Jurassic Coast World Heritage Site

Waterborne Transport Study

Stage 2: Feasibility Including Pilot Projects

Final Report

Prepared by Fisher Associates for Dorset AONB

Document History		
Version	*Date*	*Notes*
Draft Report	31/07/10	First Draft
Draft Final Report	23/12/10	Incorporates survey results
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1) Introduction

Dorset and East Devon has an exceptional coastline, renowned for spectacular scenery, geological and ecological interest and stunning coastal features. It is designated a World Heritage Site for its globally important geology and geomorphology. Popular beaches, family resorts, the South West Coast Path National Trail, and opportunities for sea and land based recreation attract thousands of visitors each year, contributing considerably to the local economy.

However, the large number of car-borne visitors result in considerable pressures - on the landscape and environment, the network of rural coastal roads, and the transport network in the area. Development of marine-based transport along the coast, integrated with other transport modes, may offer a sustainable future transport option and an alternative to the car.

The Jurassic Coast (JC) Transport Strategy was prepared in 2005 as an overarching strategy to guide a more sustainable approach to transport along the coast, and is now supported by a comprehensive JC Sustainable Transport Improvements and Actions (2009 - 2014) Plan. The complementary Dorset and East Devon Coastal Corridor Action Plan has been prepared as an integrated delivery plan for the coastal corridor encompassing sustainable access, transport, information and interpretation, visitor management and facilities, community celebration and action, and environmental enhancements.

Development of waterborne transport is a key aim being taken forward by the Jurassic Coast Transport Working Group. A Project Steering Group has been established with the key partners comprising the Jurassic Coast team, Dorset AONB, Dorset County Council, Devon County Council, Jurassic Coast Trust and the Maritime and Coastguard Agency.

Passengers boarding Stuart Line Cruises vessel.

In May 2009, Fisher Associates was appointed to investigate the long term potential for waterborne transport along the Dorset and East Devon Coast, which would offer an enhanced, reliable and realistic alternative transport opportunity for both functional and leisure journeys, and would enable integration between waterborne and surface transport.

A Scoping Study published in September 2009 presented an assessment of:

- The potential market;
- Issues related to vessels and landing facilities, and constraints on these;
- Barriers to development of services; and
- Recommendations for future actions.

This provided the basis for this Stage 2 Study, commissioned from Fisher Associates in association with BMT Nigel Gee, but undertaken as a collaboration between Client and Consultant.

Stage 2 centres on investigation of three pilot projects linking:

- East Devon: Sidmouth, Beer / Seaton and Lyme Regis
- Portland and Weymouth
- Poole Bay: Swanage and Studland with Poole and Bournemouth

It provides more detailed articulation of the vision for waterborne transport on the Jurassic Coast, and specific consideration of options for developing services for the pilot projects.

Stage 2 has been underpinned by a demand survey, conducted by Dorset County Council, which is possibly the most extensive exercise of this kind in the UK.

This report also provides material for assimilation into the emerging Local Transport Plan 3 (LTP3) processes of both Devon and Dorset County Councils.

2) Vision

2.1) Introduction

This section reviews and updates (where helpful) some of the demand data identified in the earlier scoping study.

It illustrates how growth in overall transport demand makes the requirement for more sustainable modes ever more pressing as time passes.

It concludes with an illustration of the future vision of waterborne transport.

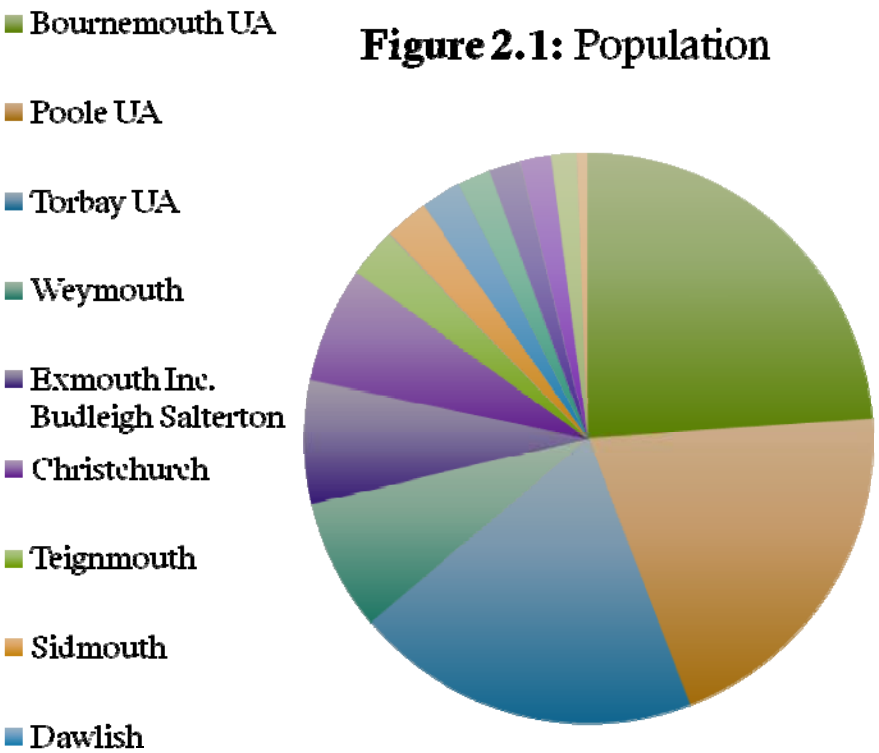
2.2) Where Are We Now?

Based on previous census data, about 680,000 people live along the Jurassic Coast and its extension into Torbay and Poole Bay.

