STATES BOARD OF ADMINISTRATION

HARBOUR OF ST. SAMPSON'S — LAND RECLAMATION AND DEVELOPMENT OF DEEP WATER BERTHS

EXECUTIVE SUMMARY

HARBOUR OF ST SAMPSON'S - LAND RECLAMATION AND DEVELOPMENT OF DEEP WATER BERTHS

Introduction (Report - Sections 1 and 2)

1. The Board's Report presents the findings of its investigations into the development of deep water berths at St Sampson's Harbour and provides details and estimated costs of the project, as directed by the States in September 1988.

2. A refined layout for the necessary harbour extension to accommodate deep water berths has been produced as a result of detailed site investigations. This design needs to be confirmed in physical model studies and the Report requests the necessary funding for this work.

3. The Report recommends substantial increases in harbour dues for hydrocarbon fuels and gas in order to finance the greater part of the development.

Need for the Development of Deep Water Berths (Report - Section 3)

The following needs have been identified:

4. To protect lives and property by moving volatile fuel discharge operations offshore.

5. To allow hazardous cargoes currently handled at St Peter Port Harbour to be handled instead at the proposed harbour extension, at a greater distance from the population.

6. To ensure that the Island's future fuel and bulk cargo demands will be met by an extended harbour facility. Predicted increases in imports and the trend towards ever larger vessels which are not designed to ground while discharging fuel (as currently occurs), will not be accommodated by the existing harbour.

7. To provide for vessels to berth at all tides and in all but the most severe weather conditions, thereby reducing the possibility of Island fuel stocks falling to critical levels.

8. A significant number of additional benefits have been identified in the Report and the disadvantages of only maintaining the present harbour facilities are also highlighted.

Marine Traffic Forecast Survey - Robert West and Partners
(Report - Section 4.2)

9. This survey considered the adequacy of the existing harbour for present and future predicted marine traffic.

10. The predictions of the report, carried out in 1989 and based on Statistical Digest Reports, including figures for individual sectors such as oil and gas, and trends in product usage, have proven accurate to date. Information obtained from a wide variety of sources led the consultants to conclude that expected increases in vessel size and increased import volumes are likely to exceed the capacity of the existing harbour by the turn of the century.

11. Survey findings predicted that, in addition to two berths for oil and gas tankers, three general berths for bulk and other cargoes, one Ro-Ro cargo berth and one container berth should be provided. Such facilities would alleviate the intense pressures placed upon St Peter Port Harbour and meet long term demands for increased imports across a range of products.

12. The Marine Traffic Survey was reviewed by the consultants in 1991, the results of which reinforced the findings of the earlier study.

United Kingdom Health and Safety Executive Reports
(Report - Section 4.3)

13. During 1992 two safety reports considered the unloading of volatile fuels at St Sampson's Harbour. The reports provided details of the various hazard zones should an accident occur involving volatile fuels. Relocation of fuel discharge operations offshore as proposed moves the hazard zones for such away from the busy retail and residential areas around St Sampson's Harbour.

Phase I Site Investigations - Hydraulics Research Limited
(Report - Section 4.4)

14. As a result of these investigations, which included mathematical/computer modelling using comprehensive data obtained on site, the most promising design for the harbour extension has been determined - See Appendix 2 of the Report. This design needs to be verified by constructing and testing physical models.

Land Utilisation Study - Coode Blizard Limited (Report - Section 4.5)

15. This report included recommendations for shore based facilities which would be needed for Port operations, together with a sketch layout. The study concluded that over half of the land at Longue Hougue Phase II would be required for Port operations.

Reconnaissance Environmental Impact Assessment - W S Atkins Environment Ltd (Report - Section 4.6)

16. This report considered the possible effects of the harbour development on the environment, and concluded that there did not appear to be any over riding reasons why the development should not be allowed to proceed. It added that although the construction and operation of the harbour extension would have a number of environmental implications, these were generally not substantial and could largely be mitigated.

Alternative Schemes Considered to the Proposed Development of Deep Water Berths (Report - Section 5)

17. The Board considered a range of alternative schemes, including offshore moorings and the construction of a third port. Also taken into account in relation to their effect on the harbour extension proposals were the possibility of an electricity link to France, the construction of a single liquid petroleum gas tanker berth alongside the existing St Sampson's breakwater, and AMEC Marine's proposals which also incorporated the reclamation of Belle Greve Bay.

18. The Board concluded that the Island's need for a deep water harbour facility remained and was clearly an essential project of major importance to the Island's economy and future growth.

Proposed Phase II (Physical Model) Laboratory Investigations (Report - Section 6)

19. These are essential to verify the findings of Phase I site investigations and the proposed harbour layout. The studies will take approximately six months to complete and are estimated to cost around £323,000. Included will be studies on wave activity, current flows and navigational matters. Video recordings of these effects on the 3-D models to be constructed will be produced.

20. The Board's Report proposes that in addition to the above investigations to be carried out by Hydraulics Research, Coode Blizard Ltd should carry out a detailed study on fuel pipeline and discharge facilities, the estimated cost of which is £6,000.

Proposed Development of St Sampson's Harbour, including Facilities, Layout, Costs and Time scales (Report - Section 7)

21. The facilities to be included in the development have been listed in paragraph 11 of this summary. The extended harbour layout (Appendix 2 of the Report) has been prepared on the basis of investigations to date and is subject to the results of physical model studies which are proposed.

22. The largest element in the costs is for the construction of breakwaters and reclamation bunds. Additional substantial cost elements include those for dredging and for the construction of quays.

23. The Board's Report details two options for the construction of the harbour extension. **Option 1** is estimated to cost £49,665,00 and would take a minimum technically of 8 years to construct up to and including two oil/gas tanker berths. Additional berths have been included in the cost estimate (i.e. Ro-Ro, container and general cargo berths) and these would be constructed when needed.

24. **Option 2 (the Board's preferred option)** is estimated to cost £45,990,000 and would take a minimum technically of 6 years to construct up to and including two oil/gas tanker berths. Again, additional berths have been included in the cost estimate, to be constructed when needed. Option 2 provides for the earliest provision of a deep water fuel berth.

25. It should be noted that deep water fuel tanker berths can be provided without extensive in fill. However, the development of other berths will require appropriate reclamation. Timing for these additional berths will be influenced, primarily, by the Island's needs and by the speed of reclamation.

Financing the Development (Report - Section 8)

26. The Board's view is that the funding of the greater part of this development should be through the industry which will actually use and benefit from the facility. The Board has suggested that harbour dues on hydrocarbon fuels and gas should be substantially

increased to raise funds for the development. Island history shows that marine developments have on many occasions been financed through the users of the same. It is proposed that increases on harbour dues are removed upon completion of the development.

27. Neither general revenue nor the Ports Holding Account could provide sufficient funds, in their present forms, for the project.

28. One illustrative set of increases to hydrocarbon dues is shown in Appendix 10 of the Board's Report. This shows increases in harbour dues necessary to undertake the development over 12 years, which the Board considers to be an acceptable period. This example would give an increase on the Guernsey RPI of 0.42% in relation to the June 1992 figures. The Report also shows related cash flows (Appendix 11). It has been suggested that a separate account should be set up to hold any funds generated by such increases. It is suggested that Ro-Ro, container and general cargo berths may be funded by the Ports Holding Account as and when needed - the current estimate for this work is £8,715,000.

Consultations (Report - Section 9)

29. The production of investigative reports used in consideration of the development of deep water berths required consultations with a wide range of interested and involved parties, including United Kingdom and local fuel companies, ship owners and authorities such as the United Kingdom Health and Safety Executive.

30. In addition, the Board arranged a series of presentations in May 1993 at which it outlined its proposals for St Sampson's Harbour. These presentations were to the private sector including fuel companies and other harbour users, Deputies and Douzaines of the Vale and St Sampson's Parishes, and to all States Members.

31. Arising from the presentations was the suggestion that the consultants who compiled the Marine Traffic Forecast Survey, Robert West and Partners, and representatives from the United Kingdom Health and Safety Executive, should be invited to the Island to take part in a meeting with those who had attended the presentations mentioned above. It was agreed that the Board would pursue the necessary arrangements.

32. Comments are also made on the Island Development Committee's remarks contained in its letter forming Appendix 13 of the Report.

Recommendations (Report - Section 10)

33. The Board's Report will recommend the States to:

(1) note the results of Phase I site investigations;

(2) authorise the Board to commence Phase II physical model studies, for a sum not exceeding £323,000.00;

(3) authorise the Board to investigate fuel pipeline requirements for a sum not exceeding £6,000.00;

(4) approve expenditure in the sum not exceeding £22,895.00 for a Reconnaissance Environmental Impact Assessment for the proposed development, such sum having already been met in the first instance from the Advisory and Finance Committee's Technical Services Consultant's vote;

(5) approve expenditure for a sum not exceeding £6,720.00 for the engineering consultancy services to the Board of Coode Blizard Ltd. Consulting Engineers, which services have included presentations on the proposed development;

(6) direct the Board to report back to the States with the results of Phase II physical model studies;

(7) direct the Board to carry out further consultation with the Commercial Port Users Association and other interested bodies before reporting back to the States with recommendations concerning whether or not to proceed with the planning of an extension to St Sampson's Harbour;

(8) direct the Board to consult with the Advisory and Finance Committee concerning the funding of the extension to St Sampson's Harbour and to put forward appropriate recommendations for such funding at the time that the main propositions are put to the States, should it be agreed, in due course, to recommend the States to proceed with an extension to the Harbour.

HARBOUR OF ST SAMPSON'S - LAND RECLAMATION AND DEVELOPMENT OF DEEP WATER BERTHS

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Development Investigations Undertaken to Date

1. Tankers currently operating at St Sampson's Harbour.

2. Proposed Harbour Layout Showing Major Fire Hazard Zones for (a) 1992 and (b) 1993.

3. Marine Traffic Forecast Survey undertaken by Robert West and Partners - Chartered Consulting Engineers.

4. Hydraulics Research Limited, Wallingford - Harbour Development St Sampson's - Phase I Site Investigations (completed).

5. Reconnaissance Environmental Impact Assessment Non-technical summary - WS Atkins Environment.

Alternative Schemes considered (to the proposed development of deep water berths)

6. Review of offshore tanker berths - Versluis SPM Advisory Services BV/Shell International Marine Ltd.

The Proposed Development of St Sampson's Harbour

7. Details concerning the phased development of St Sampson's Harbour, including estimated costs at 1993 prices.

Financing the Development

8. Retail Prices Index calculations.

9. Imports of Hydrocarbons for 1988 to 1991 (excluding LPG).

10. Suggested increase in harbour dues and resultant revenue for hydrocarbon fuels and gas.

11. Cash flows (at 1993 prices) over the proposed development period.

12. **Statistical Digest 1992 Section 9: Energy.**

13. **Island Development Committee - views on proposals.**

The President,
States of Guernsey,
Royal Court House,
St. Peter Port,
Guernsey.

18th June, 1993.

Sir

HARBOUR OF ST SAMPSON'S - LAND RECLAMATION AND DEVELOPMENT OF DEEP WATER BERTHS

1. **INTRODUCTION**

1.1 The purpose of this report is:-

- to present the findings of investigations into the development of deep water oil/gas and bulk cargo berths outside St Sampson's Harbour and to report back to the States with full details and costs of this project as directed by the States in September 1988 (Billet d'Etat XX); and

- to seek approval and the necessary funding of £323,000 to commence Phase II laboratory (physical model) investigations that are required before any further detailed designs for the development of deep water berths can be considered and to investigate the provision of fuel pipelines and unloading facilities and seek approval for the necessary funding of £6,000.

1.2 In reporting on the costs of the proposed development as directed by the States the Board has also considered the funding required. In this respect the Board is of the opinion that the funding of the substantial part of the proposed development should be principally raised through the industry that will benefit from it by an increase in harbour dues for hydrocarbon fuels and

gas. This method has been identified in the Policy Planning, Economic and Financial Report of 1992 (Billet d'Etat XIII) - the 'user pays' principle.

2. **BACKGROUND**

2.1 The following is a most recent list of Billet d'Etat's concerning the development of Longue Hougue Bay and St Sampson's Harbour. All these Billets are available for viewing at the Greffe, public libraries and various States departments.

HARBOUR OF ST SAMPSON'S DEVELOPMENT - BILLET D'ETAT

Year	Billet d'Etat	Page (Resolution)	Title
1981	XVIII	657 (140)	Land Reclamation at Longue Hougue Bay
1983	X	548 (80)	Harbour of St Sampson's - Protective Walls
1983	XXV	1232 (194)	Harbour of St Sampson's - North Side Fuel Discharge Berths
1984	VIII	334 (70)	Harbour of St Sampson's - Safety Improvements
1985	IV	135 (33)	Harbour of St Sampson's - Safety Improvements
1988	VIII	200 (41)	Reclaimed land at Longue Hougue - Sale and Lease of Land
1988	XX	802 (132)	Land Reclamation and Development of Deep Water Oil and Gas Tanker Berths
1990	VIII	308 (48)	Sale and Lease of Land at Longue Hougue
1990	XII	508 (89,102)	Land Reclamation and Refuse Disposal
1990	XVIII	917 (129)	Longue Hougue Land Reclamation - Contract Supervision

2.2 In 1988 (Billet d'Etat XX) the States considered the Board's policy letter entitled "Harbour of St Sampson's - Land Reclamation and Development of Deep Water Oil and Gas Tanker Berths." Prior to the 1988 policy letter the States had approved a range of temporary measures put forward by the Board during the 1980s to improve safety at St Sampson's Harbour. These measures were concerned mainly with lessening the risk of death or injury to persons in the vicinity of the harbour, where large volumes of volatile fuels were (and continue to be) discharged. 2.7

2.3 The protection of human life remains the Board's chief concern with regard to fuel discharge activities at St Sampson's Harbour. Furthermore, a serious incident at this location would have dire consequences for the Island as a whole, as this site is the Island's "fuel inlet". The cost to human life and property in the event of a serious accident at the site is one which the Board feels is too great to contemplate without at the same time progressing measures to reduce as far as possible the inherent risks associated with such operations. 2.8 2.9 2.1

2.4 The Board's 1988 policy letter highlighted the trend for the small coastal ships that serviced the Island with fuels to be replaced with larger vessels which require deeper water than that which can be provided within St Sampson's Harbour. Furthermore, it was stated that, increasingly, these modern tankers would not be designed to settle on the sea bed (as happens at present, leaving the vessel immobile should an accident occur), but instead need to remain afloat at all times. If the Island cannot provide facilities for the new generation of vessels it will find, in the long term, that it will be increasingly difficult and expensive to acquire essential fuel supplies (see **Appendix 1** for details of tankers currently operating at St Sampson's Harbour). 3. 3.1

2.5 Tidal conditions, close proximity to populated areas and existing physical limitations in the size of St Sampson's Harbour mean that the development of deep water berths is absolutely essential in order to meet the Island's safety and fuel needs in the future. This objective remains the Board's number one marine priority.

2.6 The Board presented a provisional layout of the harbour breakwaters as an appendix to its 1988 policy letter. A refined layout, prepared on the basis of research undertaken since that time, is appended to

this report (**Appendix 2**). This layout also shows major fire hazard zones prepared as a result of United Kingdom Health and Safety Executive reports produced during 1992. A larger layout will be displayed at the Greffe for the information of States Members.

2.7 Both the Capital Works Sub-Committee and the Island Development Committee supported the Board's original development proposals, during 1988, to provide deep water berths at St Sampson's Harbour.

2.8 After consideration of the Board's report of 1988 the States resolved, inter alia:-

2.9 "To authorise the States Board of Administration to investigate further the development of deep water oil/gas and bulk cargo berths outside St Sampson's Harbour ..... and to direct that Board to report back to the States within 2½ years with full details and costs of this project."

2.10 This report has, however, been delayed due to the depth and complexity of investigations required.

3. THE NEED TO PROGRESS THE DEVELOPMENT OF ST SAMPSON'S HARBOUR

3.1 PRINCIPAL NEEDS

These have been identified as follows:-

a) to protect human life and property as far as possible by providing offshore facilities to enable vessels carrying volatile fuels to discharge their cargoes outside the existing St Sampson's Harbour so that the major fire hazard zones for the existing volatile fuels berth will be moved offshore and away from the busy retail and residential areas at the Bridge - see Appendix 2;

b) to allow hazardous cargoes (such as chemicals and explosives), currently handled at St Peter Port Harbour, to be handled instead at St Sampson's Harbour when the oil and gas berths are vacant, being at a greater distance from the population; and,

c) to ensure that the Island's future fuel and bulk cargo demands will be satisfied by providing a harbour facility which will be able to receive significantly increased future imports and the next generation of larger vessels during all tides and in all but the most severe weather conditions.

