. This might be useful if a non-dedicated service was used calling only in St Helena.

5.2.5 The vessel could make around trip between the islands every seven days which would give a total annual capacity of 3,900 passengers per year in each direction – more than double than required. The low £744 cost per passenger trip therefore depends on finding another 4,647 passengers. To meet existing demand the fare would be a minimum of £1,769 per person, a substantial increase.

Fig.6 Typical small roro passenger ferry

Table 32 - Passenger costs by small RoRo Vessel

Item	Unit Cost	# of Units	Total Cost
Daily Charter cost			
No of days at sea (700 miles @14 knots)	$15,000	2.1	$31,500
No of days in port	$15,000	1.4	$21,000
Fuel Costs			
Fuel at sea @ 29 tons/day ($750pt)	$21,750	2.1	$45,675
Fuel in port @ 1 ton/day ($1,100pt)	$1,100	1.4	$1,540
Port costs			$697
Total voyage costs (one way)			**$100,412**
No of Passengers		75	
Cost per passenger (one way) US $			**$1,339**

Source: WSP estimate

5.2.6 No commercial operator would put on this service because of the substantial doubt that the required passenger numbers would be achieved. A commercial operator will require an SHG guarantee to cover any shortfall.

5.3 Passenger Vessel Service

5.3.1 A small passenger ship with accommodation for approximately 125 passengers could be chartered four times each year to provide two round voyages between the islands each charter period, but this would be a very expensive option as the availability of such vessels is dependent on their regular cruising schedules. In addition to the daily cost of the vessel there would be a positioning and redelivery cost to be met. This is a very unlikely option and its cost has not been formally tested.

5.3.2 There are a number of small passenger vessels (of which a considerable number are ex Russian research vessels) that are available for charter and operate in a various parts of the world. As they are ex research vessels they tend not to be very luxurious and a considerable number of them operate cruises in the Arctic and Antarctic waters, so their seagoing capabilities would be acceptable for the Ascension / St Helena service. With a capacity of 110 passengers they are similar in size to the RMS at about 117 metres with a speed of 14.5 knots.

Fig. 7 Typical small Russian ex research vessel

5.3.3 As these ship have programmes arranged often years in advance they are extremely difficult to find at short notice and in addition are expensive, the daily charter cost for these vessels can easily be around $20,000 per day. Daily fuel consumption will be approximately 25 tons of heavy fuel oil per day.

Table 33 - Passenger costs by small cruise vessel

Item	Unit Cost	# of Units	Total Cost
Daily Charter cost			
No of days at sea (700 miles @14 knots)	$20,000	2.1	$42,000
No of days in port	$20,000	0.8	$16,000
Fuel Costs			
Fuel at sea @ 25 tons/day ($750pt)	$18,750	2.1	$39,375
Fuel in port @ 1 ton/day ($1,100pt)	$1,100	1.4	$880
Port costs			$697
Total voyage costs (one way)			**$98,952**
No of Passengers		150	
Cost per passenger (one way) US $			**$660**

Source: Current charter & fuel costs

The likelihood of a reliable and permanent service operated on this type of short term intermittent charter is impracticable and is therefore not considered further.

5.4 High Speed Service

5.4.1 It may be possible to utilise a large offshore crew boat similar to those employed in the offshore industry. These craft have a high service speed (30-35 knots) and would be able to make the transit between St Helena and Ascension in about 24 hours. They can have a passenger capacity of up to 100 passengers. They also have a

capacity for carrying a small number of containers and other general cargo on the open after deck. However, in general they are only certificated to operate up to about 200 miles offshore, and as there are no other vessels operating regularly in the area, the Maritime and Coastguard Agency may insist that there are at least two (if not three) of these vessels available in order that a search and rescue operation can be undertaken should a vessel suffer a breakdown *en route* between the islands. This is only required for this type of vessel.

5.4.2 There are considerable numbers of these craft in the various offshore oil industry operating areas both for sale and for charter. Indicative costs for the purchase price for a new vessel would about $3-4 million.

Fig 8 - Typical Offshore Crew Boat

5.4.3 An alternative could be a fast catamaran ferry such as a 10 year old Incat or Austel designed vessel, but the high cost of charter and the high fuel consumption probably rules this out. For example a 10 year old catamaran would cost about $18m (say $7,200/day on bareboat charter). The fuel cost alone, at 3/tons per hour of marine diesel at $1,100/tonne, on a 24 hour / 28kts passage burning 72 tonnes is $79,200 equating to £790 per passenger provided all 100 passengers seats are occupied on each voyage. The single night at sea would allow recliner seats rather than berths in cabins required for the longer transits.

5.4.4 The transit time would be 25 hours at 28kts. A sailing could be delayed if the 2 day weather forecast showed deterioration in conditions, and this would obviously affect the reliability of the service. However, the open sea, ocean swell and remoteness probably rule out a small, fast passenger craft or small offshore crewboats.

5.4.5 Regardless of whichever option is finally adopted to provide a seaborne passenger service to Ascension from St Helena, the cost will be significant and the individual passenger fares substantial.

6 Port Facilities

6.1 Cargo Handling – St Helena

6.1.1 The present cargo handling operation at Jamestown is well tried and is as effective as can be expected under the operating conditions. The cargo handling is carried out by Solomon's general labour force, under the control of the Company's supervisor. The Port Operations Manager should have a greater input into this operation, as there can at times be a conflict between the requirements of the port and the stevedoring operations.

6.1.2 The introduction of a second Sennebogen crane will not be of any significant advantage as the rate of discharge from the ship offshore is controlled by the number and speed of the lighters transporting the cargo. However, it does provide security in that there is now a backup facility that supports the operation.