With respect to towns located within the pilot projects, populations are:

- Sidmouth: 17,000
- Seaton: 12,000
- Lyme Regis: 4,000
- Portland: 13,000
- Weymouth: 51,000
- Swanage: 10,000
- Poole: 138,000
- Bournemouth: 163,000

Figure 2.1: Population



Analysis undertaken by Dorset County Council for the Scoping Study indicated the following commuting flows across all modes based on 2001 census data:

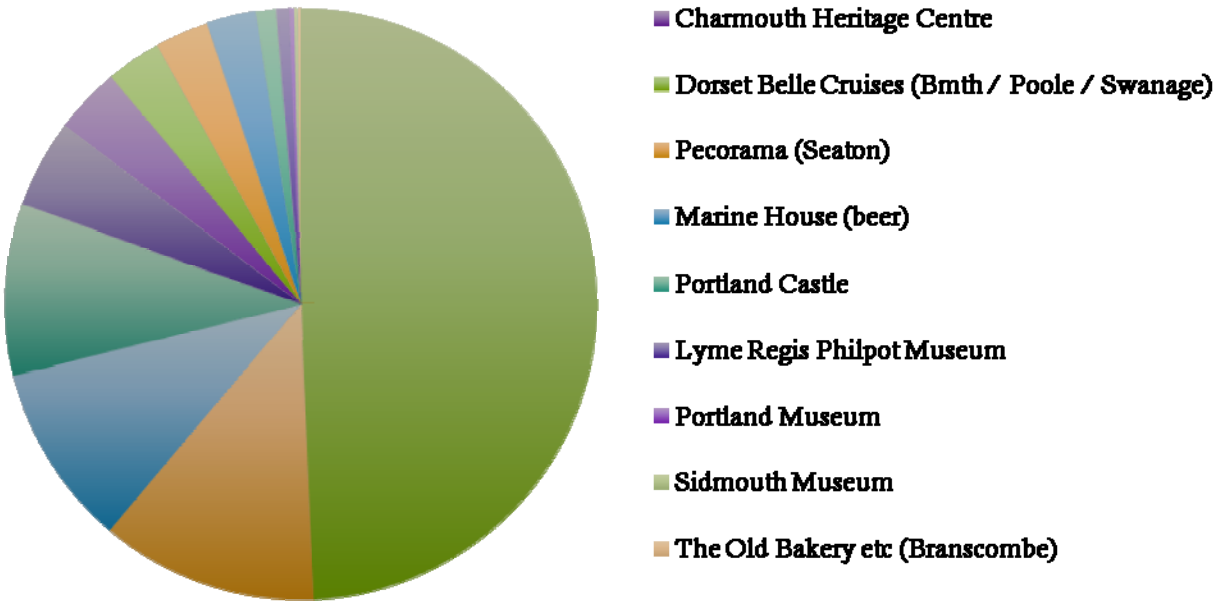
- The number of people travelling from Jurassic Coast settlements to other key specified towns is approximately: 350 to Sidmouth; 300 to Weymouth; 250 to Bridport; 100 to Charmouth / Lyme.
- About 450 people lived in Swanage, but worked in Bournemouth or Poole, and about 100 in the reverse direction.
- Over 10,000 lived in Poole but worked in Bournemouth, plus 10,000 vice versa.

For the Jurassic Coast, we conclude that depending on the actual stretch of coast, water based services timed for commuters would have a potential market on the scale of hundreds of passengers per day.

About 5 million leisure visits are made to the Jurassic Coast each year.

About 2 million people visit key attractions located within or adjacent to the pilot projects (see Figure 2.2). With at least 1 million visitors, Studland accounts for 50% of these.

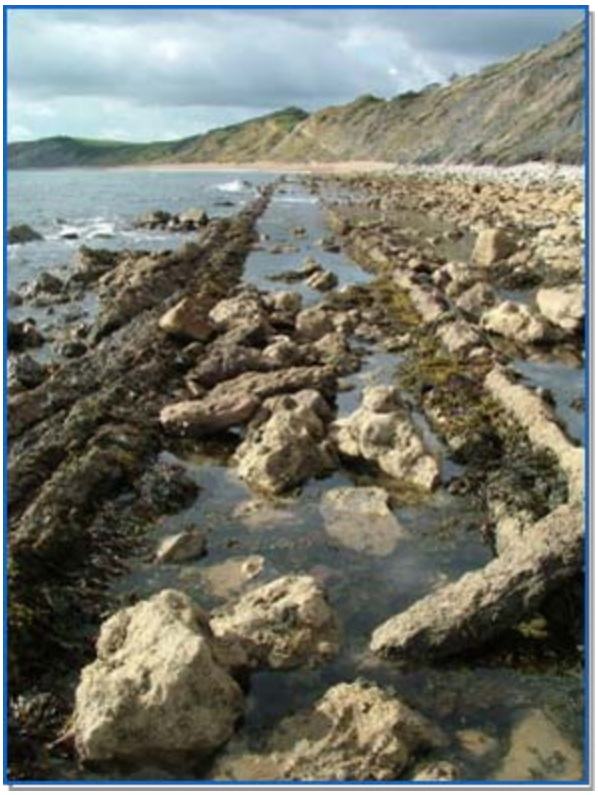
Figure 2.2: Visitors



2.3) Future Outlook

We can identify five clear key evidence based trends:

- The number of visitors is likely to grow.
- This will lead to a growth in road traffic, increased congestion, and environmental impact.
- The capacity of road infrastructure and parking cannot increase significantly in response to this due to the environmental impact associated with these.
- In fact capacity will be *reduced* due to loss of facilities arising from coastal erosion.
- Sea levels are rising, and this *may* increase rates of erosion, but *will* increase useable depths of water at coastal locations.



We have developed a best guess at the scale of growth in future traffic flows based on some representative Low, Base and High scenarios.

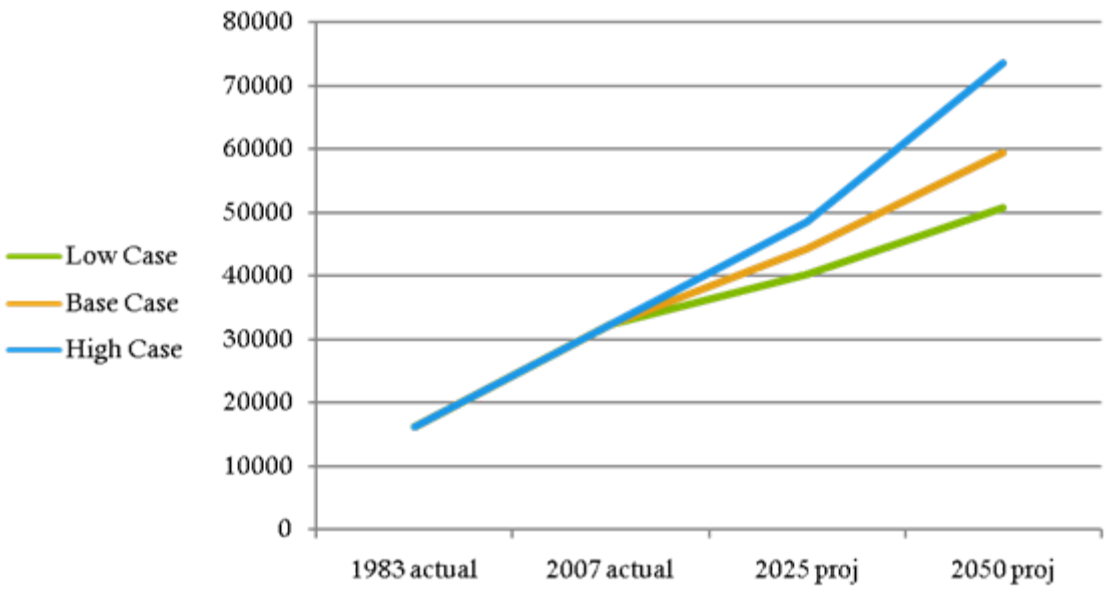
Figure 2.3 shows that actual traffic on a combination of six coastal roads on the Jurassic Coast, for which data is available, increased by 99% over 24 years from 16,200 in 1983 to 32,200 in 2007.