3.2 SUMMARY OF ADDITIONAL BENEFITS

3.2.1 In addition to the above identified needs, the following benefits are included amongst those which will result from the development of the existing harbour at St Sampson's:-

a) All commercial vessels currently using St Sampson's Harbour could be berthed outside the existing harbour.

b) Fuel and bulk cargo vessels will be afforded 24 hour working at the deep water berths, rather than the restricted access which occurs at present.

c) Larger vessels will be able to supply the Island and will be able to remain afloat at all times, having a quicker turnaround time (eg 6 hours instead of 20 hours), thereby reducing the Island's fuel and bulk cargo import delivery costs through larger volumes and increased handling efficiency. Vessels may be removed from the berth at any time during the discharge period should difficulties arise. This is not possible at present.

d) Provision would be made to enable containers to be stuffed and unstuffed in the port area of the proposed development. This would reduce considerably the number of heavy loads on Island roads.

e) It should be noted that, since 1988, meetings have taken place between the Board, BP Oil, Esso Petroleum Company Ltd, Shell, Kosangas and F T Everard & Sons Management Ltd. Some of these companies were not prepared to commit themselves to specifying their future requirements for the harbour expansion at this stage. However, the companies were clearly aware that delivery costs would be reduced if larger vessels were able to discharge at the harbour, provided the land side facilities were available, and they would also benefit from lower costs due to reduced turn around times as vessels could adopt 24 hour working rather than being tide restricted. On this basis, the Board has been advised by one shipping company which was consulted that savings of up to 19% on shipping delivery costs for fuels could be achieved. **These potential savings are on delivery costs**, not on actual cargo costs.

Similar benefits in terms of delivery cost savings could be achieved if deep water berths for dry bulk cargoes are made available. The Island's building industry, in particular, would benefit from such savings.

The scheme provides for land to be made available through reclamation, providing valuable commercial opportunities surplus to that land which will be required for port operations. In addition and for illustrative purposes it should be noted that the approximate area of sea to be enclosed by the development (at high water) ie between the existing pier heads at St Sampson's Harbour and the proposed new pier heads **= 170 vergees (approx 69 acres).** For comparison purposes St Peter Port Harbour is almost the same area at 172 vergees and St Sampson's existing harbour is only 44 vergees (18 acres).

Marine and General Engineers Ltd shipyard could be relocated to the outer harbour, removing industrial premises from the inner harbour and providing valuable space for revised traffic arrangements. Positive discussions between the Board and Marine and General have already taken place in this respect, and both parties have identified the benefits of such a move.

The development of the harbour would provide an opportunity for future road improvements at the Bridge which would alleviate traffic congestion currently experienced at that location.

The scheme would also benefit St Peter Port in that commercial marine traffic could be transferred from the heavily used St Peter Port Harbour, which is the focal point of visitor activity. Its attraction is one of the Jewels in the Crown of Guernsey's tourist ambiance.

St Peter Port Harbour itself could then be used far more as a centre for leisure by both locals and visitors. Large areas of our beautiful harbour are being sterilised from recreational use due to intense commercial operations and the associated safety requirements. An example is the loss of vehicle and pedestrian access to the White Rock spur which was once enjoyed by both islanders and tourists.

k) Since the reduction in coal imports at St Sampson's, the Bridge and North and South Sides have become very busy and popular residential and retail areas. Our northern port has its own particular charm which is of great value to Islanders and visitors alike but could be enhanced by the relocation of commercial vessels and operations from the existing harbour to an outer harbour location. 3.3.5 3.3.6

l) Furthermore, the relocation of commercial vessels currently using St Sampson's Harbour to an outer harbour would allow for additional simple moorings for local vessels to be made available within the existing harbour. 3.3.7

3.3 DISADVANTAGES OF ONLY MAINTAINING THE PRESENT HARBOUR FACILITIES

3.3.1 According to the findings of extensive research and detailed investigations carried out to date the Island's future fuel and bulk cargo demands will not be met as the existing vessels, which are currently able to service the Island's needs and cope with the natural site restrictions and inadequacies at St Sampson's Harbour, are expected to be increasingly difficult to acquire to meet the Island's long term requirements for the range of products concerned. 3.3.8

3.3.2 Economics dictate that those few vessels which may continue to be available will be **increasingly costly** to use in a market which is moving towards ever larger vessels. 3.3.9

3.3.3 It is harbour policy that tankers are not considered for berthing, other than in exceptional circumstances, on tides where the predicted high water is less than 8 metres. In 1992 this permitted a theoretical total of only 183 days of the year when tankers could be berthed. There are, however, tankers regularly running to St Sampson's which are of a larger draft and these vessels would require tides of 8.5 metres or higher to berth on the south side of St Sampson's. 3.3.1 3.3.1

3.3.4 It must be borne in mind that it is not only fuel tankers that call at St Sampson's during the spring tide period, but also other vessels carrying cargoes of coal, sand, gravel, etc. **This therefore means that the demands on the available berths during the spring tide periods are at their greatest.**

3.3.5 In addition, particularly with regard to the north side berths, the length of some of the tankers precludes the Harbour Authorities from using the balance of the berth for other vessels, except for those under 200 feet in length.

3.3.6 It must also be appreciated that adverse weather and tidal conditions, which are not uncommon in the winter months, lead to yet further restrictions being experienced by vessels attempting to enter the existing harbour at St Sampson's.

3.3.7 The Marine Traffic Forecast Survey undertaken in 1989 by Robert West and Partners, Chartered Consulting Engineers, clearly stated as a result of their research that:-

"It is therefore concluded that expanded facilities will be required between the year 1995 and the year 2000. The consultants recommend that it would be prudent to start planning the necessary extended facilities immediately."

3.3.8 As a result of research carried out to-date the Board is of the opinion that if the proposed development is not carried out, then St Sampson's Harbour will be unable to receive the larger fuel and other cargo vessels of the next century. It will prove very difficult if not eventually impossible to acquire the use of suitable small vessels in the future within reasonable cost parameters.

3.3.9 **The Robert West survey shows that the existing harbour's limited berthing and handling capacity will not cope with expected future increases in import volumes, quite apart from the issue of vessel size.**

3.3.10 If the harbour is not developed then existing risks of death or injury to persons and destruction or damage to property in close proximity to volatile fuel discharge operations at St Sampson's Harbour will remain as at present.

3.3.11 In addition, the brief summary of identified benefits listed earlier in this report, which include significant future savings on import delivery costs and the enhancement of the area in the vicinity of St Sampson's Harbour, will be lost.

4. DEVELOPMENT INVESTIGATIONS CARRIED OUT TO DATE

4.1 GENERAL

4.1.1 Subsequent to its 1988 report, the Board commenced a series of preliminary investigations concerning the development scheme. It should be noted that the proposed length of the breakwaters has been reduced, and the layout amended, in the light of the results of research to date.

4.1.2 Preliminary investigations and reports have been undertaken as follows:-

Consultant	Title	Date
Robert West & Partners	St Sampson's Harbour Traffic Forecast Survey	August 1989 (Addendum/ Review July 1991)
Hydraulics Research, Wallingford	(Phase I Investigations) Harbour Development at St Sampson's - Field Data Collection and Appendix A	December 1989
Hydraulics Research, Wallingford	(Phase I Investigations) Port Development at St Sampson's - Feasibility Studies Volumes 1 and 2	March 1991
Coode Blizard Ltd	St Sampson's Harbour Development - Land Utilisation Study	March 1991
Versluis SPM Advisory Services BV	Review of Offshore Tanker Berths	July 1991
United Kingdom Health and Safety Executive	Unloading of volatile fuels at St Sampson's Harbour	March and June 1992
Shell International Marine	Analysis of Versluis report	August 1992
W S Atkins Environment	Reconnaissance Environmental Impact Assessment	March 1993

4.1.3 **Copies of each of the above reports have been deposited at the Greffe for the information of States Members.**

4.2 **Robert West and Partners - Marine Traffic Forecast Survey**

4.2.1 This report, based on Statistical Digest Reports and trends in product usage, was designed to consider the adequacy of St Sampson's Harbour, which has not been significantly improved since the 1800s, for present and future predicted marine traffic. The report noted that because of navigational difficulties, the Harbour Authority already imposed a restriction of a length overall (LOA) of 79.2 metres on vessels entering the harbour. **Future oil tankers are expected to have LOAs of between 90 and 104 metres in length.**

4.2.2 The report concluded:

"Following an analysis of the existing vessel fleet and cargo traffic to and from St Sampson's Harbour, the consultants have concluded that expected increases in vessel size and increased import/export volumes would be likely to exceed the capacity of the existing facilities by the turn of the century"; and

"even if existing vessel sizes could be maintained, the existing berthing and handling capacity of the port will be exceeded by the year 2000 as a consequence of demand for increased cargo traffic". The report recommended that facilities to be provided should include two liquid product berths and three dry bulk cargo berths.

4.2.3 From the findings of the Marine Traffic Survey it is clear that the creation of new berths outside the existing Harbour of St Sampson's should not be limited to those for fuel tankers and that facilities will also be needed for other types of cargo vessels, including facilities for cargo Ro-Ro vessels.

4.2.4 **The Board is of the opinion that, in the medium and long term strategic interests of the Island, the existing and foreseen inadequacies at St Sampson's Harbour should be addressed at the earliest opportunity. The economic recession experienced at the time of submission of this**

report should not weaken resolve to maintain and enhance, wherever possible, the Island's facilities and economic strengths in the short, medium and long term.

4.2.5 An Addendum to and Review of the Traffic Forecast Survey was undertaken by Robert West and Partners during July 1991.

4.2.6 The 1991 Review included the following conclusions:

- the general view of operators of both oil and gas carriers was that for reasons of efficiency and availability, the size of vessels would continue to increase; 4.3

- existing restrictions at St Sampson's Harbour could lead to island stocks of oil and gas falling to low levels;

- the general trends for marine traffic forecasted within the 1989 report appeared to be borne out by events subsequent to the report; and, 4.3.

- the availability of vessels of the size able to operate at St Sampson's Harbour would reduce in coming years.

4.2.7 **Further details from the Marine Traffic Forecast Survey are shown in Appendix 3 of this report and Appendix 12 shows Section 9 (Energy Imports and Consumption) of the 1992 Statistical Digest Report.**

As an example, the latter shows that Heating Oil Imports increased by 61.7% between 1984 and 1991, and Gas Imports (LPG) increased by 72% over the same period. 4.3.

4.3 **UNITED KINGDOM HEALTH AND SAFETY EXECUTIVE - SAFETY REPORTS**

4.3.1 During 1984 a Report was undertaken by the Health and Safety Executive on the Safety of Unloading Operations of Petroleum Products and Liquified Petroleum Gas (LPG) at St Sampson's Harbour. 4.3.(

4.3.2 The 1984 study, which led to a range of safety improvements including the construction of a new road and the relocation of Channel Welders, included the following under Section 5.1 of the Report:-

"St Sampson's Harbour, Guernsey, is similar in its scale and type of operation to a number of importing ports for petrol and LPG on the United Kingdom mainland. There are, however, two unusual but not unique features. Firstly, during discharge, gas carriers and petroleum tankers become grounded and sit on a sandy bottom at low tide. Secondly, within a comparatively short distance from the LPG and petroleum discharge points on the South Quay, there are offices and workshops where people are at work during daylight hours."

More recently, the United Kingdom Major Hazards Advisory Unit of the Health and Safety Executive has prepared Reports on the unloading of volatile fuels at St Sampson's Harbour, at the request of the Board of Administration. These Safety Reports dated March and June 1992, will be made available at the Greffe for the information of States Members. They provide among other matters statistical information and plans relating to the various on-shore zones should an accident occur involving a blast caused by volatile fuels.

A hazard zones plan, incorporating the results of the recent safety reports superimposed on the proposed harbour layout, is shown under Appendix 2. A large scale plan will also be made available at the Greffe for the information of States Members. The data provided confirms the Board's opinion that the development of St Sampson's Harbour along the lines now proposed is, in addition to other important considerations, clearly in the best interests of public safety.

The Board is of the opinion, in the light of health and safety aspects, that serious consideration should be given to the relocation (eastwards) of the vertical gas storage tanks currently sited along Bulwer Avenue and replacement with mounded tanks which would present significantly improved safety to residential and retail areas around St Sampson's Harbour.

The proposed harbour development allows for vessels to remain afloat during the discharging operation, so that they will be able to be removed from the berth relatively quickly should a hazardous situation arise.

The discharge of volatile fuels would also take place further away from the built up residential and retail areas around St Sampson's Harbour.

4.3.7 The original 1984 Health and Safety Report on volatile fuel unloading operations at St Sampson's Harbour included a total of 24 recommendations on various aspects of the unloading facilities. The necessary improvements have been made with the exception of recommended improvements to fire fighting water facilities, although the facilities on the North Quay are largely unchanged.

4.3.8 Investigations into the provision of a suitable water supply have been undertaken over a number of years and significant progress is now being made by the Committee for Home Affairs (now responsible for the project following discussions with the Advisory and Finance Committee), with the active involvement of the States Water Board and the Guernsey Fire Brigade. The Board is grateful to Shell Oil for their offer to the States of the redundant oil tanks west of Bulwer Avenue, which tanks can be used as the main storage facility for the new fire main which is proposed for the South side, and to the States Water Board for its offer of the necessary water supply from Longue Hougue Quarry which may be called upon in the event of an incident.

4.4 SUMMARY OF PHASE 1 SITE INVESTIGATIONS UNDERTAKEN (MATHEMATICAL MODELLING)

4.4.1 As a result of its investigations as detailed in this Report (including alternative schemes considered in Section 5) the Board concluded that there was no viable alternative to accommodating predicted increases in imports/vessel sizes and improved safety at the Harbour other than to progress the Board's original proposals of 1988 and to further pursue, as directed by the States, investigations concerning the development of deep water berths.

4.4.2 The Phase I site investigations approved by the States of Deliberation (Billet d'Etat No XX 1988) have now been completed.

4.4.3 The main thrust of these investigations was to determine an optimum layout for the proposed harbour extension and deep water berths based on the results of extensive site investigations assisted by computer/mathematical modelling techniques.

The States voted a sum of £293,992 to cover the cost of these preliminary investigations. There was a saving of £11,748.45 which was frozen and no longer accessible to the Board following the setting up of the Advisory and Finance Consultancy Fee vote in 1992.

Phase I site investigations and further studies were supervised by Coode Blizard Ltd who have reported in detail to the Board of their findings, all of which were satisfactory.

As a result of all of the investigations and research the most promising design for the harbour extension given the natural constraints of the site was determined and submitted to the Board.

The proposed layout is shown in Appendix 2 (with hazard Zones superimposed).

The research undertaken during the Phase I investigations is summarised in Appendix 4.

LAND UTILISATION STUDY

A Land Utilisation Study of the southern area (Longue Hougue Phase II) in the proposed development for harbour operations was undertaken by Coode Blizard Ltd.

Amongst other things, the report considered that provision could be made to enable containers to be stuffed and unstuffed in the Port Area of the proposed development, so reducing considerably the number of heavy containers on Island roads.

The report also provided a breakdown of the areas of land which would be likely to be needed for Port operations, together with a sketch layout.

The cost of buildings which would be required in addition to the costs to service the proposed harbour extension, including a Port Administration Office and Container Freight Station, are not included in this Report and would have to be met from the Ports Holding Account in line with existing policy in this regard. Capital costs for buildings would be recovered through charging commercial rents where applicable.

4.5.5 The actual layout of the area and detailed requirements for Port operations were not formally considered as this was acknowledged to be best dealt with as part of the detailed design for the Harbour, at which time methods of operation would also be carefully examined.

4.5.6 The land utilisation study concluded that:-

"..... approximately half the land that is presently being reclaimed (at Longue Hougue Phase II) as part of St Sampson's Harbour development will be required for Port operations if the development of the deep water facilities at St Sampson's is approved"; and

"..... care must be taken not to allocate land use in this area that will restrict future Port operations if the development of the deep water harbour at St Sampson's goes ahead."

4.5.7 Should the Board's proposals for developing St Sampson's Harbour be approved, reclaimed land, including Longue Hougue Phase II, totalling 116 vergees (46 acres) will be created. Approximately 73 vergees (29 acres) will be required for harbour operations. 35 vergees (14 acres) will be available for commercial and/or light industrial purposes with the remaining 8 vergees (3 acres) forming a buffer zone between the harbour works and the recreational areas of La Banque Imbert and Bordeaux.

4.5.8 The Board has been advised that, at 1992 rental values, the proposed land area available for commercial and/or light industrial purposes is worth between £200,000 and £600,000 per annum in rental terms.