6.1.3 On completion of the airport contractor's operations at Rupert's Bay the landing facility constructed for the contractor's own use may be both suitable and available for future cargo operations. It would then be possible to use an ungeared cargo vessel, provided that one of the Sennebogen cranes at Jamestown is transferred to Rupert's Bay. An area for manoeuvring around the root of the new jetty will require clearing and surfacing for the safe handling of containers by heavy plant. The addition of a large warehouse would enable traders to partially unstuff the containers and store cargo in the shed to await collection by receivers.

6.1.4 The advantage of using an ungeared vessel is that the cost of stevedoring at St Helena will be reduced. There is unlikely to be any improvement in other cost elements, although an ungeared ship should be easier to find. The reduction in freight rate may not be sufficient to compensate for the additional cost of the road move to Jamestown.

Fig. 10 - Rupert's Bay

6.1.5 Use of Rupert's Bay would not eliminate any of the service options as the larger ships, such as the MACS service, would be able to use the lighter system currently used at Jamestown.

6.1.6 As the maximum gross weight for vehicles on the island's roads is limited to 14 tonnes it may prove practical to permit an increase in this limit - especially as certain roads will have been upgraded for the movement of heavy plant to the

airport site. Buy increasing the limit it would then be possible for containers to be moved directly from the wharf at Rupert's Bay to the receivers own premises, thus reducing transport costs.

6.2 Improvements and recommendations – St Helena

6.2.1 Considerable investment in the improvement of working space and landing facilities for passengers is planned for Jamestown. This will entail the infill of the area between the existing two roundheads, creating a large additional working area – especially for storing containers. This work is expected to start in the near future and will be completed well before the airport commences operations. A new reach stacker is on order and should be delivered to the port in the near future.

6.2.2 It is understood that the new construction will also include a new landing stage for passengers alighting from launches, and this will include the construction of a small breakwater to provide shelter and a safe berth. It is recommended that facilities should be provided to enable two launches to berth simultaneously in order that launches from passenger cruise liners can load and discharge passengers quickly.

Fig 9 - Area for development at Jamestown Port

6.2.3 The general condition of the working area is poor and the surface has been badly damaged in areas where the Sennebogen crane has been manoeuvring. The entire working area should be made good with a proper concrete surface suitable to withstand the effects of the crawler tracks.

6.2.4 A proper safe route from the landing stage to the Customs and Immigration offices should be provided as soon as the present work on the cliff face is complete. This should be marked off with a substantial barrier (e.g. Armco) to ensure that pedestrians have a safe walkway.

6.2.5 It is understood that there are plans to renovate some of the old buildings at the bottom of the cliff – this will only reduce the working area for the cranes and reach stacker and create difficulties for the operators. The existing side loading combination will be redundant on the arrival of the reach stacker.

6.2.6 The Port Operations Manager requires additional authority to enable him to take better control of the various personnel and activities on the wharf. It is understood that there is not a port company as such and that there are no Bye-Laws that empower the management of the port to take effective control of activities on the wharf. The formation of an official port company should be introduced as soon as possible.

6.3 Cargo handling – Ascension Island

6.3.1 The operating conditions at Ascension are substantially different to those at Jamestown. In Ascension all cargo handling is carried out by AIG staff and the operatives are drawn from the maintenance workforce. Considerable training has been carried out and all operatives appeared to be well acquainted with their tasks, which they were observed to perform very satisfactorily

6.3.2 However, the existing crane used for handling containers is quite unsuitable for this type of operation as it is a rough terrain construction crane not designed for the type of loads imposed on the structure of the machine. It suffers a considerable number of breakdowns as a consequence and consideration should be given to replacing it with one similar to the cranes at Jamestown.

Fig 11 Rough Sea conditions at Ascension

6.3.3 There is ample open storage for containers and a number of reefer point that appear adequate for the volume of traffic. Traders can remove their containers by truck and indeed use them as temporary storage for their various goods.

6.3.4 There is a major refurbishment programme in hand that will return old warehouses to a good weather tight condition and this will improve the reception and delivery of goods from the containers.

6.4 Improvements and recommendations – Ascension Island

6.4.1 The port situation at Ascension is expected to remain relatively unchanged in future, with the possible exception of some relatively minor works to improve the passenger landing. The new Passenger Terminal is virtually complete and is a great improvement over the original cargo shed operation. It serves as a good guideline for the proposed passenger terminal facility at St Helena.

6.4.2 A protected walkway for pedestrians from the new Passenger Terminal would improve the safety in the transfer from the landing steps to the Terminal. It should be constructed from a heavy duty barrier material (e.g. Armco) and this would permit the simultaneous activity of cargo handling and passenger movements, which is not permitted at present.

7 Impacts: Social, Economic, Institutional

7.1 Social Impacts

7.1.1 With the RMS being the only contact with most people on the outside world, delays and variations to the published schedule affect the plans of all travellers to the island. Any delay in the programme will influence travel plans and may increase the cost of trips significantly. Saints who live and work away from the island, experience a disturbance as their employer may not take too kindly to an unexpected delay in the return of an employee, who may also have been taking an extended period of leave.

7.1.2 Regardless of the cargo option chosen by the SHG, the individual consumer on St Helena should not be unduly inconvenienced by the change in the freight service, provided that trading companies maintain appropriate stock levels. As all options provide a regular service traders will be better able to plan, and even in the case of the Portland service option, stock levels should not be significantly higher than those needed to deal with an irregular service as exists at present. By far the most significant impact on the island will be the lack of a seaborne service to Ascension at a fare similar to those currently charged on the RMS. If a regular weekly service is introduced, not only will it be considerably more expensive than at present, but it will not have any capability of coping with the peaks in travellers that are experienced at Christmas. The irregular service utilising a specially chartered, small passenger vessel will enable fares to be at a lower level but with the disadvantage that there will only be four periods during the year when passengers can transfer by sea between the islands. The alternative route would be from St Helena to Ascension via South Africa and the UK, by air at an even greater a cost.