Assuming much lower growth rates to 2025 (33% L, 50% B, and 67% H), and even lower still to 2050 (25% L, 33% B, and 50% H), we estimate that traffic will have nearly doubled again by 2050 to about 60,000, perhaps +/- 10,000.

Jurassic Coast roads and related infrastructure simply cannot cope with the anticipated scale of growth in traffic. Nor can capacity be expanded to cope without significant degradation of the Coast itself.

The strong implication is that alternatives to access by car will become not just desirable but essential.

Figure 2.3: Combined annual average daily traffic on 6 Jurassic Coast roads in August



Furthermore, actual loss of roads and related capacity must be taken seriously. The images below show how a section of path at Seaton Hole has disappeared. The sequence of images overleaf show how the coast at Studland is eroding.

All along the coast, the broad picture is one of managed (or unmanaged) retreat.

Across the Jurassic Coast there is a need to balance economic benefits and growth with environmental degradation. To achieve this new solutions to movement along the coast need to be sought.

Eroded path at Seaton Hole leaving a path to nowhere.

1909. Although partly redrawn, this view is almost certainly the southern most point of Middle beach. The presence of short grass behind the figures suggests that the dune system is intact.

1927. There is a distinct drop between dunes and sea shore in this view, where the tidal action has carried material away. You can see some tidal defence timber work in a bad state of repair.

1936. Although captioned, the 'north beach' this view looks like Middle beach and shows the area further affected by erosion. The hut is still evident in the trees.

1954. The dunes shown here look similar to the 1936 view. The hut in the trees shows how similar the viewpoint is.

Erosion over time at Studland Middle Beach.

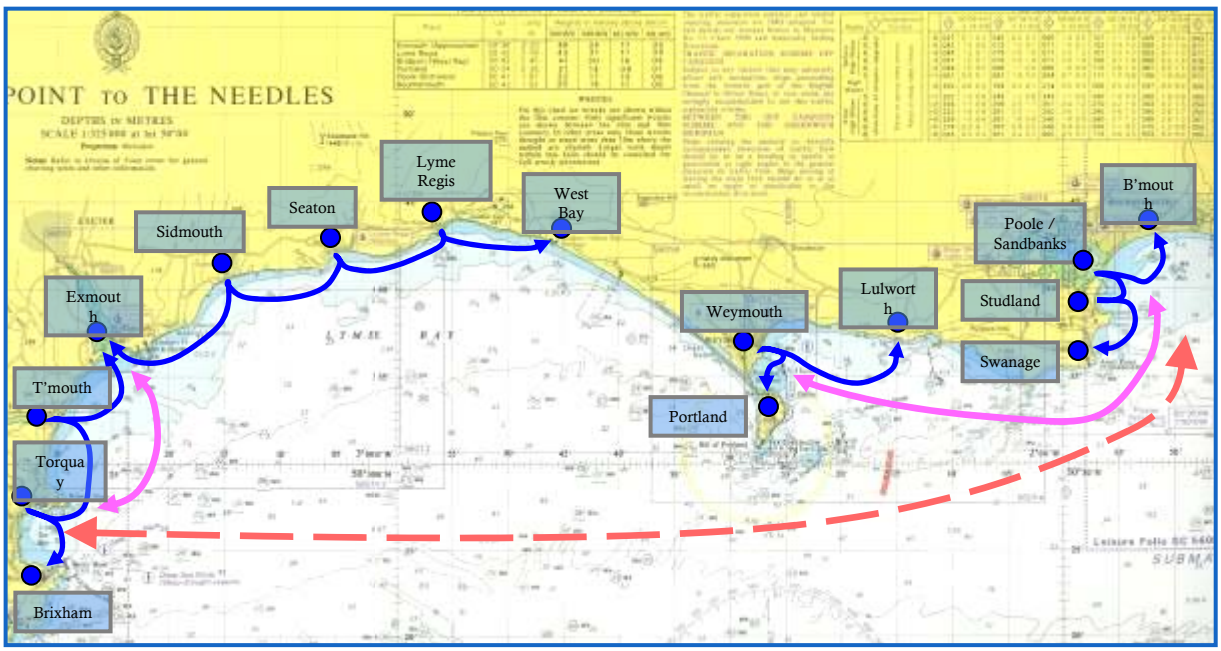
2.4) Vision

The long term vision is for the development of a network of primarily seasonal routes serving the Jurassic Coast, and by extension into Torbay and Poole Bay. Services will be integrated with each other, and with land side connections.

As illustrated in Figure 2.4, the architecture of this vision might include:

- Multi-stop / short hop coastal services.
- Primary routes such as Torquay to Exmouth, and Poole Bay to Weymouth / Portland.
- Long-haul inter-bay service such as Poole Bay to Torbay.

Figure 2.4: Route Vision



3) Survey

3.1) Introduction

The Jurassic Coast Waterborne Transport Survey was undertaken during the summer of 2010 by Dorset County Council on behalf of the Jurassic Coast Transport Working Group.

The survey is reported in full in the companion report "Waterborne Transport Study - Stage 2: User Survey Methodology and Findings Report". Some of the key aspects, findings and conclusions of the survey are drawn upon and used throughout this report.

The goal of the survey was to provide evidence of the potential demand for waterborne transport across the three pilot projects:

- East Devon: Sidmouth, Beer / Seaton and Lyme Regis (with the addition of West Bay)
- Portland and Weymouth
- Poole Bay: Swanage and Studland with Poole and Bournemouth

More specifically, the research objective was to provide robust information relating to the following user factors that could affect the feasibility of waterborne transport along the Jurassic Coast:

- The potential demand for waterborne transport.
- What factors would influence potential users' decisions to use the service.
- The willingness to pay for services.
- The potential impact of waterborne transport on the existing transport network.