4.5.9 The Board would wish to emphasise that passenger traffic will continue to pass through St Peter Port Harbour.

4.6 RECONNAISSANCE ENVIRONMENTAL IMPACT ASSESSMENT

4.6.1 In line with Environmental Policy as detailed in the Policy Planning, Economic and Financial Report, 1992 and following consultations with the Advisory and Finance Committee, the Board was given approval to commission a Reconnaissance Environmental Impact Assessment of the proposed development, undertaken by W S Atkins Environment Ltd, for the sum not exceeding £22,895.00. This

sum has been met in the first instance from the Advisory and Finance Committee's Consultants Vote but the Board now proposes that the States vote it a credit to cover the above cost, to be taken from its allocation for expenditure on capital works.

In line with good environmental practice it was agreed that the Reconnaissance Environmental Impact Assessment results should be made available to assist the Board in coming to an informed view of the probable environmental consequences of its proposals.

The Consultants were provided with copies of relevant reports and studies and a list of primary contacts for their research.

The Reconnaissance Environmental Impact Assessment considered the following areas in relation to the possible effects of the harbour development:-

- Planning
- Landscape and Visual Impact
- Operations and Hydrodynamics
- Safety and Environmental Risk
- Noise and Vibration
- Traffic
- Air Quality
- Solid Waste Disposal and Land Reclamation
- Water Quality and Pollution
- Ecology
- Fisheries
- Archaeology and Cultural Heritage
- Geology
- Comments from Harbour Users

The Report concluded that:-

'There do not appear to be any over-riding reasons why the development should not be allowed to proceed. Although the construction and operation of the St Sampson's Harbour extension will have a number of environmental implications, these are generally not substantial and can largely be mitigated.

The detailed assessment of potentially significant impacts, monitoring of effects, planning of environmental controls, and the preparation of environmental protection programmes is recommended.'

4.6.5 The following specific environmental issues were also detailed in the Conclusions of the Report:-

"(a) There are considerable difficulties in manoeuvring in and out of the existing St Sampson's Harbour. With the proposed development these difficulties will on balance be reduced. While current speeds across the Harbour mouth may increase slightly the wider harbour entrance will more than compensate.

(b) A wide harbour entrance could be less effective in providing shelter. Unacceptable wave conditions could arise once every 50 years. Physical modelling studies are planned to further investigate the currents and wave climate in the harbour.

(c) Changes in current speeds in the Little Russel could modify sediment deposition at the NW tip of Herm and the Great Bank.

(d) The proposed development will bring about significant improvements in safety.

(e) From St Sampson's the development would partly obscure views towards the coast and Herm Island, and dominate the landscape setting of the scheduled monuments of Vale Castle, Mont Crevelt and the associated car park. There will be some benefit from the proposed relocation of existing harbour facilities.

(f) The development would be a major feature in views from Bordeaux Harbour. Appropriate landscaping would reduce the visual impact. From the vicinity of St Peter Port Harbour the development would be seen as a middle distance extension to the industrial area of Bulwer Avenue.

(g) From Herm the development would be backgrounded by Mont Crevelt, the power station and the landform beyond. The area would be visible but generally only the cargo ships would be seen as individual elements.

(h) Night time construction noise could give rise to complaint. Impacts could be lessened by appropriate controls. It is unlikely that there will be a problem of noise from shipping operations in the new harbour. Night time industrial operations and loading/ unloading of bulk goods would require strict control.

(i) There is likely to be a significant increase in heavy traffic in the vicinity of the harbour. Some of this traffic would, with present plans, need to pass through the Bridge, an area already subject to traffic congestion. A Working Party has been set up by the States Traffic Committee to assess methods of improving both road safety and traffic management.

(j) The development is not likely to have a significant effect on air quality.

(k) Reclamation of Longue Hougue with inert waste will greatly improve the present shortage of disposal resources on the Island.

(l) The reclamation of Longue Hougue with waste materials is potentially an important issue. Though 'inert' waste will be used, some local environmental impact is likely. The scale of effect will depend on waste permitted to be deposited, site design and engineering, and site operating practices.

(m) Construction will have a small temporary impact on water quality. Operation is unlikely to have any significant effect. Water quality in the inner harbour may at times be adversely affected, but this will not be significant.

(n) Present water quality near St Sampson's often breaches EC standards for bacteria. The relocation of the emergency sewage overflow from the harbour area and similar proposals to remove combined surface drainage will benefit water quality.

(o) There are no significant ecological impacts associated with the proposals.

(p) Direct impacts on fisheries are small. There will be a loss of potting area on Black Rock, but this is only locally significant - the new breakwaters may provide areas suitable for potting once recruitment of young crustaceans has occurred. The possible modification of the sandy area to the NW tip of Herm and the Great Bank could have some small impacts on fisheries.

(q) The proposals for the port development do not directly affect any sites of cultural heritage or buildings of architectural interest. There is no information to suggest that important wrecks or similar sites occur offshore or may be affected by the proposals."

4.6.6 The Board's commitment to good environmental practice means that environmental considerations will continue to be taken into account as part of the ongoing planning process. The information provided by the Reconnaissance Assessment will prove invaluable in this respect.

4.6.7 A copy of the Non-Technical Summary of the Reconnaissance Environmental Impact Assessment is shown under Appendix 5 of this Report and the full Report has been lodged at the Greffe.

5. ALTERNATIVE SCHEMES CONSIDERED TO THE PROPOSED DEVELOPMENT OF DEEP WATER BERTHS

5.1 INTRODUCTION

5.1.1 It has been necessary for the Board to consider a range of alternative schemes, other than the deep water berths and harbour extension proposed. These alternative schemes are described below.

5.2 VERSLUIS SPM ADVISORY SERVICES BV - REVIEW OF OFFSHORE TANKER BERTHS

5.2.1 A review of offshore tanker berths was undertaken by Versluis SPM Advisory Services BV and finalised in July 1991.

5.2.2 The Versluis Report had been compiled without the benefit of full consideration of the prevailing current and weather conditions, therefore, the report was subsequently analysed and the information reviewed and updated by Shell International Marine Ltd in August 1992.

The Versluis Report considered the possibility of constructing and utilising Multiple Buoy Moorings (MBMs), Single Point Moorings (SPMs), and Hose Reel Discharge systems as alternatives to constructing deep water berths off St Sampson's Harbour.

However, tidal difficulties, the range of fuels received into the Island, and predicted future increases in fuel and other imports (including bulk cargoes) mean that the alternatives considered in the Versluis Report do not offer viable schemes to meet the Island's importation and Safety Requirements.

Moreover, the Shell International Marine Ltd analysis of the Versluis Report concluded:-

'We would not consider the northern end of the Little Russell to be a suitable location for any form of offshore berth, given the volume of passing traffic and the consequent risks associated with the handling of sensitive oil products in an exposed location.'

Further details from the Versluis and Shell International Marine Reports are shown in Appendix 6 of this Report. Copies of these reports have been deposited at the Greffe for the information of States Members.

ELECTRICITY LINK TO FRANCE

It has been suggested that an electricity link to France could be provided which would reduce the amount of heavy oil required in the Island. The Board has been advised that this matter has been discussed by the States Electricity Board over a number of years. It has been pointed out that even if the electricity link were to be progressed, the power station would still require heavy fuel oil imports for plant operations as generation would be necessary during the summer months, and probably 100% generation capacity would be needed during the winter months.

CONSTRUCTION OF A THIRD PORT

The Board has given detailed consideration, over a number of recent years, to the possibility of developing a third port off Spur Point instead of extending St Sampson's Harbour.

5.4.2 However, this would have given three ports within two miles of each other. This idea was not pursued as it was agreed that such a proposal would place unnecessary and uneconomic demands on the Harbour Authority for more staffing, buildings and equipment. Indeed, the third Port which was considered would not in any way meet the Island's future fuel and bulk cargo import requirements which are clearly shown in the Robert West Marine Traffic Survey. 5.5

5.4.3 This Island has had two ports for a very long time and a third port would be a financial liability as well as being visually and environmentally unacceptable.

5.5 **CHANNEL ISLANDS GAS GROUP LTD SUGGESTION** 5.6

5.5.1 The above named company approached the Board towards the end of 1992 concerning an alternative scheme to accommodate liquid petroleum gas (LPG) vessels at St Sampson's Harbour. The company explained that some of the smaller vessels had Been scrapped, that remaining small LPG ships were becoming too expensive to operate, and that replacement larger ships, with superior health and safety features, had larger draughts and the opportunities for berthing in St Sampson's Harbour were more restricted. 5.6. 5.6.

5.5.2 The Company's proposals provided for a dedicated LPG tanker berth at the outer southern breakwater at St Sampson's. Following a site meeting in early 1993 between the Ports Sub-Committee of the Board of Administration, the Company and the vessel owners, the Board wrote to the various parties concerned stating that it could not recommend to the States the suggested location for an LPG berth as an alternative to the proposed development of the harbour for the following reasons: 5.6.

(i) the location was not free from existing tidal restrictions, it would not overcome health and safety difficulties and would not answer the Island's other import needs;

(ii) the proposal would not provide a solution to existing shipping difficulties, and an isolated approach, ie recommending the provision of a facility for the use of one importer did not make strategic sense with regard to the overall needs of the Island;

(iii) engineering advice indicated that the scheme would cost at least £4,250,000 in order to provide a protective breakwater, all-tide sump and access jetty. This level of expenditure was not considered to be cost effective.

The Board noted the Company's concern that existing operational difficulties should be addressed and overcome as soon as possible, and informed the Company that the Board's scheme to meet the Island's long term needs would allow for the provision of a protected deep water gas berth in the early stages of the proposed phased development.

AMEC Marine Proposal (incorporating the reclamation of Belle Greve Bay)

In September 1992, AMEC Marine (formerly Fairclough Marine), a division of AMEC Civil Engineering Limited, approached the Advisory and Finance Committee with a number of ideas based upon strategic issues identified in the 1992 Policy Planning Report. As Fairclough Marine, the company had carried out the construction of the Longue Hougue II breakwater project.

The Advisory and Finance Committee requested the Board to investigate the matter and the suggestions by AMEC Marine were subsequently presented to the Board. The Board then invited all States Members and Senior Officers of a number of States Committees, together with media representatives, to a second presentation of AMEC Marine's proposals.

AMEC's proposals went far beyond the Board's own mandate, and proposed the reclamation of Belle Greve Bay from just above the low water mark. AMEC Marine considered that the land reclaimed could be used to solve some of the various problems detailed in the 1992 Strategic and Corporate Plan namely - local housing, a sewage treatment plant, an 18 hole golf course, a deep water marina and a hotel. Other improvements in the St Sampson's area included improved traffic arrangements and the enhancement of the area in general.

5.6.4 The proposals also included the development of St Sampson's Harbour and the provision of deep water berths. Indeed, should AMEC's ideas have been pursued as a package then the results of the Board's Phase I site investigations would have been fully utilised in further studies to verify and refine the proposed harbour layout.

5.6.5 Following further discussions with AMEC Marine the Advisory and Finance Committee decided that in view of the extent of construction on the reclaimed land which would be necessary to generate revenue, and the level of additional States funding needed, the proposals relating to the reclamation of Belle Greve Bay could not be usefully pursued.

5.6.6 The approach by AMEC, whilst generating useful discussion and associated media and public interest, should not be allowed to divert attention from the Island's need for a deep water harbour facility at St Sampson's and further delay progress in this matter. In fact, the Board's proposals should be seen as an essential project of major importance to the Island's economy and future growth as recommended in the 1992 Policy Planning Report. 6.3

6. PROPOSED PHASE II (PHYSICAL MODEL) LABORATORY INVESTIGATIONS 6.4

6.1 The preliminary investigations authorised by the States in 1988 are now complete and in order for the Board to verify the findings of Phase I site investigations, together with the resultant revised proposed layout, it will now be necessary for Hydraulics Research, Wallingford, to commence physical model investigations in the laboratory. 6.5

6.2 Much of the work already completed by Hydraulics Research would be used in the next stage. The work already completed has for the most part used mathematical modelling techniques utilising information gathered during on site investigations. These mathematical models will provide essential data for the various physical models which will have to be undertaken as the next phase of the project. For example:- 6.6

a) The Bathymetry of the site has been input on computer and this will be used in line with Hydraulics Research Auto Computer Assisted Design programs to provide the design profiles to be used to build the 3 dimensional physical basin model.

b) The wave climate that has been derived for the sites is in Hydraulics Research computer and the program will be used to drive the wave paddles for all the physical model testing.

c) The ship simulation model already exists and has built into it not only the geometry of the harbour layout but also the winds and currents that exist at the site. It is proposed that after the physical modelling is complete further simulation runs should be made.

Apart from the three specific areas referred to above where the work already completed will be used in the future test programme, Hydraulics Research knowledge of the project will be an invaluable input in detailing the future work programme.

These secondary investigations, the results of which are essential prior to any deep water (ie breakwater) construction being undertaken, are expected to take around 6 months to complete.

It is not expected that further surveys of sea bed levels and depths to rock will be required as these elements have already been investigated. It will, however, in a development of such magnitude, be necessary to extend the scope of hydraulic modelling as described above so that the designs can be finalised with confidence.

To reiterate, although studies of wave disturbance in the proposed harbour have been completed using mathematical modelling, these need to be confirmed in a **physical** (wave basin) model. Such a model will give a comprehensive picture of wave conditions within the harbour and video recordings will also be made. The physical model will give a more complete view of the situation and thus lead to the design of the most efficient and effective structures possible.

6.7 It is therefore recommended that the Phase II laboratory studies be carried out at Hydraulics Research, Wallingford. The estimated cost of the work is £323,000 which includes the construction of a scale model of the proposed development which will be submitted to various studies concerning wave activity, current flows and navigational matters. The Board's consultants, Coode Blizard Ltd, advise that these investigations are vital to give the Board and the States the necessary information to enable long term decisions to be taken concerning the proposed harbour development.

6.8 Should Phase II investigations be approved then opportunities will arise for senior commercial ships masters and the local pilots to be involved in further navigational simulations.

6.9 Additional larger scale models will be used for detailed studies on the main deep water breakwaters, enabling the most effective and economic structures to be designed.

6.10 It is proposed that the physical model will be undressed in phases so that the effects of building the structure in phases can be anticipated.

6.11 To enable detailed requirements of fuel pipelines and fuel discharge facilities to be designed it is proposed that Coode Blizard Ltd, the Board's consultant engineers on this project, carry out detailed investigations. This will allow preliminary schematic designs of the pipelines and unloading arrangements to be provided and will also provide cost estimates for alternative arrangements. The estimated cost of these investigations, which are required in order to ascertain the different requirements of the fuel companies, is £6,000.

7. PROPOSED DEVELOPMENT OF ST SAMPSON'S HARBOUR, INCLUDING FACILITIES, LAYOUT, COSTS AND TIMESCALES

7.1 In the same way that our forefathers built St Peter Port and St Sampson's Harbours to give service for over a hundred years so should St Sampson's Harbour now be developed to be capable of later flexibility.

While for all the safety reasons mentioned in the Board's 1988 policy letter the deep water fuel berths remain a priority, the Board agreed that it would be sensible to produce a design which incorporated the recommendations of Robert West & Partners, ie to include facilities for other types of cargo vessels.

The Board therefore decided on the basis of its investigations that the minimum development should include:-

- two deep water oil and gas tanker berths

- three general berths for bulk and other cargoes

- one Ro-Ro cargo berth

- one container berth

These berths would be accessible at all stages of the tide and in all but the most severe weather conditions. The timescale for completion of each stage of the development can be extended at the will of the States at each stage, but it must be stressed that engineering, financial and practical constraints (the latter being linked to the inadequacies of the existing harbour) will need to be continually monitored.

The Robert West Report concluded that expanded facilities would be required by the year 2000.

Based on the extensive research carried out to-date, the Board is now able to present for States approval the proposals for developing a harbour facility which will meet the Island's importation and safety requirements in the medium and long-term. The design of the proposed harbour development together with hazard zones is shown in Appendix 2.

These proposals will be subject to alterations as at this stage final details and design cannot be produced and so it has not been possible to produce a definitive build up of costs. Also, until usage of the land to be reclaimed has been finally determined it will not be possible to identify in great detail the costs of the various facilities that may be needed.

7.8 However, the largest element in all the costs will be the cost of the **breakwaters and reclamation bunds.** Overall quantities for these have been calculated with reasonable accuracy but exact proportions including armouring will be a matter for the final design. The overall profiles of the breakwater elements may need modification in final design which could affect the overall quantities. This will depend on the results of the Phase II investigations proposed.

7.9 In 1992 the cost of construction for the breakwaters was calculated on the composite rate for rubble based on the 1991 rate at Longue Hougue, with allowances being made for the nature of the work on the proposed harbour extension being more difficult. The original figures provided by the Consultants have now been updated taking into account the anticipated movement in stone prices thereby providing estimated costs at 1993 prices. These figures are given in the costs set out further on in this report.