7.1.3 The trading community on the island will need to adapt to whatever sea freight service is finally chosen, but no major adverse change will result as expected. The two Europe based services are more likely to create the need for higher average stock levels than other options because a Portland based has a service 54 day frequency. Lower frequency would be offset by a lower freight rate than the more frequent service. For the Portland service the effect may be mitigated by using a faster vessel with a modest increase in freight rate caused by increased use of fuel, and in the MACS case greater frequency could be required, but with a greater impact on freight rates. In any case the impact of a lower freight rate far exceeds that of the increased inventory cost.

7.1.4 The hospital service on the island, for obvious reasons, does not have the resources to deliver the range of medical activities normally expected in a major city, and therefore in certain situations patients may have to be transferred to Cape Town for specialist treatment. It is estimated that approximately 60-70 of these “medevac” cases are transferred to Cape Town by the RMS each year. It has been stated that about 10 of these medevac cases should not be evacuated by air, but the Medical Officer on board the RMS expressed doubt that this would necessarily be the case. With the average age of the islanders increasing, the number of age related diseases and problems are likely to increase, which undoubtedly will require more transfers to Cape Town for attention.

7.1.5 Government departments – like the trading community - will need to reassess purchasing requirements and possibly carry larger stocks of equipment and stores.

7.1.6 The decision on the management of the freight service will be required to be taken by SHG in sufficient time to ensure that there is a smooth change over from the current service operated by the RMS. The initial requirement will be for SHG to decide what entity will be involved in operating the service. The options include but are not limited to:

- SHL continuing to operate the service through a professional line manager (i.e. AWS).
- SHL directly chartering a suitable vessel for the chosen service. This would require recruiting of a specialist ship manager to identify and negotiate with a number of ship operators to provide a suitable service.
- Solomon's establishing a shipping division that would undertake the operation. Again, a specialist shipping manager would be required to provide the necessary specialist input to operate the service.
- A co-operative comprising some – or all – of the island traders to undertake the service in a similar manner to that described for Solomon's above.
- SHG offering to the international shipping industry the option to tender for whichever service option is selected. This will require the recruitment of a shipping specialist by SHG to a) draw up the service requirements for the tender document, b) assess the various offers submitted by the bidders, and c) continuously monitor the operations to ensure that the service requirements are properly complied with by the line operator.

7.1.7 The lead time to establish such an operation would be considerable as the identification and recruitment of a specialist shipping manager will take some time. Identification by this specialist of the local requirements will also take some time. Assuming the decision of SHG has identified the chosen option then the specialist will require approximately six to nine months drawing up the necessary documentation, interview potential operators and finalise details prior to the commencement of the service. The minimum time required therefore to establish the service is indicated in Table 34 below.

Table 34 - Timeline for introducing sea freight service

Activity	Time line
Recruit shipping specialist	6 months
Draw up documentation	4 months
Interview potential operators	3 months
Finalise operation and introduce initial service	3 months
Total time required	**16 months**

Source: WSP estimate

7.1.8 Should SHG choose to own and operate its own vessel it would need to establish a supporting and management organisation to ensure that the line functioned at an acceptable level of efficiency. This would require a structure similar to that currently in force, in which AWS manages the RMS, as financial, operational, maintenance management, and marketing inputs will be required as well as a line manager for day to day management and liaison with forwarders, shipping agents, the ship and the SHG department responsible. At present SHL has three directors (part time), a line manager in AWS plus three additional supporting staff (not all full time) and on St Helena there is a Shipping Officer who is also involved in the operation. At a conservative estimate the costs would be:

Table 35 – Potential Management Costs

Requirement	Annual Cost
Managing/Operations Director (part time)	£20,000
Financial Director (part time)	£20,000
Maintenance Director (part time)	£20,000
Line Manager (full time)	£75,000
General staff 3 @ £25,000	£75,000
Travel & other costs	£20,000
Total	**£230,000**

Source: WSP estimate

7.1.9 This sum would be approximately doubled with the addition of employers' liabilities, superannuation etc. so that the cost of management of the line would be £460,000 or US$ 920,000 or an additional US $42 per freight ton. These costs have been assumed in cost comparisons between management options in the body of the study. A smaller management team would be required if SHG decided to charter a vessel, as there would still be, for instance marketing responsibilities, though no responsibility for crew and maintenance. This is not, however, recommended. The recommendation is to subcontract all the functions described to an operator who would make all decisions as to chartering or owning for itself, and would be responsible for all facets of the operation subject to its contract with SHG.

7.1.10 In sub-contracting the operation, only a line manager would be needed to liaise between the SHG (or whichever entity is taking responsibility for the service) and the shipping company supplying the vessel and service. This would require a full time commitment for the period leading up to the commencement of the service, developing and drafting the Terms of Reference for the contract and selecting the most appropriate tender, but once the systems were established and the service operating, only minimal input would be required from the line manager, with perhaps only a quarterly report to the principals being required. This cost could be minimised by employing an established and reputable shipping agent in whichever port the service is based.

7.2 Economic Assessment and Impacts

7.2.1 It might be expected that, given a number of options for the arrangement of freight services, cost-benefit comparisons are made between the options. It may further be considered that such comparisons might take the form of a social cost-benefit analysis. While the options can certainly be compared, the comparison is constrained by the fact that each option has as its objective the achievement of the same benefits, namely the delivery of the freight cargoes currently carried by the RMS St Helena. Provided the delivery is effected, the social costs and benefits incurred and accruing to the wider community, if they exist, will be identical. Reorganising the provision of freight services will not provide improved access to the island in the way that construction of the airport will do; benefits from increased economic activity through employment creation and increased consumer expenditure accrue to air rather than to sea access and in any event, the cost of alternate shipping services had been included in the Air Access CBA.

7.2.2 There will, however, be an impact on sea freight stakeholders, the magnitude of which will depend on the attributes of the option selected. The options will differ in terms of:

- the costs of providing a freight service as reflected in the freight rate;
- the frequency of that service with implications for the cost of stockholding; and
- on the degree of involvement by the SH authorities.