This survey data therefore supports the assessment of feasibility within this Stage 2 report, and the assessment of an initial case for investment. It also provides valuable information to potential operators in assessing the investment potential of waterborne transport.

3.2) Methodology

The overarching research objective set the questions that this survey sought to answer and it was around these questions that the methodology was devised.

Firstly, the potential users of waterborne transport were segmented into two groups, namely: Residents and Visitors. These groups were chosen as both will use the service and were likely to have distinctly different responses to the research objectives, therefore allowing for finer analysis of the results.

The segmented groups provided the basis around which to devise the questions satisfying the research objectives, and also the distribution strategy to reach these groups. In total three distribution strategies were implemented for the survey, these were:

1. Visitors – Paper based self completion survey distributed through partner holiday parks and hotels. These were further split into two groups for each pilot: Those that were within 5km of a potential landing point; and those that were within the wider area of each pilot route.

2. Residents – Paper based self completion survey distributed to residences within 2km of the identified potential landing points.

3. Residents and Visitors – Research assistant completed paper based street survey. These surveys were undertaken over half a day at each of the potential landing points.

In addition to the questions focusing on the research objectives, further questions were asked that centred on contextual information (age, sex etc.) allowing for the validity of the results to be assessed and ensured in terms of demographic distribution.

To further ensure the validity of the results, the draft surveys were piloted at each of the identified potential landing points. The primary aim of this was to ensure that participants properly understood what was being asked and required as a response, thus ensuring the validity of future responses. Changes were made following the pilot surveys and the final questionnaires produced.

3.3) Response Rates

Having produced the finalised questionnaires and identified the potential participants, a total of 12,276 questionnaires were distributed through the three strategies. The table below in figure 3.1 provides the number of returned questionnaires for each strategy against the number distributed and the respective response rate.

These response rates are considered to be excellent. Generally a postal self completion survey (Strategy 2) can expect a response rate of less than 10%, and those distributed through 3rd parties (Strategy 1) much less than this. It was hoped that a response rate of 40% (40 per landing) would be achieved through Strategy 3, however, due to poor weather during the street survey period the level of responses was less than this.

Before the responses could be entered and analysed, those questionnaires that were spoiled were identified and removed. Through this process a total of 132 questionnaires were removed, predominately due to evidence of falsified data. This left a total of 2107 unspoiled questionnaires that were used for analysis.

3.4) Analysis

The 2107 completed unspoiled paper based surveys were digitised using a computer based survey program called Snap. This program provided the raw result data to each question which was then imported into Microsoft Excel for further analysis.

The Excel based analysis addressed the research objectives at three levels:

1. Waterborne transport on the Jurassic Coast as a whole;

2. Related to each of the three pilot projects; and

3. Specific to landing points.

Not all research objectives were addressed at each level however. Willingness to pay for the service was only addressed at the pilot level and the impact on the existing transport network at the individual landing point level.

Finally, in order to validate the survey findings, they were cross referenced with the Dorset Citizens Panel and Devon Voice Surveys.

Figure 3.1: Survey Response Rates

	Total Distributed Questionnaires	Total Returned Questionnaires	Response Rate %
Strategy 1	7,450	710	9.5%
Strategy 2	3,826	1,243	32.5%
Strategy 3	1,000	286	28.6%
Total	12,276	2,239	18.2%

3.5) Results

This section summarises the key survey results across waterborne transport as a whole (Level 1). Key responses specific to each pilot project (Level 2) are detailed in the appropriate sections 6.4, 7.4 and 8.4. The responses at the individual landing points level are given in the full survey report (Waterborne Transport Study - Stage 2: User Survey Methodology and Findings Report) along with more detailed findings at levels 1 & 2.

The following graphs provide the results of the survey in relation to the demand and factors that could affect demand research objectives. These are broken down thus:

Demand

- Assuming the appropriate vessel for the sea conditions, would you be interested in travelling by Waterborne Transport? (Figure 3.2)
- How often do you think you would use waterborne transport during the Spring/Summer Months? (Figure 3.3).
- How often do you think you would use waterborne transport during the Autumn/Winter Months? (Figure 3.4)

Factors that could affect demand

- What factors would influence your decision to travel by boat? (Figure 3.5)
- Other factors identified by respondents. (Figure 3.6)

Figure 3.2: Assuming the appropriate vessel for the sea conditions, would you be interested in travelling by Waterborne Transport?

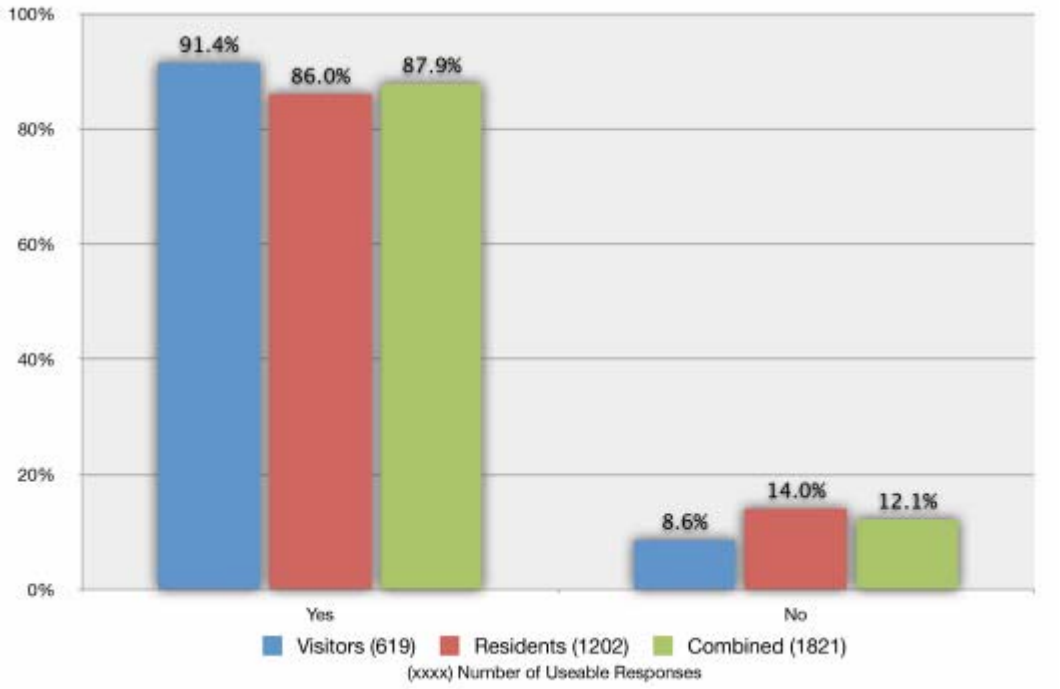


Figure 3.3: How often do you think you would use waterborne transport during the Spring/Summer Months?