7.10 Another substantial element of cost will be **dredging** to obtain the required depth in the harbour, particularly since most of this will be rock. Again the quantities can be calculated with reasonable accuracy but rates will depend greatly upon market forces at the time the work is carried out. The estimated costs of dredging at 1993 prices have been used in this report.

7.11 The third significant element is the cost of the **various berths** which may be required. As already explained, at this stage it would not be justifiable to undertake detailed design so estimates of costs have been based on similar work in situations elsewhere. The timing of the construction of berths will also be reliant on the prior reclamation and appropriate development of the hinterland.

7.12 The Board has considered, in the light of research and investigations carried out to date, two main options for the proposed development. The following costs are all at estimated 1993 values. These projected costs do not include any works within the reclamation areas such as surfacing, lighting, drainage and services generally, warehousing, administration, amenity or other buildings, cargo handling equipment etc. The actual reclamation is also assumed to take place by the disposal of inert waste and does not enter the calculation of costs (see also section 7.14).

7.13 **Options 1 and 2 for the phased development of St Sampson's Harbour, which give estimated costs at 1993 rates and include provision for detailed design, now follow:**

Option 1

SHALLOW WATER

Phase 1

North Side/Black Rock reclamation bunds using local stone. Estimated cost **£5,040,000.00.** Estimated timescale for completion **2 years**

Option 2 (Preferred)

SHALLOW WATER

Phase 1

a) North Side/Black Rock reclamation bunds using local stone. Estimated cost **£5,040,000.00** Estimated timescale for completion **2 years**

b) Simultaneous to a) above, infill part of Longue Hougue Phase II reclamation site to provide necessary **access road** using quarry over-burden material and other inert waste. Estimated cost **£525,000.** Estimated time-scale **18 months - 2 years**

NOTE: 'Other inert waste' could include suitable inert materials diverted from St Germain landfill site, which would close temporarily, allowing infill works described above to be completed within the timescale illustrated.

Option 1 (contd)
DEEP WATER

Phase 2

South breakwater using mainly **imported stone** and some local stone. This phase would include the development of number one oil and gas tanker berth and the infill of part of Longue Hougue Phase II to provide a roadway to the beginning of the breakwater using locally bought stone infill. Estimated cost **£19,950,000.00.** Estimated timescale **3 to 3½ years**

Option 2 (contd)
DEEP WATER

Phase 2

South breakwater using mainly **imported stone** and localised dredging providing for the development of number one oil and gas tanker berth Estimated cost **£15,750,000.00** Estimated timescale **18 months**

Phase 3 North breakwater using mainly imported stone, dredging and the development of number two oil/gas tanker berth. Estimated cost **£12,390,000.00.** Estimated timescale **18 months**

Phase 4 Breakwater extension on the South Side, mainly using imported stone. Estimated cost **£3,570,000.** Estimated timescale **9 months.**

Option 1

Estimated timescale to complete works up to and including Phase 4

7¾ years
for the sum of £40,950,000.00

Option 2

Estimated timescale to complete works up to and including Phase 4

5¾ years
for the sum of
£37,275,000.00

Phase 5 Additional berths as required:

Ro-Ro cargo berth, estimated cost	**£1,575,000.00**
Container berth	**£2,100,000.00**
1st General cargo berth	**£1,680,000.00**
2nd " " "	**£1,680,000.00**
3rd " " "	**£1,680,000.00**
Total	**£8,715,000.00**

Estimated timescale for Phase 5 is up to 20 years dependent upon requirements and infilling of areas to be reclaimed.

TOTAL ESTIMATED COSTS AT 1993 VALUES

Option 1	Option 2
£49,665,000	£45,990,000

A more detailed breakdown of the above is shown under Appendix 7 of this report.

7.14 If insufficient inert waste is available to reclaim land so that the additional berths can be developed, then additional infill can be obtained from offshore dredging. It is difficult at this stage to assess what quantity of material will be necessary as it will depend entirely on what volume of inert waste and other suitable infill material is generated within the Island over the next few years. If dredging is considered essential to provide early quay facilities then an additional £2 million provision should be allowed for in either option for offshore dredging operations which would take place outside the proposed harbour area.

7.15 This dredging would only be undertaken if the berths were required due to increased pressure on St Peter Port Harbour or when bulk cargo imports increased sufficiently.

7.16 The favoured option technically and financially would be Option 2 which would provide the earliest provision of a deep water fuel berth. The speed at which an access road can be created will depend on the material used. **For local stone to be used the cost would be £4.2 million and would take 18 months. However, if quarry overburden and inert waste diverted from landfill sites is used (as detailed under Option 2) then the road could cost, as a minimum, £525,000.00 and would take around 2 years to complete - an estimated saving of £3,475,000.00, subject to the use of sufficient and appropriate overburden materials supplied free of charge, where only the cost of transport would be incurred. This would be influenced by the results of the planning inquiry into quarrying operations recommencing at Best's Quarry, St Andrew's.**

7.17 To reiterate, the main thrust of the proposals is to provide deep water fuel tanker berths and these can be provided without extensive infill. However, the development of cargo berths and the ro-ro ramp would require the provision of a marshalling yard which would mean that a part of the reclamation sites would have to be infilled at the appropriate time using inert waste or suitable dredged materials.

7.18 The Board would wish to emphasise that in Options 1 and 2 the general cargo berths have been set aside as Phase 5 as their development will depend on the requirements of the importers and how quickly the two reclamation sites are to be infilled. 7.

7.19 It is preferable, as far as finances allow, that dredging is undertaken during one operation in order to save on mobilisation costs. However, dredging for inert infill may be required at a much later date than dredging required in the proposed harbour development itself. 8. 8.

7.20 Following concern expressed over Crabiere rock the Board has monitored the access to St Sampson's Harbour and has been informed that pilots have only had occasion to lay vessels offshore, rather than entering St Sampson's Harbour, due to the swell at Crabiere, twice during 1991. From information received to date the Board understands that the St Sampson's Harbour development proposals will not adversely affect the existing conditions for navigation by the pilots. Indeed, the proposed physical modelling studies and further ship simulation studies will incorporate detailed navigational considerations. 8. 8.

7.21 The use of imported stone for the proposed north side reclamation bunds would be undesirable, as due to the depth of the site vessels would not be able to dump the stone directly on the site and would have to unload on the south side quay developed for the unloading of stone for the Longue Hougue reclamation. This would mean that imported stone would have to be transported over land either using the Bridge or by other routes. 8.4

However, any local stone which could be made available could if necessary be brought on site directly from the north avoiding the Bridge.

7.22 Prior to work commencing on the North breakwater a roadway will need to be created along the bund where the three cargo berths are proposed.

7.23 The inclusion of wave power generation facilities as part of the overall development has been considered. The Board has, however, been advised that such a scheme is not viable in these particular circumstances. Similar options utilising wave action technology (which is in its formative stages) have been investigated by the Board at other locations and these have not proved to be viable to date. The Board does not intend, therefore, that this option should be further pursued at the present time. 8.5

7.24 Coode Blizard Ltd, Chartered Consulting Engineers, have continued to provide consultancy advice to the Board as necessary with regard to the marine engineering aspects of the Board's proposals, and including presentations of the harbour scheme. The funding of such consultancy services is referred to in Section 10: Recommendations.

8. FINANCING THE DEVELOPMENT

8.1 Various methods of funding have been considered by the Board for the development of St Sampson's Harbour. Neither general revenue nor the Ports Holding Account could provide sufficient funds, in their present forms, for the project.

8.2 It is also the Board's view that the funding of the substantial part of this development should be through the industry which will actually use and benefit from the extended harbour facility.

8.3 The principle of obtaining funding from the users of the harbours for such capital projects is not a new one. In 1851 an impot on wine, certain dues on goods imported, certain tonnage dues on vessels, anchorage and chainage dues and Harbour Master's fees was levied to cover the cost of the new harbour of St Peter Port.

8.4 The following extract is taken from the 1851 Ordres en Conseil:-

> "that the produce of the dues specified in the said Tariff should be applied exclusively to the harbour, until the outlay to be incurred in respect of the works so voted, as aforesaid, should have been defrayed:- That the principal condition on which the Bailiff and Jurats are prepared to give such consent as aforesaid, is as follows:- 'that after the works now voted have been paid for, certain dues specified in the said Act of Court shall be vested in the Bailiff and Jurats in lieu of the Petite Coutume; one portion of the said dues to constitute a special fund for the purposes of the harbour, - another portion, consisting solely of duties on goods imported, to be like the present surplus of the Petite Coutume, applicable to the general wants of the island."

8.5 In the case of the proposed St Sampson's Harbour development it is recommended that harbour dues on hydrocarbon fuels and gas be substantially increased to raise funds for the development. It is the Board's intention that such an increase will be removed following the completion of the project.

8.6 The Advisory and Finance Committee 1992 Policy Planning, Economic and Financial Report states in section 5 (Land Use Policy) sub-section 5.39 on quarrying, refuse disposal and water (including surface and foul water drainage):- 8.10

"..... it would, therefore, be appropriate for the costs to be met by water charges (for the water supply), and from the Ports Holding Account (for the development of St Sampson's Harbour). In this latter respect, reserves in the Ports Holding Account should be adequate to meet proposed capital projects (even if they were all to be put in hand) and, provided increases in Harbour Dues on the importation of hydrocarbon fuels and gas are implemented in the medium term, future revenue should be sufficient to generate enough funds to be directed towards the St Sampson's Harbour development." 8.11

8.7 The Board agrees that there should remain sufficient funds in the Ports Holding Account to finance existing planned capital projects at the Harbours and Airport. However, this means that any increase made to the Harbour Dues will need to be large enough to cover the cost of the majority of the development. Nevertheless, some planned capital works might need to be re-prioritised if the proposed development is undertaken and money which would otherwise have been allocated for these projects might be used to fund capital projects for the St Sampson's Harbour development. 8.12

8.8 It is suggested that a separate account be set up to hold funds directly attributable to harbour dues payable on hydrocarbon fuels and gas, and to use these funds to carry out the majority of the works on the St Sampson's Harbour development.

8.9 It is proposed that reserves built up due to other harbour dues and charges in the Ports Holding Account will eventually be used for the development of the proposed port facilities. This will include some requirements outlined by the Land Utilisation Survey and additional requirements associated with Phase 5 of the proposed development. It is believed to be equitable to use these accounts reserves for this purpose as the removal of the commercial bulk cargo traffic from St Peter Port will benefit both cargo and passenger vessels alike. 8.13

8.10 It has been suggested that the development of St Sampson's Harbour should be substantially complete, up to and including Phase 4, by 2010 and **should be undertaken over a period of around 12 years.** This is due to the requirement of improved port facilities in the near future as outlined by the Robert West Report, together with the need to improve safety at the Harbour.

8.11 When considering increasing harbour dues relating to hydrocarbons there is a view that increasing all hydrocarbons by the same rate may not be equitable due to the disproportionate percentage increases this would cause. These differences arise due to the variation in the densities of the materials and their various eventual retail prices. An example of this would be if dues for all hydrocarbons were increased by 1 pence per litre, petrol prices would only increase by 3% whereas the cost of heavy oil sold to growers would increase by 16%, at 1992 prices.

8.12 The results of the Robert West Report (see Appendix 3) indicated an increase in the usage of hydrocarbon fuels and gas up to the year 2020. Predictions from the Robert West study have proved accurate to date, and have even been exceeded in certain instances. It is predicted that the rate of increase will decline towards the end of the period. Nevertheless, it is believed that the increases in the quantities of hydrocarbon oils and gas imported into the Island will provide small annual increases in the amount of revenue obtained from the proposed harbour dues so that with the present low RPI increases it is unlikely that additional rises will have to be made to cover the effects of inflation. However, any increase in harbour dues on hydrocarbon oils and gases will have an affect on the Guernsey Retail Prices Index.

8.13 Where possible the effects on the Guernsey RPI have been forecast for increases in the cost of hydrocarbons. However, it is not possible to predict the effects on RPI on increases to certain hydrocarbons as the tariff passed on to the consumer is made up of other elements apart from the cost of the hydrocarbons used. An example of this is the effect on RPI due to the increase in cost of 'Aviation Gas' which cannot be calculated as it is the actual cost of an air ticket that is taken into account when calculating the RPI. A list of RPI increases predicted for various increases in the cost of hydrocarbons is shown in Appendix 8.

8.14 Using these RPI increases and the average imports of hydrocarbons shown in Appendix 9 anticipated RPI figures can be calculated for a 12 year programme of development.

8.15 Appendix 10 illustrates one set of increases in harbour dues on hydrocarbon fuels and gas which would provide sufficient funds to undertake the development over a 12 year period giving a predicted RPI increase of 0.42% in relation to 30th June 1992 RPI figures as calculated by the Department of Consumer Affairs. **Over the 12 year period a total of £41,432,952.00 would be raised by the proposed increase.** This would be sufficient to complete all the breakwater work required, ie Phases 1 to 4 inclusive, whether Option 1 or 2 was undertaken. In this respect Appendix 11 shows cash flows at 1993 prices over the proposed development period for both Options using the illustrated increases shown in Appendix 10. 8.1 8.2

8.16 Phase 5, of both options, provides for a ro-ro cargo berth, 3 general cargo berths and a container berth. The timing of the development of these berths will depend on requirements of the shipping companies and the infill that has taken place to provide the necessary associated land. The funds for this Phase should be provided by the normal Ports Holding Account and any residue on completion of Phase 4 in the account containing harbour dues raised on hydrocarbon fuels and gas. 9. 9.1

8.17 Many people will be concerned regarding the effects of increases on hydrocarbon fuels and gases both on the RPI and on industry in the Island. Increasing the price of petrol by 1 penny per litre would have a greater affect on RPI than increasing the price of LPG by 1 penny per litre (see Appendix 8). As an example, the average price per litre of 4 star petrol in the UK on 17 March, 1993, was 57.40 pence and on the same day in Guernsey was 34.30 pence. It could therefore be argued that there is scope for a large increase on petrol. Indeed, petrol price fluctuations are a common (and generally accepted) feature of modern economics. However, the English average cost of domestic heating oil was less in 1992 than the Guernsey average by a few pence. 9.2 9.3

8.18 Another problem is the difference between percentage increases to the consumers of products such as heavy oil. When heavy oil is used to generate electricity there are overheads incurred which would reduce the effect of the percentage increase to the consumer brought about from any increase in harbour dues directly on the oil. However, the same heavy oil sold 9.4

To growers has no overheads added and would be directly affected by the increase in harbour dues. Hence an increase of 1 penny per litre on heavy oil would produce an average 2.78% increase on electricity but a 16% increase on heavy oil sold to growers, using 1992 prices.

8.19 More heavy oil is imported than any other hydrocarbon (see Appendix 9). The majority of this is used directly by the States Electricity Board. However, it can be seen from the previous paragraph that proposed increases on harbour dues in respect of heavy oil will have significant implications for the Island's growing industry.

8.20 **It is recommended however that detailed proposals on financing the project be brought to the States, should the Phase II investigations be approved, when the results of those investigations are considered by the House if it is agreed to recommend the States to proceed with proposals for an extension to the harbour. Detailed proposals on financing such a project will be prepared in consultation with the Advisory and Finance Committee.**

9. CONSULTATIONS

9.1 The production of investigative reports used in consideration of the development of deep water berths required consultations with a wide range of interested and involved parties, including United Kingdom and local fuel companies, ship owners and authorities such as the United Kingdom Health and Safety Executive.

9.2 In addition, the Board arranged a series of presentations in May, 1993, at which it outlined its proposals for St Sampson's Harbour. These presentations were to the private sector including fuel companies and other harbour users, Deputies and Douzaines of the Vale and St Sampson's Parishes, and to all States Members.

9.3 Arising from the presentations was the suggestion that the consultants who compiled the Marine Traffic Forecast Survey, Robert West and Partners, and representatives from the United Kingdom Health and Safety Executive, should be invited to the Island to take part in a meeting with those who had attended the presentations mentioned above. It was agreed that the Board would pursue the necessary arrangements.

9.4 The comments of the Island Development Committee on the Board's proposals for the harbour development are included under Appendix 13 of this Report.

9.5 The Committee's comments cover the following broad areas - shown in bold type (the Board's response follows each area listed):-

(a) Full support for the principle of deep water fuel berths.

(b) Ro-Ro and container berths should be considered as optional.

The Board's policy letter explains that Ro-Ro and container berths would be provided in Phase 5 of the scheme 'dependent upon requirements'. The three dry bulk cargo berths are also 'as required' in Phase 5.