7.2.3 An option which reduces the cost of freight will impact on consumers as CIF import values fall, provided that rates of import duty, averaged at 18.04 percent in the Atkins Report, remain unchanged. Alternatively the fiscal authorities could lower the level of duty and thereby maintain the absolute amount of duty revenue. To illustrate the possibilities data is required on import values and on shipping costs. Neither is available as concurrent historic series.

Cost of freight

7.2.4 An option which increases the cost of freight will impact on consumers if the rates of import duty, averaged at 18.04 percent in the Atkins Report, remain unchanged. The consultants have been unable to identify the current average rates of import duty although it is known that levies on alcohol, cigarettes, and fuel have increased. Alternatively the fiscal authorities could lower the level of duty and thereby maintain the absolute amount of duty revenue. To illustrate the possibilities data is required on import values and on shipping costs. Neither is available as concurrent historic series.

7.2.5 The most recent budgetary estimates of RMS operations are available for the last three quarters of 2007 and the first quarter of 2008. The estimate over the year is for on-line revenues from freight of £2.209 million of which net freight revenue, i.e., revenue from the carriage rather than the handling and administration of freight, is £1.042 million. The costs of cargo handling, container transhipment, freight marketing and administration, all of which may change with the reorganisation of freight services, are the difference between freight income and net freight income and amount to £1.17 million.

7.2.6 The estimated value of CIF imports comprising consumer and investment goods, technical co-operation imports and visitor imports, on which duties are levied are forecast over the same period at £12.8 million as indicated in the table below.

Table 36 - Amount [£000] and Composition of Imports 2007/8

Year	2007			2008	
Quarter	**2**	**3**	**4**	**1**	**Total**
Consumer Goods	1,880	1,905	1,911	1,901	**7,597**
Investment Goods [a]	946	1,002	1,003	1,016	**3,967**
Visitor consumption	142	142	142	147	**573**
Technical Co-Operation goods	159	159	159	193	**670**
Total	**3,127**	**3,208**	**3,215**	**3,257**	**12,807**

Source: "Economic Workings" in St Helena Access Feasibility Study, Atkins Management Consultants, [Revised 2007]

7.2.7 Duty on this volume would be £2.31 million. If for illustration net freight revenues were increased by 50 percent import values would increase by £0.834 million or by 6.5 percent as indicated in table 37. The tax take would also increase, by £0.15 million. The rate of duty could thus be lowered slightly, to 16.93 percent, to leave the

freight increase fiscally neutral, and the resultant increase in consumer prices would be by 5.5 percent.

Table 37 - Indicative Increase in Freight Costs £m

	Current Position	20% Increase in freight charge
Freight Charges	2,209	2,651
Cargo value plus insurance	10,598	11,040
Imports CIF	12,807	13,691
Duty (Rate at 18.04%)	2,310	2,470
Total CIF plus duty	**,15,117**	**,16,160**
% difference	,	**,6.9%**

Source: Atkins (2007) and Study Estimates. The Table shows the structure of CIF [landed costs] from the Table 1 and the impact on CIF of a 20% increase in the charge per FT

7.2.8 Table 38 sets out the impact of the freight rates calculated for the four basic shipping options, in comparison with the current RMS service. With the exception of the MACS options, variations have been ignored. The Table shows the increase in landed costs [CIF value plus duty] as an absolute amount and as price increase. The estimate may overstate the change in price if importers' margins are a lump sum and not pro rata the landed cost. The Table also shows the duty rate applicable if the fiscal authorities decide to leave the tax take unchanged. In this case the impact of prices is lessened. It can be seen that the two non-dedicated services have a lighter impact than the dedicated, with the local "run-around" service the least attractive generating a near 13 percent increase in prices even with a reduced rate of duty.

7.2.9 The one-way MACS option is clearly the most attractive in terms of price impact; prices will actually fall with or without fiscal correction. The baseline and the MACS two-way options appear similar, resulting in price increases in the range 5-7 percent. (Figures used here vary slightly from those in the main report, and comparison is with the actual cost faced by shippers and not the theoretical cost including capital replacement used elsewhere. This is because at higher actual prices demand patterns would have been different).

Table 38 - Service Options and Price Impact

	Dedicated Service		Non-Dedicated	
	Base Line	Local Service	MACS Two-way	MACS One-way
$ per Freight Tonne	229	268	220	164
% Increase on RMS rate	22.5%	43.3%	17.6%	-12.3%
Increase in landed costs [£000]	497	979	389	-272
% Increase in prices	7.8%	14.9%	6.1%	-4.2%
Increase in tax take [£000]	179	345	140	-98
Duty rate for fiscal neutrality [%]	16.75%	15.70%	17.01%	18.84%
Resultant % increase in prices	**6.6%**	**12.7%**	**5.1%**	**-3.6%**

Source: Study researches [for the range of charges per FT. The calculation of the increases is from the spreadsheet developed for Table 1]

7.3 Frequency and Regularity of Service

7.3.1 At present the frequency of calls is approximately 15 a year, implying an interval between calls of near 24 days. Taken that importers' stocks are released for sale evenly over the interval, that 25 percent additional stocks are held to allow for disrupted delivery, and that the interest rate on working capital is 5 percent, the current cost of stockholding of consumer goods [consumer goods and goods for visitor consumption] is £17,020 a year. It is assumed that investment goods and goods imported under technical co-operation are not held in stock.

7.3.2 Table 39 shows the anticipated impact on the cost of stock holding of the four basic options. It is noted that the cost may be inverse to the cost of freight. A cheaper service in terms of freight charges may be a less frequent service and therefore a more expensive one in terms of the cost of holding stock.