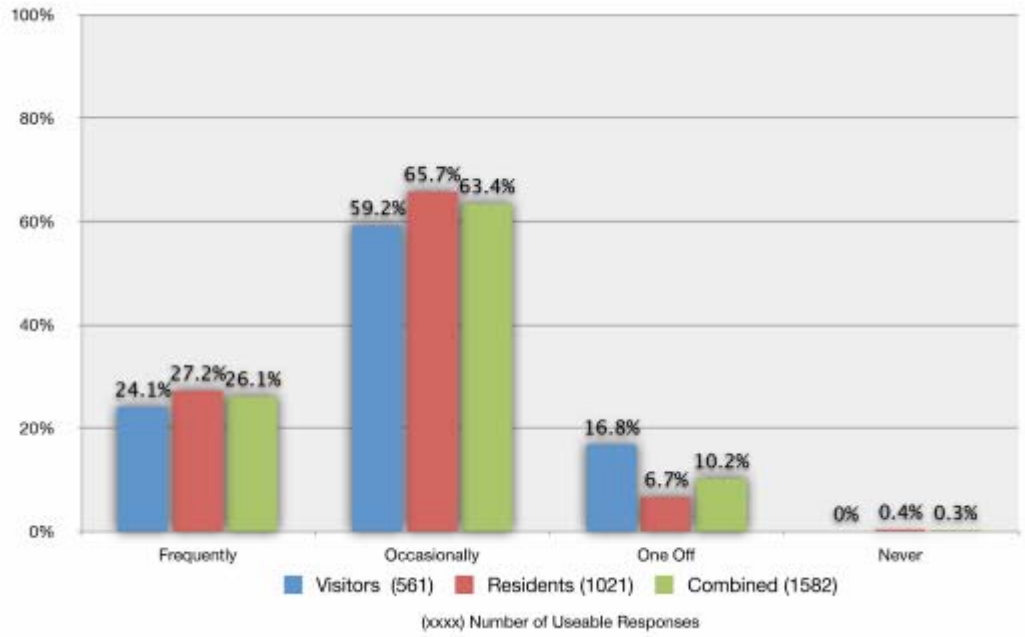


Figure 3.4: How often do you think you would use waterborne transport during the Autumn/Winter Months?

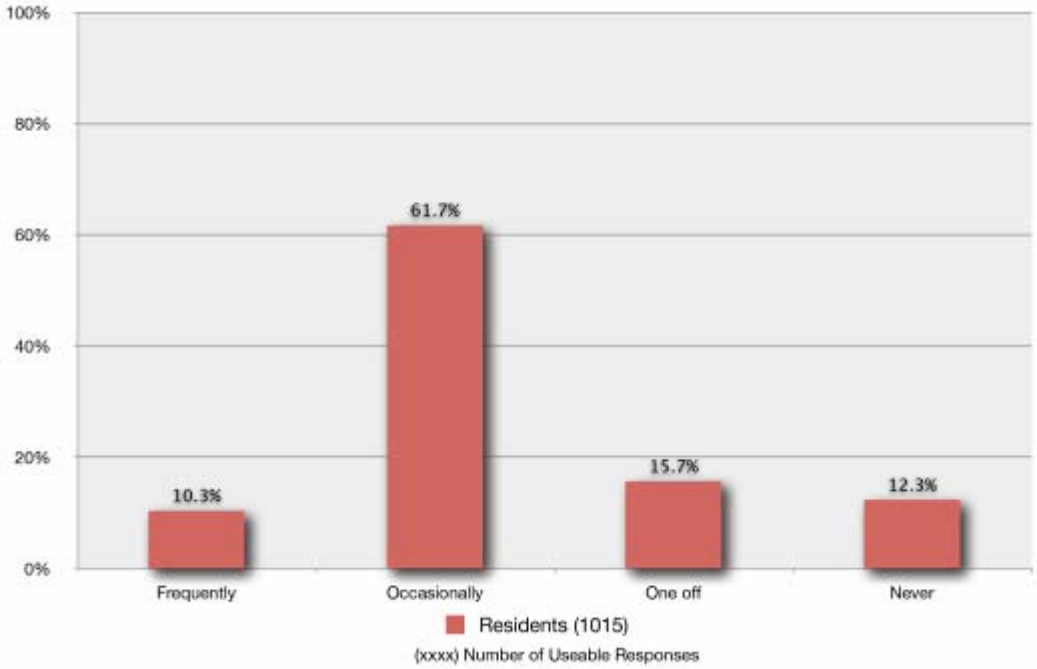


Figure 3.5: What factors would influence your decision to travel by boat?