With particular regard to paragraph 4 of the IDC letter the Board's decision to include Ro-Ro and container facilities was based on the conclusions reached in the Robert West & Partners report "Traffic Forecast Survey" dated August, 1989, and not on the "Land Utilisation Study" undertaken by Coode Blizard Ltd in early 1991.

Also in paragraph 4 it states "The Land Utilisation Study's conclusion that provision could be made to enable containers to be stuffed and unstuffed in the Port area did not take into account the Island's other pressing requirements outlined in the 1992 Policy, Planning, Economic and Financial Report". The Land Utilisation Study, as previously mentioned, was completed in early 1991 and obviously could not take into account a report prepared and published eighteen months later.

In paragraph 9 the letter states "..... the Committee feels that it would have been prudent to investigate a smaller scale scheme not including Ro-Ro and Container facilities". As the Committee make no mention of the bulk cargo berths it is fair to assume that they are in favour of this requirement and the reclamation of Black Rock. It is also in favour of the fuel berth proposed in the lee of the north breakwater (see paragraph 3 re liquid product berths). If this is the case the size of the harbour cannot be reduced as the southern breakwater provides the protection needed by the bulk cargo berths and northern fuel berth. The Ro-Ro and container facilities can be omitted in the scheme but this will not result in a reduction of the size of the development.

(c) The use of land at Longue Hougue.

Detailed land use planning for the above area will obviously be necessary, taking into account the needs of an extended harbour facility and the Island's needs in general.

(d) The effects of the proposed development on tidal streams and resultant effects on vessel navigability etc.

The proposed layout based on Phase I Investigations using computer/mathematical modelling and involving local pilots in ship simulation studies will be further tested in the proposed physical model studies.

The IDC letter explains in paragraphs 5-8 inclusive, "The Committee is concerned that the results of the Phase 1 research ..... appear in some respects to be unfavourable" - and quote some of the conclusions reached by H R Wallingford. But this was the reason for the Phase 1 Investigation - to determine the problems likely to be encountered in the preliminary design. The Committee fails to quote the recommendations of H R Wallingford in its report namely -

"The Scheme 7 layout appears to provide the most promising design for the harbour extension given the natural constraints of the site. However, it is recommended that further studies are required to optimise the layout and arrive at a final design. The studies we recommend are ....." (see p.75 of Report EX 2099 and dated March, 1992).

It is this recommendation that the Board is taking to the States in this report - namely to carry out more detailed investigations to confirm, or reject, the viability of the scheme.

(e) Environmental Assessment.

The Brief for the Reconnaissance Environmental Impact Assessment was based upon information provided by the United Kingdom Institute for Environmental Assessment. The successful consultant, WS Atkins' Environment, had conducted assessments on a number of other large marine projects. If the conclusions from the Reconnaissance Assessment had indicated that the development might cause severe impacts on the environment which were difficult to mitigate, it may then have been necessary to undertake a fuller Assessment of those particular aspects.

Environmental considerations will continue to be taken into account as part of the ongoing planning process.

(f) Traffic and After Use of Vacated Commercial Sites.

The Board agrees that these matters will require detailed planning consideration at the appropriate time.

In the final paragraph of the IDC's letter the Committee is concerned by "adverse effects upon the Bridge" from construction traffic. It is envisaged that no construction traffic would use the Bridge it being assumed that:

- local stone used to supplement imported stone in the construction of the southern breakwater would be delivered via Bulwer Avenue and the Longue Hougue reclamation site

- local stone used for the Black Rock reclamation and to supplement imported stone in the construction of the northern breakwater would be delivered via L'Ancresse, Bordeaux and the Coast Road

- inert waste, the majority of which is generated to the south of St Sampson's, would be delivered to Longue Hougue without the need to use the Bridge.

10. **RECOMMENDATIONS**

10.1 The Board of Administration recommends the States to:-

(1) note the results of Phase I site investigations and the completion of supporting preliminary studies, the full reports resulting from which have been deposited at the Greffe for the information of States Members;

(2) authorise the Board to commence Phase II laboratory (physical model) investigations as detailed in this report for a sum not exceeding £323,000.00;

(3) authorise the Board to investigate the requirements for fuel pipelines for the proposed development as detailed in this report for a sum not exceeding £6,000.00;

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(4) approve expenditure in the sum not exceeding £22,895.00 for a Reconnaissance Environmental Impact Assessment for the proposed development, such sum having already been met in the first instance from the Advisory and Finance Committee's Technical Services Consultants Vote;

(5) approve expenditure of a sum not exceeding £6,720.00 for the engineering consultancy services to the Board of Coode Blizard Ltd, Consulting Engineers, which services have included presentations on the proposed development;

(6) vote a total credit of £358,615.00 to cover the cost of the above investigation and consultation fees, such sum to be taken from the Board's allocation for capital works;

(7) direct the Board to report back to the States with the results of the Phase II laboratory investigations;

(8) direct the Board to carry out further consultation with the Commercial Port Users Association and other interested bodies before reporting back to the States with recommendations concerning whether or not to proceed with the planning of an extension to St Sampson's Harbour;

(9) direct the Board to consult with the Advisory and Finance Committee concerning the funding of the extension to St Sampson's Harbour and to put forward appropriate recommendations for such funding at the time that the main propositions are put to the States, should it be agreed, in due course, to recommend the States to proceed with an extension to the Harbour.

I have the honour to request that you will be good enough to lay this matter before the States together with appropriate propositions.

I am, Sir,
Your obedient Servant,
R. C. BERRY,
President,
States Board of Administration.

APPENDIX 1

TANKERS CURRENTLY OPERATING AT ST SAMPSON'S HARBOUR

The Robert West Marine Traffic Forecast Survey undertaken during 1989 and reviewed in 1991 provides a great deal of valuable information concerning the Island's current and future fuel and other import requirements, especially with regard to harbour facilities and the vessels using those facilities.

However, the following information would appear to be relevant as the vessels listed are currently used in St Sampson's Harbour for the importation of fuels:-

KOSAN TANKERS: (Gas Carriers)

Henrich Kosan	Built 1984
Jakob Kosan	**Built 1985**
Laura Kosan	Built 1992
Linda Kosan	Built 1992
Lotta Kosan	Built 1992
Lydia Kosan	Built 1992

All the above commenced operation into St Sampson's in 1992. **As an example the Jakob Kosan carries 590 tonnes of butane in Tank 1 whereas the old Ann Lise Tholstrop carried 122 tonnes.**

SHELL TANKERS: (Product Carriers)

Achatina (Previously Shell Craftsman)	Built 1968
*Amoria (Previously Shell Marketeer)	Built 1981
*Asprella (Previously Shell Seafarer)	Built 1981
*Arianta (Previously Shell Technician)	Built 1982

EVERARD TANKERS: (Product Carriers)

Amity	Built 1980
Averity	Built 1981

Also available but not yet utilised

*Ability	Built 1979
*Amenity	Built 1980
*Authenticity	Built 1980

COE METCALF SHIPPING: (Product Carriers chartered to Everard Tankers)

Frank M.	Built 1965
John M.	Built 1963
Nicholas M.	Built 1965

B P TANKERS: (Black Oilers)

*B P Jouster	Built 1972
B P Warrior	Built 1968

Vessels marked * are of the maximum length permitted into St Sampson's Harbour.

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DEVELOPMENT OF ST. SAMPSON'S HARBOUR —

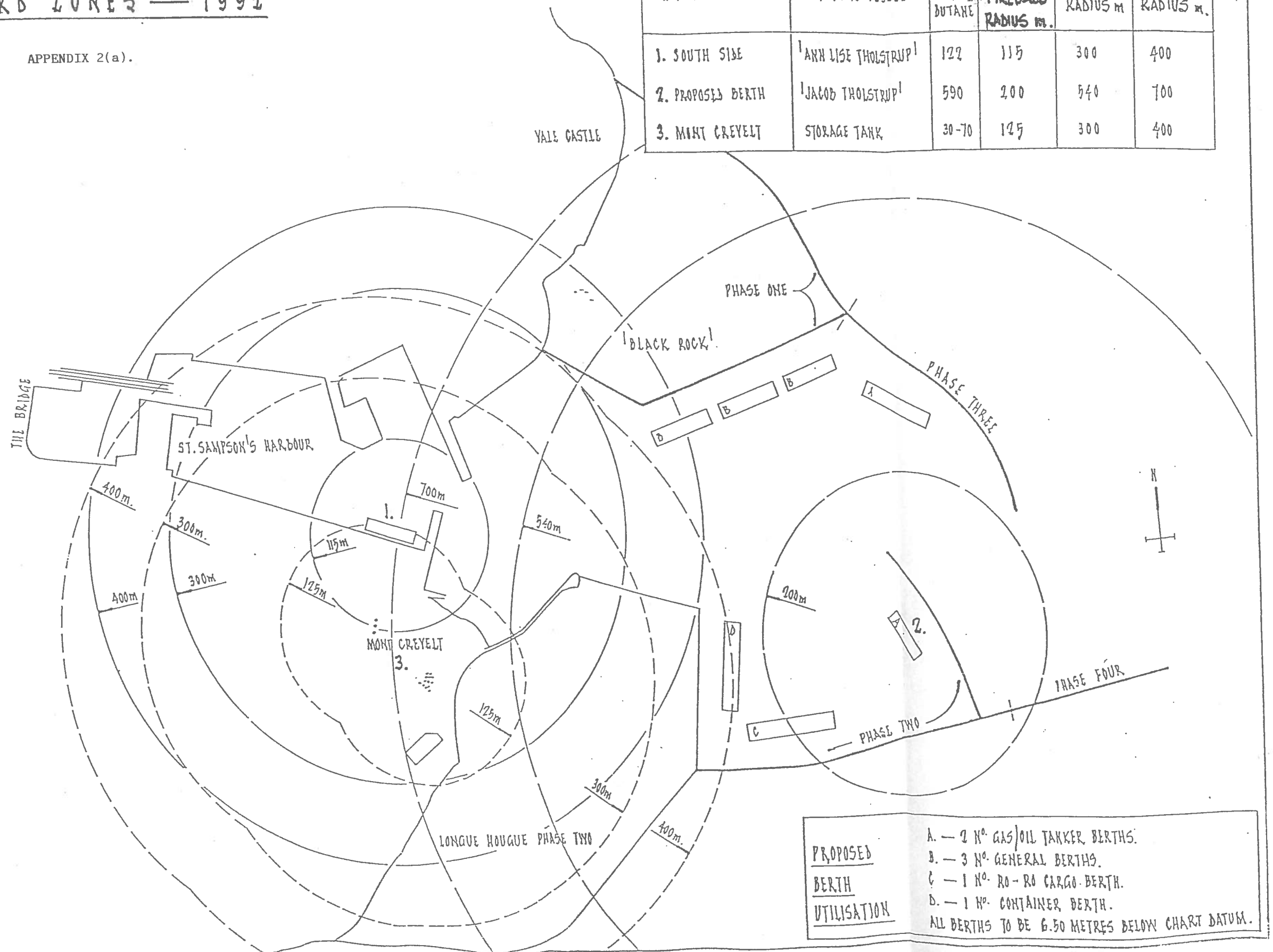
HAZARD ZONES — 1992

L.P.G.

APPENDIX 2(a).

HAZARD ZONES FOLLOWING SPILLAGE AND VAPORISATION OF L.P.G.

LOCATION	TYPICAL VESSEL	TONNAGE OF BUTANE	INNER ZONE FIREBALL RADIUS m.	MIDDLE ZONE RADIUS m	OUTER ZONE RADIUS m.
1. SOUTH SIDE	'ANN LISE THOLSTRUP'	122	115	300	400
2. PROPOSED BERTH	'JACOB THOLSTRUP'	590	200	540	700
3. MONT CREVELT	STORAGE TANK	30-70	125	300	400



PROPOSED BERTH UTILISATION

A. — 2 Nº. GAS/OIL TANKER BERTHS.
B. — 3 Nº. GENERAL BERTHS.
C — 1 Nº. RO-RO CARGO BERTH.
D. — 1 Nº. CONTAINER BERTH.
ALL BERTHS TO BE 6.50 METRES BELOW CHART DATUM.

DEVELOPMENT OF ST. SAMPSON'S HARBOUR —

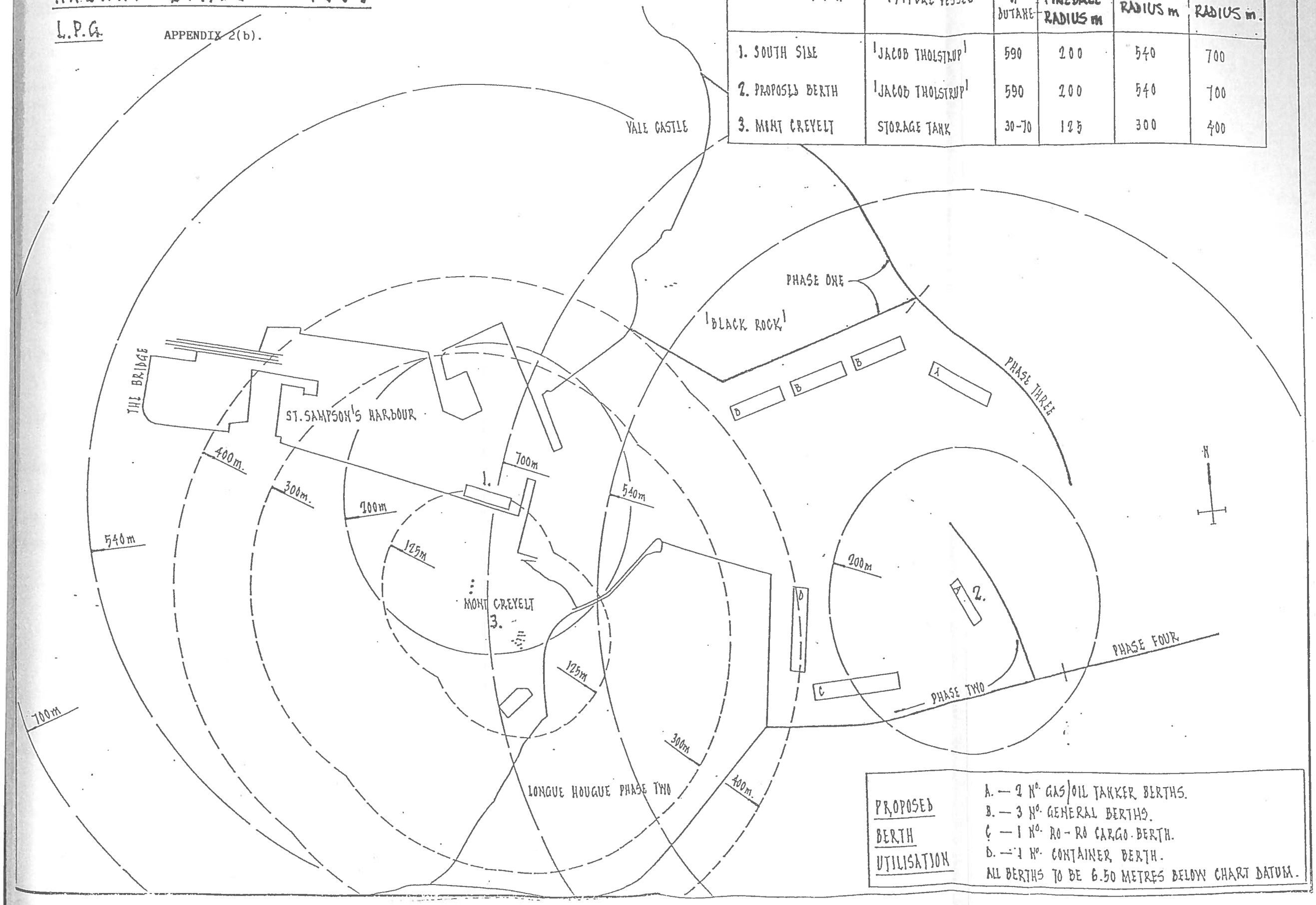
HAZARD ZONES — 1993

L.P.G

APPENDIX 2(b).

HAZARD ZONES FOLLOWING SPILLAGE AND VAPORISATION OF L.P.G.

LOCATION	TYPICAL VESSEL	TONNAGE OF BUTANE	INNER ZONE	MIDDLE ZONE	OUTER ZONE
			FIREBALL RADIUS m	RADIUS m	RADIUS m.
1. SOUTH SIDE	'JACOB THOLSTRUP'	590	200	540	700
2. PROPOSED BERTH	'JACOB THOLSTRUP'	590	200	540	700
3. MONT CREVELT	STORAGE TANK	30-70	125	300	400



PROPOSED BERTH UTILISATION

A. — 2 Nº. GAS/OIL TANKER BERTHS.
B. — 3 Nº. GENERAL BERTHS.
C — 1 Nº. RO-RO CARGO BERTH.
D. — 1 Nº. CONTAINER BERTH.
ALL BERTHS TO BE 6.50 METRES BELOW CHART DATUM.