7.3.3 The Table shows, first, that the costs of storage are minor in comparison with the freight rate. Costs range from less than one to two percent, and are insufficient to influence choice of option. Second, it transpires that the most expensive options is the MACS one-way service but with the cost of storage estimated at £3.33 per FT, the combined freight and storage costs amount to less than $170 per FT, less than the costs of the current service at $188.5.

Table 39 - Storage Costs by Option

Option	RMS	Base Line	Local Service	MACS Two-way	MACS One-way
Calls Year	15	6.5	16.2	13	6.5
Interval [days]	24.3	56.2	22.5	28.1	56.2
Interest (Rate at 5.0%)					
Interest cost/Year [£000]	17.02	39.28	15.76	19.64	39.28
Interest cost/FT £	0.74	1.71	0.69	0.85	1.71
Interest cost/FT $	1.44	3.33	1.34	1.67	3.33
$/FT	187	229	268	235	175
Cost as % of $/FT	**0.8%**	**1.5%**	**0.5%**	**0.8%**	**2.0%**

Source: WSP estimate

7.4 SHG Personnel

7.4.1 The degree of separation between shipping operations and SHG will clearly impact on employment costs. A service owned and operated by SHG will require greater administrative resources than a vessel owned by SHG but franchised to an operator, which in turn will require more than a service largely independent of SHG. The resources saved by separating Government from shipping operations have not been quantified. There is currently a shipping officer in post who will presumably be retained. Savings would be of the costs of a technical assistance chairman and two part time directors as shown in table 35.

7.5 Institutional

7.5.1 The present situation with shipping services to the islands is that the Saint Helena Line has the monopoly to operate any service to St Helena. If the preferred future

option for the sea freight service is required to be financially self sustaining, this situation will have to be reviewed. Should the new service be provided by an existing ship operator or a new company formed to provide the service, it may be necessary to draw up a licensing arrangement of some type whereby the service schedules and freight rates are identified and agreed with SHG. This may prove difficult should a long haul liner operation agree to deviate from an existing schedule to call at St Helena for an exchange of cargo.

7.5.2 If the preferred option is to either purchase or charter a vessel for a dedicated service, there will be a requirement for a separate management organisation to undertake the daily running of the service. There should not be any requirement for Saint Helena Line to exist in the future, but a single contact point between the operating line and the SHG will be required. Whichever officer of SHG has this responsibility he or she will require to have some knowledge and understanding of the international shipping industry and be able to advise SHG on the daily operation and development of the new service.

7.5.3 As noted in the Visit Report a suggestion was put forward that the traders themselves should form a virtual operating company and this was received by the traders with a certain amount of interest. Similarly it was suggested that Solomon's could in fact take the operation of the service vessel. Should either of these options come to fruition there will still be the requirement for an official contact with SHG as described above.

7.5.4 Whichever mode of operation is chosen, there will be a requirement for an organisation to be established that is in a position to provide the funds for the charter cost of the vessel before any revenue is received from the various users of the service. Initial funding will be required and the source of funds identified. Whether this is via SHG or a private (e.g. traders) operating company will have to be established, and credit ratings established prior to approaching any ship owners to arrange a charter contract.

7.5.5 The decision on the management of the freight service will be required to be taken by SHG in sufficient time to ensure that there is a smooth change over from the current service operated by the RMS. The initial requirement will be for SHG to decide what entity will be involved in operating the service. The options include but are not limited to:

- SHL continuing to operate the service through a professional line manager (i.e. AWS).
- SHL directly chartering a suitable vessel for the chosen service. This would require recruiting of a specialist ship manager to identify and negotiate with a number of ship operators to provide a suitable service.
- Solomon's establishing a shipping division that would undertake the operation. Again, a specialist shipping manager would be required to provide the necessary specialist input to operate the service.
- A co-operative comprising some – or all – of the island traders to undertake the service in a similar manner to that described for Solomon's above.
- SHG offering to the international shipping industry the option to tender for whichever service option is selected. This will require the recruitment of a shipping specialist by SHG to a) draw up the service requirements for the tender document, b) assess the various offers submitted by the bidders, and c) continuously monitor the operations to ensure that the service requirements are properly complied with by the line operator.

8 Conclusions & Recommendations

8.1 Conclusions

8.1.1 There are four service options that could provide a freight service to St Helena in the future. Two dedicated services that only serve St Helena (and possibly Ascension) and two that utilise the ships of other shipping companies that operate in the South Atlantic. The costs range from $175 to $385 per freight ton depending on the level of service.

8.1.2 If the option for a dedicated service be chosen then the vessel should be chartered and not purchased. There are many ships available that will be perfectly suitable for the service at a considerably less cost than the purchase of a new vessel.

8.1.3 The two service options that provide the most regular service both require a chartered vessel to ensure this regularity. The size of ship required for the service is larger than the level of cargo demands, due to the severe operational conditions in the South Atlantic. The daily charter cost to the service in providing a slightly larger ship than the minimum required is not significant in the overall costing of the exercise, although there will be an increase in fuel consumption for the larger vessel resulting in higher operating costs .

8.1.4 The frequency of the service – one of the most important requirements for the island traders – will depend on how much they are willing to pay in their freight cost. The cheaper the service, the less regular it is. The most regular service is the third most expensive.

8.2 Selection of a service operator

8.2.1 SHG and DFID do not need to decide service details unless they choose to continue the operation of SH Line and operate an owned vessel. If they decide to charter a vessel the chosen operator will decide whether he should buy or charter, or use a vessel in his existing fleet.

8.2.2 If the decision is not to own a vessel, the license to operate the St Helena service should be offered for tender. The license is likely to offer the operator a rolling contract with a significant notice period allowing SHG to retender if the operator wishes to withdraw from the service.

8.2.3 The license should offer the operator freedom to fix freight rates with an agreed profit margin, and SHG should insist on an open book policy, as is operated by AWS, so that it can confirm that the chosen operator is not abusing his monopoly position.