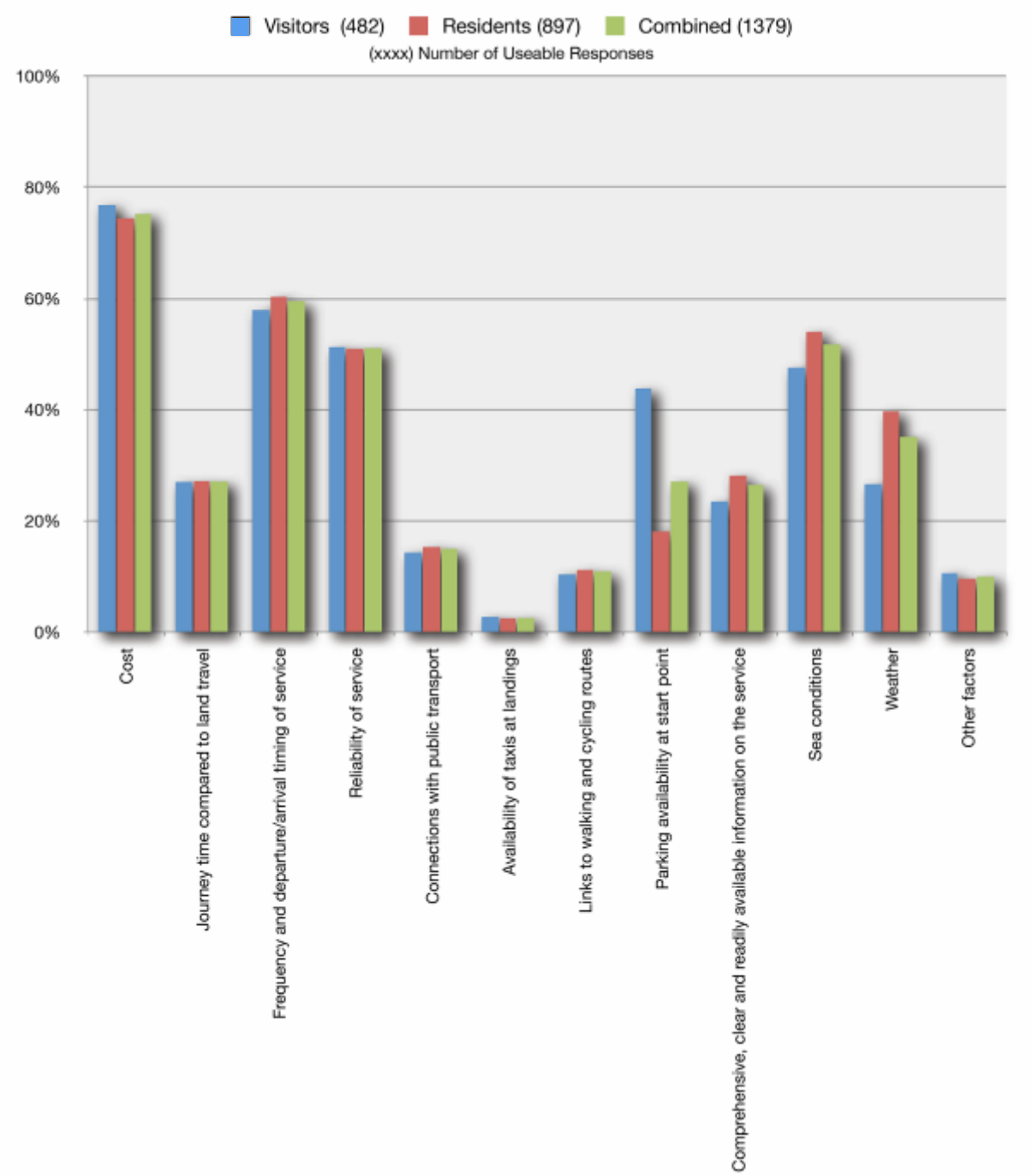


Figure 3.6: Other factors identified by respondents.

Factor	Frequency of Response	% of Responses
Enjoyment	26	24.30%
Quality/Safety of Vessel and Access	16	14.95%
Disabled Access	10	9.35%
Dogs Allowed to Travel	10	9.35%
Congestion	6	5.61%
See the Jurassic Coast	6	5.61%
Free Bus Pass Accepted/Concessional Fares	5	4.67%
Convenience of the Service	5	4.67%
Parking Costs/Integrated Park and Ride	5	4.67%
Bicycles Allowed On-Board	4	3.74%
Refreshments Available	3	2.80%
Indoor Seating	2	1.87%
Guaranteed Return Journey	2	1.87%
Reduce Car Use (Environmental Reasons)	2	1.87%
Season Ticketing	1	0.93%
Family Ticketing	1	0.93%
Day Rover Ticketing	1	0.93%
Quality of Staff	1	0.93%
Child Friendly with Storage for Pushchairs etc.	1	0.93%
Total number of relevant factors	107	100.00%

3.6) Conclusions

The results of the survey above provide a clear insight into the potential demand for waterborne transport, with **91% of visitors and 86% of residents saying that they would be interested in using waterborne transport.** This highly positive response strongly supports the feasibility of waterborne transport. However, care needs to be taken when interpreting these results.

The primary threat to the validity of these results is the potential for self-selection bias, that is, an increased propensity to respond from those that would use the service, thus artificially increasing the proportion of positive response.

To consider the potential impact of self-selection bias, these results can be compared to those gained from the Devon Voice and Dorset Citizens Panel resident surveys. Which found:

- The Dorset County Council "Citizens' Panel Survey 21", also conducted in 2010, obtained 1,690 responses to the question "Would you be interested in travelling by boat along the Jurassic Coast?" Of these, 72% said yes, 16% no, and 12% were unsure.
- The equivalent "Devon Voice 11" survey conducted by Devon County Council received a positive response rate of 80% to that same question, whilst 20% said no.

These surveys eliminate the potential for self selection bias as the questions relating to waterborne transport are only part of the wider survey. Therefore, the similarly high positive response serves to confirm the high potential demand for waterborne transport from both residents and visitors alike.

Further to the proportion of respondents that would use the service, about one quarter of people would use waterborne transport frequently, and some two-thirds would use it occasionally during the spring / summer months. Although, during the autumn / winter period, this drops with only 10% saying they would use it frequently, and 62% occasionally. These results indicate that the demand for this type of service is likely to be much greater in the spring/summer months (with the addition of visitor demand), although, some demand would still be evident in the autumn/winter months.

In terms of factors that would influence the decision to travel by boat, **cost** is the most frequent response, followed by (in order):

- Frequency and departure / arrival timing of service;
- Sea conditions; and
- Reliability of service.

A certain amount of care needs to be applied to the interpretation of the cost response, due to its position on the response table within the questionnaire. This was the first 'tick-box' and it is likely that the nature of this response and its position could have slightly artificially increased these responses.

Other factors that were given in the free space as part of this question are also a useful tool in assessing those factors that would influence a decision to use the service. Interestingly, **Enjoyment** came top of these factors, followed by:

- Quality/Safety of Vessel and Access;
- Disabled Access; and
- Dogs Allowed to Travel.

The results of the factors that would influence decision to travel by waterborne transport indicate that the service needs to offer value for money, convenience and be of a high quality, whilst at the same time being a pleasurable trip.

The relatively high response rate by residents compared to visitors indicates that waterborne transport would not be "just for holiday makers". Residents use their cars to access the Jurassic Coast for leisure purposes, and it is significant that many of these would consider using waterborne transport.

4) Marine constraints

Some appreciation of marine constraints is critical in understanding issues affecting the pilot projects. This section provides a brief summary of the tidal, wind, and regulatory constraints that impact on these.

Tides

There are two High Waters (HW) and two Low Waters (LW) every lunar day (which is just under 25 hours). The times of these tides therefore appear to advance over time measured by our 24 hour solar days. The heights of the HW and LW (hence the range between these) also varies. For example, during "springs", the range is 3m at Lyme Regis, whereas during "neaps" the range is only 1m.

The timing and height of tides are calculated in advance, and therefore planning of services can also be done in advance. This allows investigation of whether tidal constraints may impact on services. Ideally services would be operable at all states of the tide, and keep to set times.