APPENDIX 2

PROPOSED HARBOUR LAYOUT SHOWING HAZARD ZONES

The Health and Safety planning consultation zones applied to the area surrounding the L.P.G. discharge facility at South Side are based on an incident occurring involving the uncontrolled release of flammable gas from the largest single storage vessel on the site (590 tonnes of Butane). Gas released in such an incident would tend to drift according to wind speed and direction, and as such would pose a very high risk.

The Board has been advised that incidents involving the release of petroleum spirit can be contained in bunds surrounding tanks, and provided there are minimum separation distances between the bund and sources of ignition, pose much less of a risk.

The Board has also been advised that it is difficult to specify the type of effect an incident will have on persons and property, as each will have its own characteristics. A rough estimation would be:-

Outer zone: 700 metres - some broken windows, tiles off roofs. Most persons should escape with only minor injuries.

Middle zone: 540 metres - possibility of fatalities resulting from slight structural damage.

Inner zone: 200 metres/fireball - fatalities will occur. Major structural damage.

The levels of damage to property will vary with the overpressure produced (blast effect) by the fire-ball relevant to its level of containment.

APPENDIX 3

ST SAMPSON'S HARBOUR - MARINE TRAFFIC FORECAST SURVEY UNDERTAKEN BY ROBERT WEST AND PARTNERS - CHARTERED CONSULTING ENGINEERS

The Report emphasised that tankers using the harbour could only enter the harbour on Spring Tides due to their deep draught. This means that the harbour is only available to them for one week in two. Furthermore, oil tankers visiting the harbour cannot be turned around within a high tide period and must therefore bottom out and wait for the next tide before departing.

Section 4) c) of the Report concerning Gas Carriers explained that:-

"Due to the tankers' time for discharge being quite lengthy, the vessels frequently have to bottom out on the harbour bed whilst discharging, and Kosangas are unhappy about the safety implications of this."

The report made it clear that the fleet operating through St Sampson's Harbour is well below the UK average vessel size and that the harbour is, by modern standards, very small.

Weather was noted to be a constant concern to the oil companies and with regard to the power station's oil supplies. The majority of vessels are tied to the time windows made available by the Spring Tides and, in the event of a prolonged period of bad weather, a particular delivery can be missed altogether. This can reduce oil reserves on the Island down to critical levels.

The States Electricity Board has recently indicated to the Board that they would regard their winter stock level as being critical when they were down to 3,500 tonnes of their 11,500 tonnes storage capacity. This critical level would represent around two weeks generation of electricity for the Island at current levels of demand.

The Board is aware that the States Electricity Board has several emergency options should critical levels be reached. However, the provision of deep water berths would significantly lessen the likelihood of ever activating these options in an emergency situation. Indeed it is possible that year round access to fuel berths would allow the States Electricity Board to reduce its levels of heavy oil reserves and therefore reduce its capital commitment to such, effecting the release of funds and providing potential cost savings for the consumer.

The Robert West report stated that the expected growth in imports and in vessel sizes meant that St Sampson's Harbour would not be able to service Guernsey's need for many more years without being extensively redeveloped.

The consultants considered, on the basis of their research, that the probable dimensions of vessels serving the Island in the future will be:-

Vessel Type	Length		Draught	
	Now	Future	Now	Future
Oil Tanker	73 m	**90 - 104 m**	4.5 m	**6 - 6.8 m**
Gas Tanker	52 m	**65 - 80 m**	3.5 m	**4.6 - 5.8 m**
Bulk Carrier	58 m	**60 - 80 m**	3.5 m	**4 - 5 m**
Stone Carrier	N/A	**80 m**	N/A	**5 m**

The consultants also reported that oil imports were expected to rise from 124,000 tonnes in 1988 to approaching 200,000 tonnes in the year 2010. The 1991 actual figure of 147,380 tonnes is above the estimated total for that particular year.

Furthermore, gas consumption was expected to rise from 8,700 tonnes in 1988 to between 25,000 and 35,000 by the year 2020. The 1991 actual figure of 10,929 tonnes is between the predicted limits for that year. Also the consultants reported that there would be a need to import at least 180,000 tonnes of stone annually for the construction industry when the Island's readily accessible stone reserves are eventually worked out.

The actual level and timing of stone imports to the Island depends upon a number of variables, including the rate of extraction and use of stone, and is linked to the Island's strategy for waste disposal and water resources. Section 5 of the 1992 Policy Planning, Economic and Financial Report refers.

The Board believes that it is important to consider that, 20 to 25 years ago, nobody would have predicted the need for two Ro-Ro ramps in St Peter Port Harbour with 130 metre vessels serving the port, or indeed the existence of 40 knot catamarans carrying 800 passengers and 160 cars.

Anticipated needs in the medium and long term at St Sampson's Harbour have therefore been given close and detailed consideration in the course of producing the Robert West Report.

APPENDIX 4

HYDRAULICS RESEARCH LTD, WALLINGFORD - HARBOUR DEVELOPMENT ST SAMPSON'S - PHASE 1 SITE INVESTIGATIONS

A summary of the research undertaken during Phase I Investigations follows.

(i) A detailed hydrographical survey of the area from Bordeaux to St Peter Port was undertaken to determine

- the sea bed profile of the area
- the profile of the underlying bedrock in Bellegreve Bay
- tidal currents in selected locations

The hydrographical survey was carried out in 1988. The tidal current observations were carried out at Spring Tide flow conditions and during neap flow conditions in 1988.

Sea bed levels within the survey varied greatly with a very uneven sea floor, the maximum depth being approximately 14 metres below Chart Datum to the south west of Vivian, with the larger rock outcrops providing heights up to 9.5 metres above Chart Datum.

Deposits consisting predominantly of marine silts and clay occurred within Southern Bellegreve Bay where a channel feature exists. Only small thicknesses of granular deposits exist in North Bellegreve Bay where the strong tides scour the area.

The results of this survey were satisfactory and indicated no problems that might affect the harbour development.

(ii) The accumulation of field data was undertaken to determine:

- tidal current strengths and directions
- flow patterns and
- the movement of sea bed and suspended sediments

This research was carried out in 1989. The objective was to provide information for validating computer modelling studies in the laboratory (approval for which is now sought), needed to examine the proposals for St Sampson's

Harbour. The programme of works included float tracking and current observations at selected sites. Bed sediment samples were recovered from areas off shore of St Sampson's, and the foreshore to either side of the development was surveyed.

The results of this work were satisfactory and will be required for the physical modelling, Phase II investigations proposed.

(iii) The local wave climate was examined by installing a measurement system in 1988. As a result of the relatively calm 1988/89 winter period it was considered advisable to continue the wave recording exercise through at least another winter period and instructions were given by the Board of Administration accordingly.

Several significant storms occurred during the winter of 1989/90. The data obtained during the extended recording period therefore proved valuable when calculating the predictions of extreme events.

The measuring equipment was decommissioned in May 1990. The results were analysed and the design wave heights were determined. It was confirmed that during its life the development would frequently be subjected to waves with heights in excess of three metres.

These results will also be used during the proposed physical modelling.

(iv) The Board commissioned a computer navigation simulation study as, during the course of the tidal flow and wave disturbance studies, it was clear that the ability of vessels to navigate the harbour entrance was going to have important implications for the layout. In this study combinations of three possible harbour layouts, four ship types and five sets of tidal stream data were examined. The Harbour Master, two pilots and representatives of Hydraulics Research, Coode Blizard Ltd and the States Technical Services Department were present during the tests and observed and commented on the simulation tests as they were carried out by Maritime Dynamics Ltd of Cardiff. The pilots were also able to use the simulation to experience how the vessels would handle when arriving at and departing from the proposed layouts.

As a result of all of the above investigations and research the most promising design for the harbour extension given the natural constraints of the site was determined and submitted to the Board.

The proposed layout is shown in Appendix 2.

NON-TECHNICAL SUMMARY

This study reports on a "walk through environmental assessment" of St Sampson's Harbour Development, to assist the Board of Administration in coming to an informed view of the probable environmental consequences of proposals.

The proposals consist of the phased expansion of St Sampson's Harbour to provide deepwater berths and other port facilities. Breakwaters would be constructed and land reclaimed at Black Rock and Longue Hougue for cargo and container berths, cranes, and warehousing. Existing facilities and berths would be replaced by those provided in the new harbour area.

The land at Longue Hougue will be reclaimed using inert waste. The reclamation bund at Longue Hougue has already been constructed.

The development of deep water berths is necessary to meet the Island's future fuel and cargo demands and to receive increased imports and the future generation of larger vessels. Facilities at St Sampson would enable the handling of heavy and hazardous materials to be consolidated, provide a focus for industrial and warehousing activities requiring access to sea transport, and increase safety by providing fuel discharging facilities outside the existing harbour, away from sensitive areas.

PLANNING

Proposals for the development of St. Sampson's Harbour are part of the States of Guernsey strategy to develop the St Peter Port to St Sampson corridor while conserving and protecting natural resources on the Island. Plans include the reclamation of land south of St Sampson with inert waste.

Strategic plans note that deep water berths need to be created. St Sampson's Harbour is a key area for the Islands development, and an opportunity for the handling of heavy and hazardous materials to be consolidated. The development of new deepwater berths and back up areas at St Sampson's Harbour, is recognised as of paramount importance.

Development will also relieve the acute shortage of landfill space on the Island, and the relocation of existing facilities into the Harbour will enable environmental improvements to be made to the inner harbour area.

Environmental planning considerations for the St. Sampson's Harbour will be contained in Detailed Development Plans for the area.

VISUAL IMPACT

Although the new harbour and facilities would be visible from many viewpoints, development of the harbour would not significantly affect views more than 2.0 kilometres away.

From St Sampson the development would be a significant feature obscuring views towards the sea and Herm island. Views from Vale Castle and Mont Crevelt would be significantly affected, though proposed landscaping would lessen some of the impact. Some views from the town would improve with the relocation of existing facilities, and the further relocation of some landusers would help to enhance the approach to St Sampson and the setting of Mont Crevelt and Delancey. Night time lighting is not likely to be intrusive.

From Bordeaux the Black Rock development would become a major feature in views from the beach, the footpath and coastroad, and properties surrounding Bordeaux Harbour. North West of Bordeaux views would be partially affected. However landscape mounding would help to reduce the impact.

From the south of St Sampson, properties on the North Eastern edge of St Peter Port, and the area around the harbour at St Peter Port, the development would generally appear continuous with nearby industrial landuses. Landscape mounds would help to blend in the harbour with existing topography.

From Herm Island facilities will have only a minor effect on views.

Landscape features will be included but have not yet been designed. Development should not proceed without a thorough commitment to appropriate landscaping.

OPERATIONS IN THE HARBOUR

There are considerable difficulties in manoeuvring in and out of the existing St Sampson Harbour. Approach channels experience rip tides and vessels must negotiate a narrow passage between the rocks.

With the proposed development these difficulties will on balance be reduced. While current speeds across the harbour mouth may increase slightly the wider harbour entrance will more than compensate. The harbour will be open at all states of the tide and the approach channels are unlikely to be so restricted.

The present harbour is shallow - much of the harbour dries when water reaches the mid tide level. Navigable water is available for only a limited period - vessels unloading gas and oil must ground on the harbour bed for at least a full tide. With the new harbour there will be no need to bottom out and vessels will be able to enter and leave more readily. Some cargo delivery costs could be significantly cheaper and there would be greater scope for vessels to leave during incidents or to manoeuvre during bad weather.

Once in 50 years the proposed scheme could experience poor to unacceptable wave conditions. About every 5 years wave heights could be too high to ensure complete safety for mooring of vessels in all parts of the harbour and therefore some downtime would be incurred. These conditions could also hamper vessels manoeuvring into/leaving the harbour, and compromise vessel safety during mooring and unloading operations. This will require continued careful management of operations and activities. The present harbour is sheltered to Atlantic storms but is exposed to waves generated from the north through east to south.

The new harbour is likely to have some affect on current patterns. Phase I (Computer Modelling) investigations have already been satisfactorily carried out in this regard and Phase II (Physical Modelling) tests are proposed by the Board of Administration. Widespread impacts are not likely, but there could be some local effects on siltation or erosion of shore features close to the breakwaters, entrainment of effluent within bay areas, and increased currents and tidal deposition in the Little Russel channel. The latter could have some effect on the beaches of the NW tip of Herm and the integrity of the Great Bank fishing area.

The potential for changes in current patterns to influence harbour operations during construction and operation needs to be reviewed further. This should include the potential for changes to influence the extent of fishing grounds such as The Great Bank.

SAFETY

Safety consultation zones for existing facilities extend beyond nearby office and industrial premises. Imports of oil and gas will increase and the Health and Safety Executive indicate that these zones will become larger. The separation distance would be inadequate to ensure full protection of property and people.

The proposed development would improve safety in a number of respects. It would:-

- Move the oil/gas handling away from housing and workplace areas.
- Provide deep water to prevent grounding of vessels and allow vessels to move away in the event of an incident.
- Give more room for manoeuvring.
- Separate incompatible port users.

There will be some increased or new risks, but these are generally small and acceptable:-

- During oil/gas unloading there may be some restrictions on Cargo/Ro-Ro activities.
- Facilities will be more remote for access by emergency services.
- Exposed facilities; will need more frequent maintenance.
- Spill Plans may need some revision. Written instructions may be needed to ensure full environmental protection during unloading.

NOISE

Facilities for the St Sampson's Harbour Development do not include any large noise sources. There would not be any significant changes in noise levels in St Sampson, though there could be small reductions following the relocation of some companies.

Daytime construction noise would be likely to be acceptable, but night time construction noise levels could give rise to complaint. Noise levels could be controlled so that all parts of the construction programme are acceptable by, for example, limiting working hours or setting noise limits for plant and operations.

Noise control programmes will need to be reviewed prior to issuing any contracts for construction.

TRAFFIC

There is likely to be a significant increase in heavy road traffic in the vicinity of St Sampson's Harbour by the year 2010. This would in part be due to traffic from the new port. Some traffic would have to pass through The Bridge, which is already subject to traffic congestion at certain times.

Traffic from all sources could become unacceptable. In the final development stages it may be necessary to consider the construction of a roadway across the harbour.

AIR QUALITY

Construction would not generally be a significant cause of air pollution. However reclamation could give rise to dust and windblown debris. Operators would need to ensure all loose material is covered each day, and that fences are adequate to trap windblown litter.

Activities in the proposed harbour extension would be unlikely to have a significant impact on air quality.

SOLID WASTE

Land at Longue Hougue and Black Rock will be reclaimed using inert waste. This would not have an environmental impact and would help to relieve the shortage of landfill space on the Island. Though a sealed site is preferred a permanent membrane could be difficult to build because of the tidal water height.

Materials acceptable for reclamation of Longue Hougue, ie 'inert fill', need to be categorically defined to exclude organic matter (wood, paper, putrescibles), otherwise toxic leachate and other gases could be produced. These would readily disperse causing occasional sheens and odours, and possibly affect local marine life. However the impact would not be

significant provided large amounts of 'live' waste were not disposed of. However monitoring of conditions and the seabed around the site is recommended.

At the appropriate time there will be a need for a detailed, specific disposal plan for Longue Hougue describing permitted wastes and disposal schedules.

WATER QUALITY

Construction will have temporary and small impact on water quality in the area. The coarse nature of the bed materials indicates that liberation of silt and reduction in oxygen content of the water is unlikely to be a problem.

Water quality in the existing harbour has occasionally been unsatisfactory. The main source of pollution is the sewer emergency overflow near the harbour entrance. New pumps have reduced overflows, and further improvements have been included within the 1994 budget.

During construction sewage effluent would need to be diverted during the installation of the new pumping station and connection of the new overflow outfall. The final discharge will need to be located outside the shelter of the breakwaters to prevent effluent being impounded.

Operational small spillages of coal, cement, sand, and scrap iron would not have a significant impact. Losses will be minimised or contained. Spills of fuel and oils are potentially more damaging. The Harbour will be covered by the Oil Spill Plan but further review of local instructions and protection measures may be necessary.

The inner harbour area is likely to experience reduced tidal flushing. Changes in water quality may occasionally be detectable but would not be significant.

ECOLOGY

There are no significant ecological interest sites in the immediate vicinity of the site of affected by the proposals. Residual impacts on ecology would be localised and not significant.

FISHERIES

Some commercial fishing for several species has taken place towards the south of the Little Russel channel, and in the lee of the Great Bank. The inshore coastal areas of Guernsey are good nursery areas for a variety of flatfish, pollack, bass and edible crab. Scallop beds are found throughout the Little Russel channel on coarse substrata. The area is operated by one scallop dredge and about ten full time divers. Off St Sampson there are a 'few tens of pots' for lobster and crab.