8.2.4 It has been established that several companies, including AWS, Meihuizen International, MACS, at least one of the UK based forwarders, and even a St Helena traders' group, would be interested in tendering for the service. This level of interest suggests that other companies would also wish to tender. No restriction should be placed on the nature of the service offered other than a requirement that the service be regular and have at least an approximately 42 day frequency at St Helena. The named companies are the only ones interviewed that expressed an interest, and

research designed specifically to identify other possible operators was not carried out.

8.2.5 Any other limitations or constraints placed on commercial operation are likely to result in higher freight rates. It would, however, be possible for SHG to identify a maximum freight rate, and to offer the guarantee of subsidy above this figure, without penalty.

APPENDICES

Appendix 1

Vessel Types

1 Dry Cargo Vessel

The type of vessel suitable for servicing the Cape Town, (Walvis Bay) St Helena and Ascension route would be easily available in the European market in the normal shipping conditions that have been experienced over the past few years., but as with any market, the situation can change very quickly and the availability of vessels can vary from day to day. There is less likelihood of such a vessel being located in the southern hemisphere. A vessel of the type required would have the following approximate dimensions:

- Length 90-100 metres
- Beam 14-15 metres
- Draft 5 metres
- Holds 2
- Hatches 2 - strengthened for containers
- Cranes 2 x 25 tonne cranes
- Deadweight 3,500 - 4,50 tons
- Service speed 11-14 knots.
- Crew 12-14

The ship would be fitted for containers both above decks and below, and have suitable craneage for handling containers at both hatches simultaneously. There is a requirement for about 20 reefer plugs split above and below decks. Should the ship have a tweendeck in No 1 hold, this could prove to be an advantage, although not essential as the additional stowage space in this larger ship would outweigh the loss of tweendeck stowage.

Fig 212 - Typical 'tween deck space

Speed is an issue, because faster ships have a larger annual capacity and can offer more frequent service (if either is required), but this is again, determined by

vessel size. Naval architecture, sea conditions, and commercial reality dictate that the smaller a conventional vessel is, the slower it sails. (The RMS is a larger ship and has a service speed of some 14.5 knots).

Smaller vessels (i.e. less than about 90m) generally have one single engine burning diesel oil. This fuel is considerably more expensive than intermediate fuel oil (approximately + 35%). Although a ship with engines burning the heavier oils will be slightly larger (100m plus in length) the savings in fuel could be significant – especially on longer sea voyages. Therefore, the vessel should be fitted with a single engine consuming about 12-14 tons heavy fuel oil per day whilst at sea, and a separate generator burning diesel oil at about 1-1.5 tons per day in port. The ship should be fitted with a bow thruster which will reduce the requirement for tugboat assistance when berthing.

Fig. 13 - Typical small cargo vessel suitable for St Helena service.

In addition to the crew, it would be an advantage to have sufficient accommodation for 2-4 additional persons.

Availability

Small vessels of this size and type are relatively easily available in European waters, but in the southern hemisphere they are in relatively short supply. Geared vessels of the right size are more difficult to source as small vessels usually rely on shore based equipment to handle their cargoes. Vessels with container handling gear for containers are available but generally at a higher purchase or charter cost.

If voyages start from Portland they would not need a long positioning trip, and at the end of the charter the off hire leg would be similarly short. This is an incidental advantage of this option.

Appendix 2

Consultants participating in the production of this Report

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Allan Duncan – Port and Shipping Operations
Ray Fenyoe - Logistics
Steven Paling - Economist
David Hallett –Port Engineering
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Appendix 3: UK exports to and imports from St Helena, 2005

Cargo Flow Units	Total Imports Pounds Sterling	Total Imports Quantity KG	Total Exports Pounds Sterling	Total Exports Quantity KG
Comcode				
01:LIVE ANIMALS				
02:MEAT AND EDIBLE MEAT OFFAL			140,791	83,456
03:FISH AND CRUSTACEANS, MOLLUSCS AND OTHER AQUATIC INVERTEBRATES				
04:DAIRY PRODUCE; BIRDS' EGGS; NATURAL HONEY; EDIBLE PRODUCTS OF ANIMAL ORIGIN, NOT ELSEWHERE SPECIFIED OR INCLUDED			99,512	72,614
05:PRODUCTS OF ANIMAL ORIGIN NOT ELSEWHERE SPECIFIED OR INCLUDED			2,500	8
06:LIVE TREES AND OTHER PLANTS; BULBS, ROOTS AND THE LIKE; CUT FLOWERS AND ORNAMENTAL FOLIAGE				
07:EDIBLE VEGETABLES AND CERTAIN ROOTS AND TUBERS			2,049	2,881
08:EDIBLE FRUIT AND NUTS; PEEL OF CITRUS FRUITS OR MELONS				
09:COFFEE, TEA, MATE AND SPICES			11,680	4,473
10:CEREALS				
11:PRODUCTS OF THE MILLING INDUSTRY; MALT; STARCHES; INULIN; WHEAT GLUTEN				
12:OIL SEEDS AND OLEAGINOUS FRUITS; MISCELLANEOUS GRAINS, SEEDS AND FRUIT; INDUSTRIAL OR MEDICAL PLANTS; STRAW AND FODDER				
13:LACS; GUMS, RESINS AND OTHER VEGETABLE SAPS AND EXTRACTS				
14:VEGETABLE PLAITING MATERIALS; VEGETABLE PRODUCTS NOT ELSEWHERE SPECIFIED OR INCLUDED				
15:ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS; PREPARED EDIBLE FATS; ANIMAL OR VEGETABLE WAXES			16,476	25092
16:PREPARATIONS OF MEAT, FISH OR CRUSTACEANS, MOLLUSCS OR OTHER AQUATIC INVERTEBRATES			63,113	30202
17:SUGARS AND SUGAR CONFECTIONERY			11,263	3677
18:COCOA AND COCOA PREPARATIONS			38,366	14378
19:PREPARATIONS OF CEREALS, FLOUR, STARCH OR MILK; PASTRYCOOKS' PRODUCTS			124,688	74900
20:PREPARATIONS OF VEGETABLES, FRUIT, NUTS OR OTHER PARTS OF PLANTS			66,225	69775
21:MISCELLANEOUS EDIBLE PREPARATIONS			50,171	36045
22:BEVERAGES, SPIRITS AND VINEGAR			82,278	120,564
23:RESIDUES AND WASTE FROM THE FOOD INDUSTRIES; PREPARED ANIMAL FODDER			4,195	192
24:TOBACCO AND MANUFACTURED TOBACCO SUBSTITUTES			81,410	6,289
25:SALT; SULPHUR; EARTHS AND STONE; PLASTERING MATERIAL, LIME AND CEMENT			14,816	230,810
26:ORES, SLAG AND ASH				
27:MINERAL FUELS, MINERAL OILS AND PRODUCTS OF THEIR DISTILLATION; BITUMINOUS SUBSTANCES; MINERAL WAXES			739,875	2,671,657
28:INORGANIC CHEMICALS: ORGANIC OR INORGANIC COMPOUNDS OF PRECIOUS METALS, OF RARE-EARTH METALS, OF RADIOACTIVE ELEMENTS OR OF ISOTOPES	13,353	550	2,564	2,300