The ebb and flow of water associated with high and low waters generate tidal velocity. Midway between HW and LW such velocities would typically be 0.5 to 1 knot in Lyme Bay (for example). Velocities can be much higher around headlands, as much as 3 to 4 knots around Portland Bill.

Wind

Sea state varies on a daily basis, and by location, but also seasonally. The main driver of sea state is the wind at the time – the stronger the wind and the longer it is blowing for, the bigger the waves will be.

Data overleaf (Figure 4.1) shows generally slight (up to 1.25m) *average* sea conditions over summer, worsening into the winter period:

- In Lyme Bay, the mode for wave distribution is up to 1m from April to September. From June to August, wave heights are typically less than 1m for nearly 2/3 of the time.
- For Poole Bay, wave height is generally higher, with wave heights exceeding 1m by almost 50% of the time during May and June.

These show average distributions, and services in the high season *can* be significantly affected by sea state. Operational downtime can be up to 30% over the summer period, although this is inherently dependent on the sea keeping capability and design of vessels, and whether it is a poor summer (e.g. 2009).

Monthly distribution of wave height (m)

lower	upper	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
00	01	16.4	23.8	29.5	44.0	55.0	62.2	63.2	65.4	47.2	35.2	30.5	31.0
01	02	38.8	45.4	50.8	42.8	37.5	32.6	33.4	31.2	39.3	41.6	44.1	43.0
02	03	28.7	23.0	13.9	9.4	7.3	4.5	3.4	3.1	11.9	15.6	19.0	16.6
03	04	12.2	6.3	4.7	3.7	0.3	0.7	0	0.3	1.6	5.1	5.5	6.5
04	05	2.9	1.1	0.6	0.1	0	0	0	0	0	1.2	0.8	2.8
05	06	0.9	0.3	0.1	0	0	0	0	0	0	0.5	0	0
06	07	0.1	0	0.3	0	0	0	0	0	0	0.8	0	0
07	08	0	0	0.1	0	0	0	0	0	0	0	0	0
08	09	0	0	0	0	0	0	0	0	0	0	0	0
total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

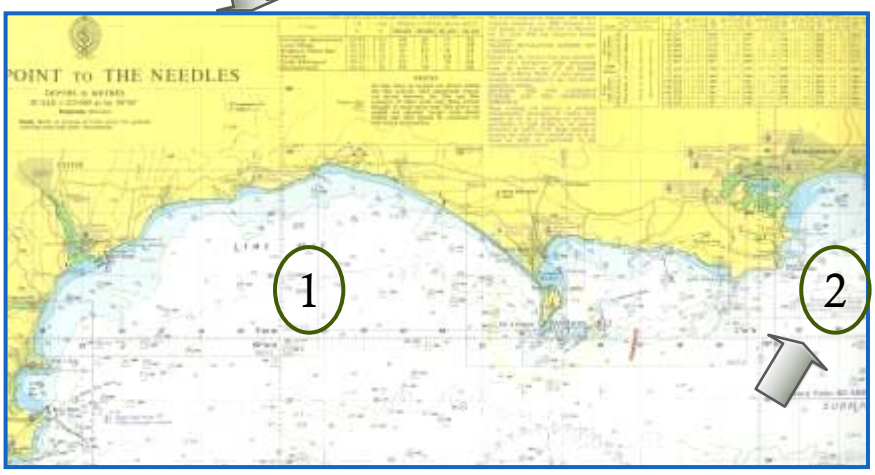


Figure 4.1: Wave Heights

Monthly distribution of wave height (m)

lower	upper	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
00	01	15.4	26.3	33.3	40.5	51.0	50.4	60.1	55.5	38.2	32.0	41.7	20.8
01	02	38.7	46.2	51.2	43.6	39.0	40.8	35.1	35.5	52.4	41.1	37.6	40.9
02	03	25.9	18.7	14.1	14.8	10.0	8.5	4.9	6.0	7.8	18.3	11.2	16.5
03	04	16.1	8.0	1.3	1.0	0	0.4	0	1.3	1.6	5.4	5.0	18.2
04	05	3.3	0.4	0	0	0	0	0	0	0	3.1	4.5	2.0
05	06	0.3	0.4	0	0	0	0	0	1.3	0	0	0	1.7
06	07	0.3	0	0	0	0	0	0	0.3	0	0	0	0
07	08	0	0	0	0	0	0	0	0	0	0	0	0
total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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Regulatory issues

The average sea state drives regulatory standards for passenger shipping, and has a major impact on vessel design (hence cost), and operations:

- Regulations require ships to be constructed to a "class" that is appropriate to the height of the waves and their intended distance from refuge.
- Operators wishing to work off the Jurassic Coast ideally need relatively highly classed vessels (meaning ships constructed to standards that offer robust sea keeping and safety margins), if they are to operate throughout the year.
- A lesser class applies for seasonal operation (April to October inc.) off the Jurassic Coast, but this is still high in comparison to the standard applied to a vessel for operation in say Poole Harbour (for example).

In the case of **Weymouth to Portland**, regulation MSN 1776 (M) categorises "between the River Wey and Portland Harbour" as a "tidal river or estuary" category D for all year operation. This category is extended eastwards in summer to "west of a line from Redcliff Point to Grove Point".

Thus vessels for this route must be more robust, and would be more expensive to build, than vessels designed (for example) for Poole Harbour, which is category C.

In the case of the **East Devon** and **Poole Bay** routes, regulations class these as "sea", and require vessels built to EU Class C for "all year" operation, and EU Class D for "summer only" operation (Apr to Oct inc.).

The restrictions that apply to these EU categories are:

- EU Class C: Voyages in the course of which the vessel is at no time more than 15 miles from a place of refuge, nor more than 5 miles from the line of the coast, where shipwrecked persons can land.
- EU Class D: Voyages in the course of which the vessel is at no time more than 6 miles from a place of refuge, nor more than 3 miles from the line of the coast, where shipwrecked persons can land.

5) Landward Constraints

This section provides a brief summary for each of the three pilot areas.

Landward and marine constraints mirror each other in their importance regarding understanding issues affecting the pilot projects, their potential for commercial success, and provision of increased travel choice and flexibility. Without good integration between waterborne and other public and private transport modes, adequate landing facilities and good information provision, the benefits of marine transport will be seriously diminished.

Section 2.3 identifies five key evidence based trends, four of which impact on landward services or highway infrastructure. They are:

- *The number of visitors is likely to grow.*
- *This will lead to growth in road traffic, increased congestion and environmental impact.*
- *The capacity of road infrastructure and parking cannot increase significantly in response to this due to the environmental impact associated with these.*
- *In fact capability will be reduced due to loss of facilities arising from coastal erosion*

Dorset and East Devon Waterborne Transport Scoping Study published in September 2009 identified that there is a large resident population living along the coast in the study area which uses the road network to get about.