Local boatowners increasingly take anglers for day trips. Species commonly caught are bass, bream, conger, dogfish, garfish, mackerel, mullet, plaice, pollack and wrasse.

Development would not have a direct significant impacts on commercial fisheries. Loss of lobster potting on Black Rock would be temporary - the construction of new breakwaters could provide new areas for potting once recruitment of young crustaceans has occurred. Fisheries immediately adjacent Longue Hougue and Black Rock could be affected by some 'inert' waste materials used in the reclamation.

Part of the Great Bank fishing area could be affected by changes in local currents. This could have a small but probably undetectable impact on local fisheries.

HERITAGE

The St Sampson region is historically important. Part of the town is a listed Conservation Area and Vale Castle and Mont Crevelt are monuments of historic importance. Though there will be no direct effects on these features, views from them will change significantly. Landscaping and other proposed environmental improvements would benefit the area.

No known important wrecks or similar sites will be affected.

SUMMARY OF CONCLUSIONS

There do not appear to be any over-riding reasons why the development should not be allowed to proceed. Although the construction and operation of the St Sampson Harbour extension will have a number of environmental implications, these are generally not substantial and can largely be mitigated.

The detailed assessment of potentially significant impacts, monitoring of effects, planning of environmental controls, and the preparation of environmental protection programmes is recommended.

APPENDIX 6

REVIEW OF OFFSHORE TANKER BERTHS - VERSLUIS SPM ADVISORY SERVICES BV/SHELL INTERNATIONAL MARINE LTD - ANALYSIS OF THE VERSLUIS REPORT

Offshore tanker facilities were considered as possible alternatives to the construction of deep water berths for the Island's future fuel requirements.

A summary of the review undertaken by Versluis, together with appropriate references to the Shell International Marine Ltd analysis, now follows:

a) **Multiple Buoy Moorings (MBM)**

These were found to be unsuitable for a number of reasons, including the fact that:-

- mooring an import vessel to an MBM is time consuming and difficult in open sea conditions (as would be experienced in the Little Russell. In the opinion of Captain Gill of Shell International and local pilots, an MBM could not be installed close to the shore);

- the MBM system needed for Guernsey would involve at least 6 pipelines which would be liable to tangle; and

- vessel mooring and discharge time can be excessive unless it is undertaken in a sheltered area.

The review made it clear that the use of MBMs is restricted to comparatively sheltered locations.

The Shell International Marine analysis stated that:-

- Experience worldwide indicates that the limiting sea state in which an MBM can be operated is 1.2 m significant wave height. Most likely this would prove to be very restrictive in terms of downtime, particularly during winter months; and

- due to the problems associated with moorings at these berths, berthing is often restricted to daylight hours only.

b) **Single Point Moorings (SPM)**

This system was also found to be unsuitable for a number of reasons which include the following:-

- A single point mooring system is normally used for one product and possibly two. For all Guernsey's oil and gas requirements to come ashore from a single

point mooring, including heavy oil, light oil and petroleum gas, individual lines would need to be supplied along with vapour lines. Six lines would therefore be required, far in excess of the standard system design.

- The SPM mooring anchoring system is vulnerable to variations in water level. Offshore systems have been used in lochs and within harbours where waves up to 12" are experienced. However, waves off Guernsey can reach several metres during the winter period.

- The complicated swivel unit of the SPM is located on the sea bed and is difficult to access for maintenance and repairs.

- It is understood that a single point mooring system for the offloading of liquid petroleum gas in the North Sea has been tried, and in the long term has been unsuccessful. The system is understood to have cost around £7 million, not including pipelines to the shore; and

- SPM facilities for handling pressurised Liquid Petroleum Gas (LPG) do not exist.

The Shell International Marine analysis commented that:-

- In the case under consideration, coasters of the size envisaged would (also) be unable to work cargo in open sea conditions with waves of the order of 1.8 m; and

- sites affording sufficient protection from the weather, which have low current velocities, are not readily available in local waters.

c) **Reel Type Discharge Hoses**

These were also investigated.

The Versluis Report gave the example of this system being used in relation to a small import vessel discharging in a sheltered bay close to the shore.

With the local tidal range (which is insignificant in the Caribbean) of ten metres and wave heights expected on occasion to be in excess of three metres, the proposed area for a fuel berth at St Sampson's cannot be considered a sheltered area.

The Shell International Marine analysis emphasised that:-

- As indicated in the Versluis Report, this method of cargo discharge is popular for product supply to the smallest and least developed islands in the Caribbean, where Trade Winds are prevalent and there is minimal tide and current. These are prerequisites for the successful implementation of this type of operation.

The Shell International Marine analysis of the Versluis Report concluded that:-

'We would not consider the northern end of the Little Russell to be a suitable location for any form of offshore berth, given the volume of passing traffic and the consequent risks associated with the handling of sensitive oil products in an exposed location.'

Captain Gill (of Shell International) who prepared the analysis of the Versluis Report, has direct, practical experience of St Samspon's Harbour. The Board concurs with his conclusion.

APPENDIX 7

Details concerning the Phased Development of St Sampson's Harbour, together with estimated costs at 1993 prices

			1993 £
OPTION 1			
Phase One	North Side/Black Rock bunds		5,040,000.00
Phase Two	South Breakwater etc and access road in Longue Hougue Phase II using stone		
i)	Stone	14,122,500.00	
ii)	Dredging	1,102,500.00	
iii)	Berth	525,000.00	
iv)	Access Road	4,200,000.00	19,950,000.00
Phase Three	North Breakwater etc		
i)	Stone	7,612,500.00	
ii)	Dredging	4,252,500.00	
iii)	Berth	525,000.00	12,390,000.00
Phase Four	Extension to South Breakwater		3,570,000.00
Phase Five	Additional Berths		8,715,000.00
Total estimated costs for **OPTION ONE**			£49,665,000.00
OPTION TWO (PREFERRED)			
Phase One	North Side/Black Rock bunds and access road in Longue Hougue Phase II but using overburden material		
i)	Stone	5,040,000.00	
ii)	Access Road	525,000.00	5,565,000.00
Phase Two	South Breakwater etc		
i)	Stone	14,122,500.00	
ii)	Dredging	1,102,500.00	
iii)	Berth	525,000.00	15,750,000.00
Phase Three, Four & Five			
	As Option One		24,675,000.00
Total estimated costs for **OPTION TWO**			£45,990,000.00

An additional £2,000,000 provision should be allowed for either option for offshore dredging operations which may be necessary to provide materials for reclamation purposes. The principal dimensions and quantities for the development are:-

	m	Tonnes of Stone
1. Stone		
Phase One - bunds enclosing 'Black Rock'	890	275,000
Phase Two - South Breakwater inc spur	760	775,000
Phase Three - North Breakwater	360	420,000
Phase Four - Extension to South Breakwater	160	200,000

2. Dredging

Volumes of dredging required (undertaken in Phases Two and Three)

Rock - 126,750 m^3
'Soft' - 15,000 m^3

3. Harbour Area

The approximate area of sea enclosed by the development (at high water) ie between existing pier heads of St Sampson's Harbour and proposed pier heads

= 170 vergees (approx 69 acres)

and for comparison purposes St Peter Port Harbour is almost the same area at 172 vergees and St Sampson's Harbour is 44 vergees (18 acres).

APPENDIX 8

PREDICTED CHANGES IN RETAIL PRICE INDEX

Electricity Tariff

increase per litre (pence) (Heavy Oil)	inc. in RPI (elec)
1.00	0.08
1.50	0.12
2.00	0.15

Petrol and Diesel

increase per litre (pence)	inc. in RPI
1.00	0.08
1.50	0.12
2.00	0.15
2.25	0.17

Kerosene

increase per litre (pence)	inc. in RPI
1.00	0.05
1.50	0.07
2.00	0.09

L.P.G.

increase per litre (pence)	inc. in RPI
1.00	0.01
1.50	0.02
2.00	0.03

(All increases relate to the 30th June 1992 Guernsey R.P.I.)

GROSS IMPORT FIGURES FOR HYDROCARBONS EXCLUDING L.P.G. 1988 TO 1992

GROSS IMPORT FIGURES FOR HYDROCARBONS EXCLUDING L.P.G. 1988 TO 1992

YEAR	MOTOR SPIRIT		AVIATION FUELS		GAS OIL		FUEL OILS INCLUDING HEAVY OIL		KEROSENE	
	litres	tonnes	litres	tonnes	litres	tonnes	litres	tonnes	litres	tonnes
1988	30,993,835	23,130	3,902,011	2,787	18,552,195	15,460	70,964,474	68,898	15,342,791	12,576
1989	32,932,759	24,577	7,196,071	5,140	16,235,511	13,530	74,001,446	71,846	15,934,986	13,061
1990	34,543,889	25,779	6,269,531	4,478	20,672,971	17,227	73,704,067	71,557	16,587,306	13,596
1991	32,180,538	24,015	4,125,844	2,947	25,525,519	21,271	83,647,376	81,211	21,118,137	17,310
1992	33,477,826	24,983	3,741,002	2,672	33,079,362	27,566	60,379,269	58,621	19,898,011	16,310
Ave.	32,825,769	24,497	5,046,892	3,605	22,813,112	19,011	72,539,326	70,427	17,776,246	14,571

YEAR	OTHER		REFUNDS		TOTALS	
	litres	tonnes	litres	tonnes	litres	tonnes
1988	206	0	0	0	139,755,512	122,851
1989	204	0	-126,779	-102	146,174,198	128,052
1990	45	0	0	0	151,777,809	132,638
1991	93	0	0	0	166,597,507	146,755
1992	1,396	1	0	0	150,576,866	130,153
Ave.	389	0	-25,356	-20	150,976,378	132,090

Figures taken from Customs records.

Customs figures for 1991 and 1992 include the following imports by the States Electricity Board of Heavy Fuel Oil:-

1991 63,996,907

1992 59,313,912

AN ILLUSTRATIVE POSSIBLE INCREASE IN HARBOUR DUES AND RESULTANT REVENUE FOR HYDROCARBON FUEL AND GAS (RETAIL PRICE INCREASE BY 0.42%)

Grade	88 - 92 Average Quantity per Annum Tonnes		1992 Price per Litre Pence	Proposed Price per Litre Pence	Inc in Cost per Litre Pence	%Inc	Increase in Revenue £	Price per Tonne Pence
Gas Oil	19,011	Ind	13.50	15.50	2.00	14.81	456,264	2,516.00
		Dom	14.94	16.94	2.00	13.39		2,516.00
Kerosene	14,571	Ind	14.25	16.25	2.00	14.04	355,532	2,556.00
		Dom	15.40	17.40	2.00	12.99		2,556.00
Petrol	24,497		30.80	32.80	2.00	6.49	656,520	2,796.00
Av. Gas	3,605		29.74	31.99	2.25	7.57	113,558	3,266.00
Fuel Oil[1]	69,916	HFO	6.25	8.25	2.00	32.00	1,233,108	2,176.00
		Other					207,161	2,176.00
LPG[2]	10,929	MBT	18.60	20.60	2.00	10.75	430,603	4,056.00
		Cyl	23.39	25.39	2.00	8.55		4,056.00
TOTAL	142,529						3,452,746	

1 Average of 1991 and 1992 figures only used for fuel oil imports

2 1991 Harbour figures used for LPG

N.B. Prices of hydrocarbons to customers are dependant on various factors including quantity purchased. The 1992 price per litre costs shown above were chosen to be examples only of the prices charged.

of the prices charged.

ILLUSTRATIVE CASH FLOWS (AT 1993 PRICES) OVER UPTO A 12 YEAR DEVELOPMENT PERIOD

USING INCREASES SHOWN IN APPENDIX 10

	Option 1			Option 2		
Year	Income £	Expenditure £	Running Total £	Income £	Expenditure £	Running Total £
1	3,452,746	2,520,000	932,746	3,452,746	2,782,500	670,246
2	3,452,746	2,520,000	1,865,492	3,452,746	2,782,500	1,340,492
3	3,452,746		5,318,238	3,452,746		4,793,238
4	3,452,746		8,770,984	3,452,746		8,245,984
5	3,452,746	5,700,000	6,523,730	3,452,746		11,698,730
6	3,452,746	5,700,000	4,276,476	3,452,746		15,151,476
7	3,452,746	5,700,000	2,029,222	3,452,746	10,500,000	8,104,222
8	3,452,746	2,850,000	2,631,968	3,452,746	5,250,000	6,306,968
9	3,452,746		6,084,714	3,452,746	8,260,000	1,499,714
10	3,452,746	8,260,000	1,277,460	3,452,746	4,130,000	822,460
11	3,452,746	4,130,000	600,206	3,452,746	3,570,000	705,206
12	3,452,746	3,570,000	482,952			
Totals	41,432,952	40,950,000		37,980,206	37,275,000	

9.1

Imports

Section 9 : Energy

Imports

Year	OIL IMPORTS Thousands of Litres Transport*	Heating	Total	COAL IMPORTS Tonne Domestic	Industrial	Total	GAS IMPORTS Tonne
1980	44,427	144,056	188,483	17,409	1,298	18,707	6,997
1981	42,405	114,468	156,873	17,200	2,382	19,582	6,655
1982	42,049	95,639	137,688	17,338	5,688	23,026	6,337
1983	38,128	90,037	128,165	22,621	6,130	28,571	6,409
1984	37,130	81,036	118,166.	20,889	2,027	22,916	6,351
1985	37,910	87,542	125,452	28,664	1,027	29,691	6,932
1986	38,179	100,072	138,251	n/a	n/a	16,912	7,742
1987	35,416	102,331	137,747	16,826	5,800	22,626	8,795
1988	34,283	104,115	138,398	15,470	4,000	19,470	8,685
1989	39,349	105,288	144,637	16,514	3,120	19,634	8,589
1990	40,071	109,510	149,581	22,767	2,202	24,969	9,108
1991	35,566	131,068	166,634	23,352	3,995	27,347	10,929

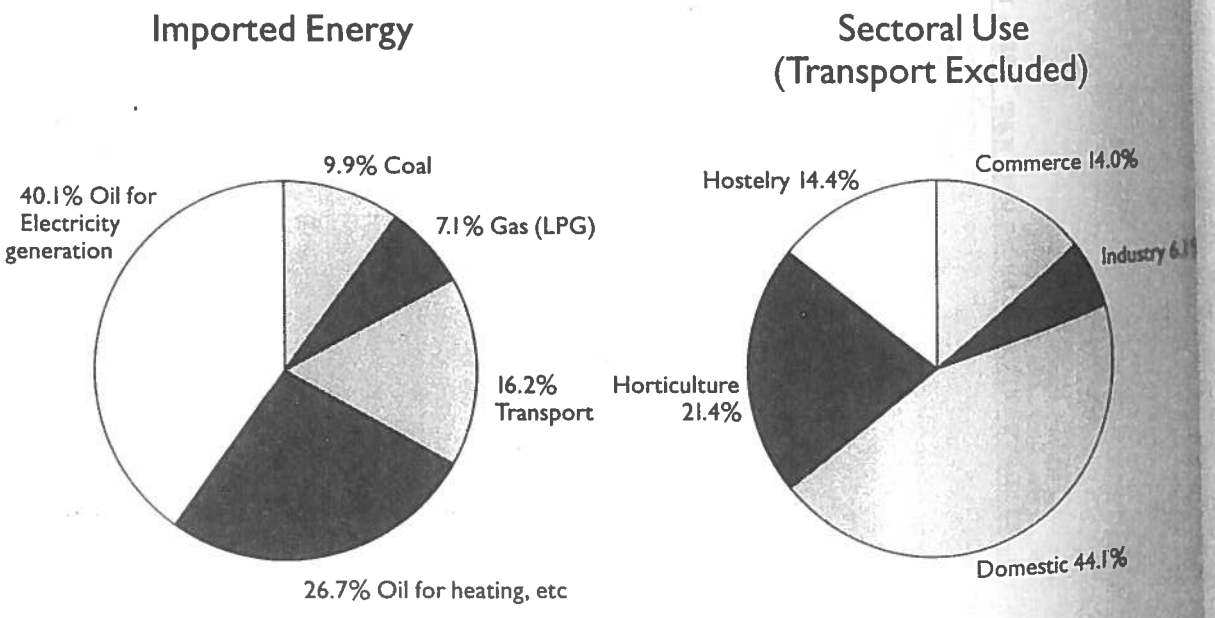
*Transport includes aviation and motor spirit but not gas oil used for transport purposes.

Source: Oil - Customs, Coal - Customs & British Fuels, Gas - GuernseyGas.