Cargo Flow Units	Total Imports Pounds Sterling	Total Imports Quantity KG	Total Exports Pounds Sterling	Total Exports Quantity KG
29:ORGANIC CHEMICALS			89,617	8,242
30:PHARMACEUTICAL PRODUCTS			165,705	7,208
31:FERTILIZERS			1,184	15,247
32:TANNING OR DYEING EXTRACTS; TANNINS AND THEIR DERIVATIVES; DYES, PIGMENTS AND OTHER COLOURING MATTER; PAINTS AND VARNISHES; PUTTY AND OTHER MASTICS; INKS	6,040	70	105,902	58,631
33:ESSENTIAL OILS AND RESINOIDS; PERFUMERY, COSMETIC OR TOILET PREPARATIONS			30,310	11,566
34:SOAPS, ORGANIC SURFACE-ACTIVE AGENTS, WASHING PREPARATIONS, LUBRICATING PREPARATIONS, ARTIFICIAL WAXES, ETC			66,270	65,292
35:ALBUMINOUS SUBSTANCES; MODIFIED STARCHES; GLUES; ENZYMES			6,790	3,737
36:EXPLOSIVES; PYROTECHNIC PRODUCTS; MATCHES; PYROPHORIC ALLOYS; COMBUSTIBLE MATERIALS			5,493	1,483
37:PHOTOGRAPHIC OR CINEMATOGRAPHIC PRODUCTS			40,247	10,451
38:MISCELLANEOUS CHEMICAL PRODUCTS			36,231	51,435
39:PLASTICS AND PLASTIC PRODUCTS			183,190	60,434
40:RUBBER AND ARTICLES THEREOF			59,505	32,656
41:HIDES AND SKINS (OTHER THAN FURSKINS) AND LEATHER				
42:ARTICLES OF LEATHER; SADDLERY AND HARNESS; TRAVEL GOODS, HANDBAGS AND SIMILAR CONTAINERS; ARTICLES OF ANIMAL GUT (OTHER THAN SILK-WORM GUT)	13,839	1,703	675	70
43:FURSKINS AND ARTIFICIAL FUR; ARTICLES THEREOF				
44:WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL	1,367	125	154,185	145,535
45:CORK AND ARTICLES OF CORK				
46:WICKERWORK AND BASKETWORK				
47:PULP OF WOOD OR OF OTHER FIBROUS CELLULOSIC MATERIAL; WASTE AND SCRAP OF PAPER OR PAPERBOARD				
48:PAPER AND PAPERBOARD; ARTICLES OF PAPER PULP, PAPER OR PAPERBOARD	5,749	853	76,126	34,600
49:BOOKS, NEWSPAPERS, PICTURES AND OTHER PRODUCTS OF THE PRINTING INDUSTRY; MANUSCRIPTS, TYPESCRIPTS AND PLANS			15,075	1,602
50:SILK				
51:WOOL, FINE AND COARSE ANIMAL HAIR; YARN AND FABRICS OF HORSEHAIR				
52:COTTON	1,435	149		
53:OTHER VEGETABLE TEXTILE FIBRES; PAPER YARN AND WOVEN FABRICS OF PAPER YARN				
54:MAN-MADE FILAMENTS				
55:MAN-MADE STAPLE FIBRES				
56:WADDING, FELT AND NONWOVENS; SPECIAL YARNS; TWINE, CORDAGE, ROPE AND CABLE AND ARTICLES THEREOF				
57:CARPETS AND OTHER TEXTILE FLOOR COVERINGS				
58:SPECIAL WOVEN FABRICS; TUFTED TEXTILE PRODUCTS; LACE; TAPESTRIES; TRIMMINGS; EMBROIDERY	3,137	456	2,219	120
59:IMPREGNATED, COATED, COVERED OR LAMINATED TEXTILE FABRICS; ARTICLES FOR TECHNICAL USE, OF TEXTILE MATERIALS	12,858	7,360	3,538	1,660

Cargo Flow Units	Total Imports Pounds Sterling	Total Imports Quantity KG	Total Exports Pounds Sterling	Total Exports Quantity KG
60:KNITTED OR CROCHETED FABRICS				
61:ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, KNITTED OR CROCHETED	75,041	3,182	108,379	15,759
62:ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, NOT KNITTED OR CROCHETED	245,056	23,149	34,940	2,101
63:OTHER MADE UP TEXTILE ARTICLES; SETS; WORN CLOTHING AND WORN TEXTILE ARTICLES; RAGS			4,911	1,051
64:FOOTWEAR, GAITERS AND THE LIKE; PARTS OF SUCH ARTICLES	2,854	920	35,174	5,628
65:HEADGEAR AND PARTS THEREOF	3,869	445		
66:UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS, SEAT-STICKS, WHIPS, RIDING-CROPS AND PARTS THEREOF				
67:PREPARED FEATHERS AND DOWN AND ARTICLES MADE OF FEATHERS OR OF DOWN; ARTIFICIAL FLOWERS; ARTICLES OF HUMAN HAIR				
68:ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIALS			964,708	1,360,201
69:CERAMIC PRODUCTS	8,463	1,100	14,511	7,173
70:GLASS AND GLASSWARE				
71:NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES, PRECIOUS METALS, METALS CLAD WITH PRECIOUS METAL, AND ARTICLES THEREOF; IMITATION JEWELLERY; COIN	79,925	904		
72:IRON AND STEEL			4,158	2,750
73:ARTICLES OF IRON OR STEEL			413,955	137,683
74:COPPER AND ARTICLES THEREOF			21,451	878
75:NICKEL AND ARTICLES THEREOF				
76:ALUMINIUM AND ARTICLES THEREOF	2,369	524	66,622	80,296
78:LEAD AND ARTICLES THEREOF				
79:ZINC AND ARTICLES THEREOF				
80:TIN AND ARTICLES THEREOF				
81:OTHER BASE METALS; CERMETS; ARTICLES THEREOF				
82:TOOLS, IMPLEMENTS, CUTLERY, SPOONS AND FORKS, OF BASE METAL; PARTS THEREOF OF BASE METAL			58,380	18,603
83:MISCELLANEOUS ARTICLES OF BASE METAL	18,692	4,850	2,629	398
84:NUCLEAR REACTORS, BOILERS, MACHINERY AND MECHANICAL APPLIANCES; PARTS THEREOF	149,069	27,059	568,715	168,410
85:ELECTRICAL MACHINERY AND EQUIPMENT AND PARTS THEREOF; SOUND RECORDERS AND REPRODUCERS, TELEVISION IMAGE AND SOUND RECORDERS AND REPRODUCERS, AND PARTS AND ACCESSORIES OF SUCH ARTICLES	44,611	2,209	9,676,115	196,733
86:RAILWAY OR TRAMWAY LOCOMOTIVES, ROLLING-STOCK AND PARTS THEREOF; RAILWAY OR TRAMWAY TRACK FIXTURES AND FITTINGS AND PARTS THEREOF; MECHANICAL, INCLUDING ELECTRO-MECHANICAL, TRAFFIC SIGNALLING EQUIPMENT OF ALL KINDS				
87:VEHICLES OTHER THAN RAILWAY OR TRAMWAY ROLLING-STOCK, AND PARTS AND ACCESSORIES THEREOF	2,861	96	1,145,279	536,275
88:AIRCRAFT, SPACECRAFT, AND PARTS THEREOF				
89:SHIPS, BOATS AND FLOATING STRUCTURES			17,800	22,300

Cargo Flow	Total Imports	Total Imports	Total Exports	Total Exports
Units	Pounds Sterling	Quantity KG	Pounds Sterling	Quantity KG
90:OPTICAL, PHOTOGRAPHIC, CINEMATOGRAPHIC, MEASURING, CHECKING, PRECISION, MEDICAL OR SURGICAL INSTRUMENTS AND APPARATUS; PARTS AND ACCESSORIES THEREOF	174,590	1,221	747,747	232,844
91:CLOCKS AND WATCHES AND PARTS THEREOF				
92:MUSICAL INSTRUMENTS; PARTS AND ACCESSORIES FOR SUCH ARTICLES				
93:ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF			1,290	75
94: FURNITURE	886	445	225,819	60146
95: TOYS AND GAMES	703	52	25,331	4596
96: MISCELLANEOUS MANUFACTURES			1,659	340
97: WORKS OF ART				
99: OTHER PRODUCTS	7331	45	10,220	62
Total	**874,098**	**77,467**	**16,744,027**	**6,813,584**

Appendix 4 – Glossary

AIG	Ascension Island Government
AWS	Andrew Weir Shipping (line managers for RMS)
Bareboat Charter	Charter of a vessel without crew or administration facilities
BAF	Bunker Adjustment Factor
Break Bulk	Cargo that is not carried in bulk
Brize Norton	RAF Base for Ascension flights
Bunkers	Description of ship's fuel
Catamaran	Vessel with twin hulls and low displacement
Cellular ship	Container ship with containers stowed within fixed securing steel frames
Charter	Hire of a vessel for a period or voyage
CIF	Cost Insurance and Freight
COA	Contract of Affreightment- an agreement to carry cargo
DFID	Department for international Development
DSCOM	Defence Supply Chain Operations & Movements
FIRS	Falkland Island Resupply Service
Freight ton	Measurement of cargo with 1.0 cu m bulk equivalent to 1 tonne weight
GT	Gross Tonnage -measurement of the carrying capacity of a ship
IFO	Intermediate Fuel Oil
IMDG Code	International Maritime Dangerous Goods Code
ISO	International Standards Organisation
Knot	One nautical mile per hour
MACS	Maritime Carrier Shipping Company
Medevac	Medical evacuation
MDO	Medium Diesel Oil
MGO	Medium Gas Oil
MOD	Ministry of Defence
MOL	Mitsui OSK Line
Reefer	Temperature controlled container (Refrigerated)
RMS	Royal Mail Ship
Tare	Unladen weight of a container
TEU	Twenty Foot Equivalent Unit (measurement for freight containers)
THC	Terminal Handling Charge – for containers
Ton(ne)	UK long ton=2,240 lbs, US short ton=2,000lbs, Metric tonne=1,000 kg
'Tween deck	Intermediate deck in a ship's hold (between decks)
SHDA	St Helena Development Agency
SHG	St Helena Government
SHL	St Helena Line