Figure 9.1

Imports

Energy Imports and Use: 1991 Percentages (based on Terajoules)

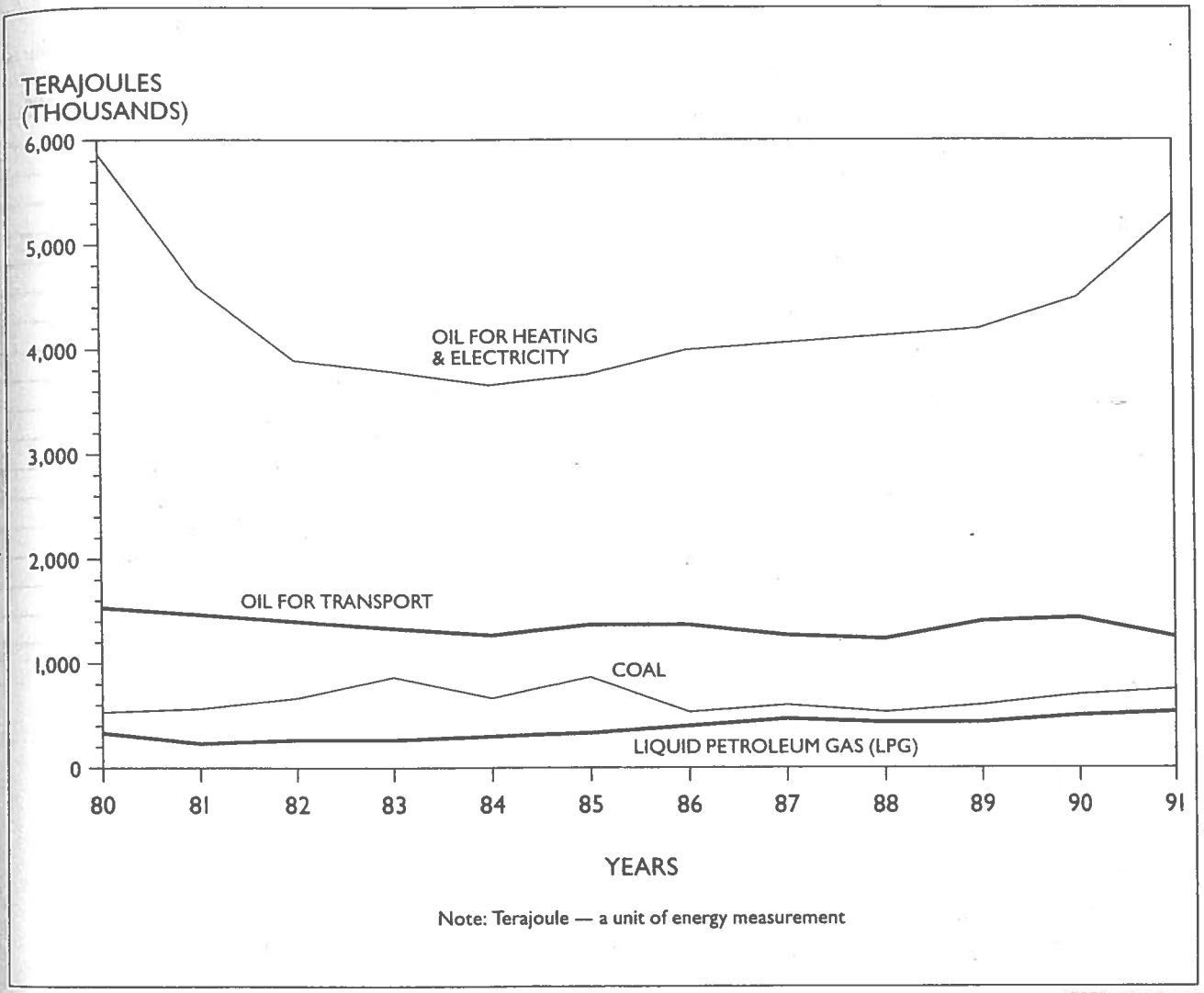


Note: Terajoule — a unit of energy measurement.

Figure 9.2

Energy Imports

Energy Imports (Terajoules)



Note: Terajoule — a unit of energy measurement

9.2

Summary of Energy Imports

Summary of Energy Imports TJ (Tera Joules)

	FUELS FOR HEATING & POWER			Sub		
	Oil	Coal	LPG	Total	TRANSPORT	TOTAL
1980	5,824	522	348	6,693	1,547	8,240
1981	4,627	546	331	5,504	1,476	6,980
1982	3,867	642	315	4,825	1,463	6,288
1983	3,649	802	318	4,770	1,347	6,117
1984	3,284	639	316	4,239	1,310	5,549
1985	3,524	828	344	4,697	1,339	6,036
1986	4,018	472	385	4,875	1,338	6,213
1987	4,072	611	437	5,120	1,268	6,388
1988	4,222	527	430	5,179	1,196	6,375
1989	4,275	533	426	5,234	1,376	6,610
1990	4,435	693	453	5,581	1,404	6,985
1991	5,305	760	544	6,609	1,243	7,852

Approximate conversion factors: 1kWh = 3.6MJ
1,000kWh = 3.6GJ
1,000,000kWh = 3.6TJ
1TJ = 24750 litre oil = 20.1 tonne LPG = 36 tonne coal = 277,778kWh

9.3

Electricity Consumption

Electricity Consumption

Period April to March)	Number of customers (at 31 March)		KWH Units sold (000's)		Average units per customer		Average price per unit (pence)	
	Domestic	Total	Domestic	Total	Domestic	Total	Domestic	Total
1975/76	18,031	23,444	82,104	149,175	4,553	6,363	2.35	2.35
1976/77	18,316	23,729	79,462	146,363	4,338	6,168	2.76	2.77
1977/78	18,634	23,974	84,874	159,326	4,555	6,646	3.60	3.58
1978/79	18,763	24,164	88,645	168,807	4,724	6,646	3.54	3.51
1979/80	18,907	24,336	88,429	169,434	4,677	6,962	4.22	4.16
1980/81	19,161	24,606	86,256	163,817	4,502	6,658	5.68	5.65
1981/82	19,403	24,823	83,794	158,786	4,319	6,397	6.58	6.53
1982/83	19,541	24,922	83,902	158,711	4,294	6,368	6.92	6.85
1983/84	19,758	25,086	82,744	158,826	4,187	6,331	7.06	6.9[illegible]
1984/85	19,970	25,221	86,941	166,720	4,353	6,610	7.20	7.0[illegible]
1985/86	20,087	25,197	89,727	170,431	4,466	6,764	7.29	7.23
1986/87	20,217	25,108	97,340	186,728	4,814	7,437	5.98	5.97
1987/88	20,541	25,312	97,323	192,702	4,738	7,613	6.29	6.29
1988/89	20,866	25,611	98,864	199,600	4,738	7,793	6.52	6.52
1989/90	21,105	25,807	100,217	208,209	4,748	8,068	7.08	7.06
1990/91	21,250	25,909	102,918	217,026	4,843	8,377	7.78	7.75
1991/92	21,444	26,104	109,539	226,755	5,108	8,687	8.46	8.26

Note: From 1986/87 the average price per unit excludes standing order charges.

Source: States Electricity Board.

9.4

Gas Consumption

Gas Consumption

Year	Mains Gas 1000's KwH	Bottled Gas Tonnes
1977	77,921	1,523
1978	76,541	1,589
1979	76,079	1,721
1980	72,684	1,614
1981	68,704	1,564
1982	65,152	1,522
1983	66,700	1,499
1984	66,247	1,487
1985	72,317	1,664
1986	79,099	1,920
1987	87,614	2,079
1988	91,155	1,913
1989	91,864	1,825
1990	96,317	1,794
1991	109,659	2,260

Source: Guernsey Gas Group.

APPENDIX 13

-1. JUN. 1993

STATES OF GUERNSEY
ISLAND DEVELOPMENT COMMITTEE

Sir Charles Frossard House
PO Box 43 · La Charroterie
St Peter Port · Guernsey
GY1 1FH · Channel Islands
Tel. (0481) 717000
Fax (0481) 717099

Our ref: B354

The President
Board of Administration
Sir Charles Frossard House
P O Box No 43
La Charroterie
St Peter Port
Guernsey

1 June 1993

Dear Conseiller Berry

Harbour of St Sampson's
- Land Reclamation and the Development of Deep Water Berths

I refer to your letter dated 14 April 1993 enclosing a copy of the Board's policy letter, together with a copy of the final Reconnaissance Environmental Impact assessment, dated March 1993, by W S Atkins Environment in relation to land reclamation and the development of deep water berths at the harbour of St Sampson's, which the Committee considered at its meeting on 1 June 1993.

In 1988 the IDC gave its full support to all the necessary surveys being undertaken, but felt unable to comment further on the proposals in detail until the results were known. The Committee continues to support fully the principle of the provision of deep water liquid product berths for the unloading of volatile fuels.

The Committee considers that the Ro-Ro facilities and container berth which are proposed should be regarded as optional. The Committee notes that the 'Marine Traffic Forecast Survey', prepared by Robert West & Partners, recommended provision of two liquid product berths and three dry bulk cargo berths. It is also noted that the inclusion of Ro-Ro/container facilities were considered to be desirable though not essential.

The Board's decision to include Ro-Ro/container facilities seems to be based upon the 'Land Utilisation Study' undertaken by Coode Blizzard Ltd. The Land Utilisation Study's conclusion that provision could be made to enable containers to be stuffed and unstuffed in the Port area did not take into account the Island's other pressing requirements outlined in the 1992 Policy, Planning, Economic and Financial Report. The 1992 Report makes it clear that the planning of the Longue Hougue land reclamation site should be considered within the context of the Island's overall needs. Facilities associated with the future development of St Sampson's Harbour are seen as just one of the competing requirements which need to be planned for. The Strategic and Corporate Plan requires the IDC to take account of the future size of reclaimed areas and plan for their future use (SP.16).

The Committee is concerned that the results of the Phase 1 research conducted by H R Wallingford appear in some respects to be unfavourable. In particular, the study seems to find that the size of the extension in the narrowest part of the Little Russel, was to some extent incompatible with the Board's design objectives (ie accessible at all stages of the tide and in all but the most severe weather conditions). For instance, the studies found that:

"The substantial breakwaters proposed would constrict further the already constricted flow in this region and have a significant effect on the tidal streams, with the extent of changes in proportion to the length of intrusion"..."Peak speeds exceeding 3 m/s are predicted at the harbour entrance, an increase of 1 m/s over existing. Speeds of this order coupled with the high tidal ranges (mean spring range of 8 metres), could be hazardous to ships entering or leaving at certain states of the tide".

"The strong currents produced around the harbour entrance and in the channel; formed between the northern breakwater and rocks, could present an extreme hazard to small craft. The scheme would effectively block, and prevent the use of the inner channel as a thoroughfare to the harbour".

"The viability of the scheme is ultimately dependent on the ability of ships to negotiate the strong current streams around the southern breakwater and velocity gradient in the harbour approach (with currents varying by more than 2 m/s over the length of ships being considered)".

Taking the above results into consideration, the Committee feels that it would have been prudent to investigate a smaller scale scheme not including Ro-Ro and container facilities. For instance, the Committee would draw attention to the suggestion made by Robert West & Partners in the "Traffic Forecast Survey" that "...the Board of Administration might ask their marine engineering consultants to consider whether an unprotected or partially protected piled jetty with a carefully designed strongpoint fendering system might be possible in the deep water channels immediately offshore of the harbour".

The Committee is of the opinion that the evaluation of all the various options should have followed, as far as possible, the procedure set down in the European community Directive 85/337 on Environmental Assessment (EA). The Committee notes that the report from W S Atkins relates to a Reconnaissance Assessment and should not be confused with a full Environmental Impact Assessment as might be carried out in accordance with environmental assessment procedures similar to those required by UK/EC directives, or indeed as might be considered appropriate locally. Whilst the Committee commends the Board's initiative in commissioning this Report, the Committee nonetheless feels that projects of this scale should be subject to a full EIA.

The Committee considers that the traffic proposals referred to by the Board, namely the release of valuable space for revised traffic arrangements resulting from the relocation of Marine and General Engineers Ltd shipyard and "future road improvements at the Bridge", need to be given detailed consideration within the wider planning context for the area. For instance, the after-use of vacated commercial sites should take into account the contribution that commercial activities can make to the life and character of a busy working harbour.

Furthermore, the Committee are of the opinion that the impact of construction traffic, including the transportation of inert landfill material as well as stone, should be thoroughly evaluated in order to establish whether adverse effects upon The Bridge would justify a new cross harbour link. The effects of construction traffic will persist over many years. Approximately 55 loads per day would carry stone from Mont Cuet and Les Vardes to the site. In addition, trucks would carry inert waste for infill (the number of charged loads for January 1993 delivered to St Germain amounts to 898 loads). The effects could be aggravated if imported stone is used for the northern breakwater.

Yours sincerely

JOHN E LANGLOIS
President

The President,
States of Guernsey,
Royal Court House,
St. Peter Port,
Guernsey.

18th June, 1993.

Sir,

I have the honour to refer to the policy letter dated 18th June 1993 from the Board of Administration concerning St. Sampson's Harbour.

In its letter of comment on the Board's 1988 policy letter, the Advisory and Finance Committee stated that it believed that it was *"quite clear that at some time in the future, external circumstances over which we have little control will dictate that alternative berthing arrangements are made for vessels bringing fuel to the Island. There is also the internal question of safety in the areas surrounding the harbour."*

The Advisory and Finance Committee supported the carrying out of the surveys proposed by the Board without prejudice to any comments it may have wished to make at a later date on the form and cost of any outline proposals for development laid before the States having taken account of the surveys.

The Advisory and Finance Committee remains of the view expressed in 1988 and believes that it is essential that the technical, marine/civil engineering aspects of such a potentially extensive project are adequately researched. For this reason the Advisory and Finance Committee fully supports the Board's proposals to carry out further investigations.

It must be stressed, however, that the States is not being asked to agree in principle to the carrying out of the scheme nor is it being asked to approve the elements which should be included in the scheme, detailed layouts or the methods of funding which are discussed in the very comprehensive report submitted by the Board.

The redevelopment of St. Sampson's Harbour could be the largest project of its type undertaken by the States in recent times and although its main justification would be to address marine traffic and safety considerations, it could provide opportunities for other benefits. It is important that these opportunities and the need to minimise any potentially detrimental effects of the development on the surrounding area, are addressed before any detailed design work is undertaken.

A further central issue that will need to be addressed is the various alternative methods of funding which could be adopted and which, should it be decided that the scheme proceed, may affect the commencement date and the period over which construction may take place.

The Advisory and Finance Committee will liaise with the Board of Administration and other interested parties to ensure that these considerations are fully taken into account.

The Advisory and Finance Committee, therefore, recommends the States to agree to the proposals.

I am, Sir,

Your obedient Servant,

P.J.H. MORGAN,

Vice - President,

Advisory and Finance Committee.

The States are asked to decide:—

Whether, after consideration of the Report dated the 18th June, 1993, of the States Board of Administration, they are of opinion:-

1. To note the results of Phase I site investigations and the completion of supporting preliminary studies, the full reports resulting from which have been deposited at the Greffe.

2. To authorise the States Board of Administration to commence Phase II laboratory (physical model) investigations as detailed in that Report at a sum not exceeding £323,000.00.

3. To authorise the States Board of Administration to investigate the requirements for fuel pipelines for the proposed development as detailed in that Report at a sum not exceeding £6,000.00.

4. To approve expenditure in the sum not exceeding £22,895.00 for a Reconnaissance Environmental Impact Assessment for the proposed development, such sum having already been met in the first instance from the States Advisory and Finance Committee's Technical Services Consultants vote.

5. To approve expenditure of a sum not exceeding £6,720.00 for the engineering consultancy services to the States Board of Administration of Coode Blizard Limited, Consulting Engineers, which services have included presentations on the proposed development.

6. To vote the States Boad of Administration a total credit of £358,615.00 to cover the cost of the above investigation and consultation fees, such sum to be taken from that Board's allocation for capital expenditure.

7. To direct the States Board of Administration to report back to the States with the results of the Phase II laboratory investigations.

8. To direct the States Board of Administration to carry out further consultations with the Commercial Port Users Association and other interested bodies before reporting back to the States with recommendations concerning whether or not to proceed with the planning of an extension to St. Sampson's Harbour.

9. To direct the States Board of Administration to consult with the States Advisory and Finance Committee concerning the funding of the extension to St. Sampson's Harbour and to put forward appropriate recommendations for such funding at the time that the main proposals are put to the States, should it be so agreed, in due course, to recommend the States to proceed with an extension to that Harbour.

G. M. DOREY,
Bailiff and President of the States.

The Royal Court House,
Guernsey.
The 2nd July, 1993.