Significant numbers of economically active people travel to work by car. Based on 2007 data (Scoping Study Report), 5 million trips to the Jurassic Coast are made by staying visitors, generating 21 million bed nights. These are augmented by 16 million day visits.

This huge seasonal influx of visitors, in addition to the resident population, has a dramatic impact on the road network e.g. 98% of visitors to the beaches of Studland arrive by car; 74% of visitors to Corfe Castle arrive by car. Whilst the visitors themselves bring economic benefits, their reliance on road based access (mainly car) has a significant impact on landscape, communities, air quality, damage to the historic environment in villages and often aggravation to the non-tourist based economy.

Dorset and East Devon's landscapes are some of the most precious and varied in the country with a wealth of national and international statutory designations (shown in figure 5.1). These reflect not only the tremendously rich natural environment but also the quality of the historical built environment. It is this combination of high quality landscape, pretty villages, dramatic coast and seascapes which attracts visitors to return year after year, and many others to come and live here permanently.

Managing highway infrastructure and traffic within the confines of this high quality natural and built environment places extra pressures and responsibilities upon Dorset and Devon's Highway Authorities. Balancing the management of an annual increase in traffic volume, the seasonal influx of visitors (particularly in coastal areas), and the loss of infrastructure (e.g. car park spaces) to coastal erosion with the presumption against large road building projects within environmentally sensitive areas and againgst building new infrastructure close to the coast in future "at risk" areas, is a difficult task. See figure 5.1.

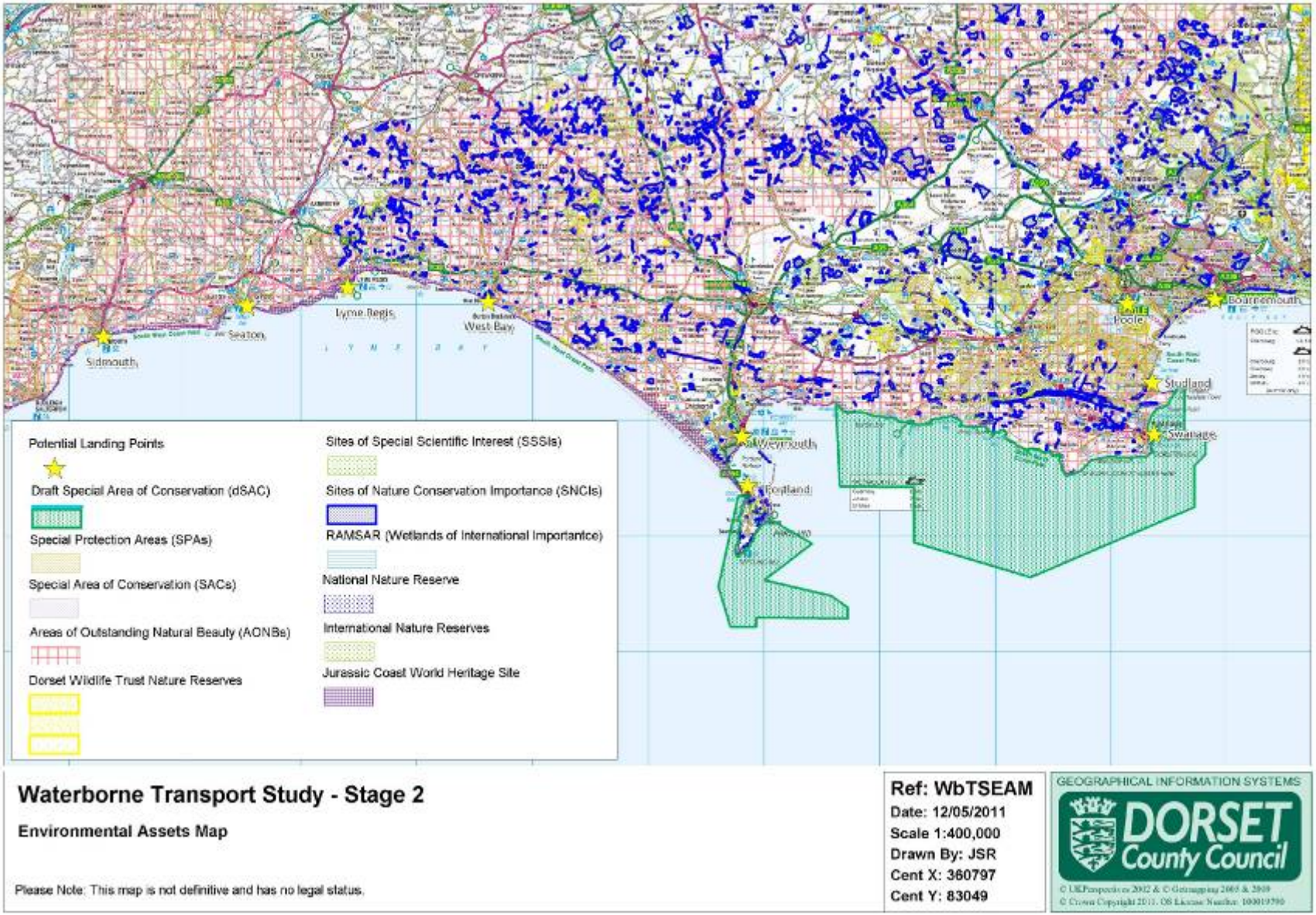
Current local authority budgetary (financial) constraints will severely restrict all but essential maintenance of the existing transport infrastructure. Couple this with over-demand for "honeypot" locations and increasing environmental impacts, particularly from congestion and ongoing climate generated erosion, the necessity of planning for alternative approaches to enabling travel in the Dorset and Devon coastal areas is urgent. These alternative approaches will need to find investment from both public and private sectors.

Traffic congestion, along with its impact on the landscape and communities living there, must therefore be addressed by other means. Increasing travel choices to effect modal shift from car to a more sustainable means of getting about (for parts of some journeys) and reducing the volume of traffic on Dorset and Devon's roads is a strategy shared by both local authorities and strongly encouraged by the government.

Waterborne passenger transport has the potential to provide a real option that not only satisfies demand for transport in its own right but also provides an added attraction that enhances the existing portfolio of tourist destinations and attractions, and reinforces the value of the local economy.

Summertime queues in Studland for the Chain Ferry.

Figure 5.1: Environmental Assets Map



FISHER

6) East Devon Pilot

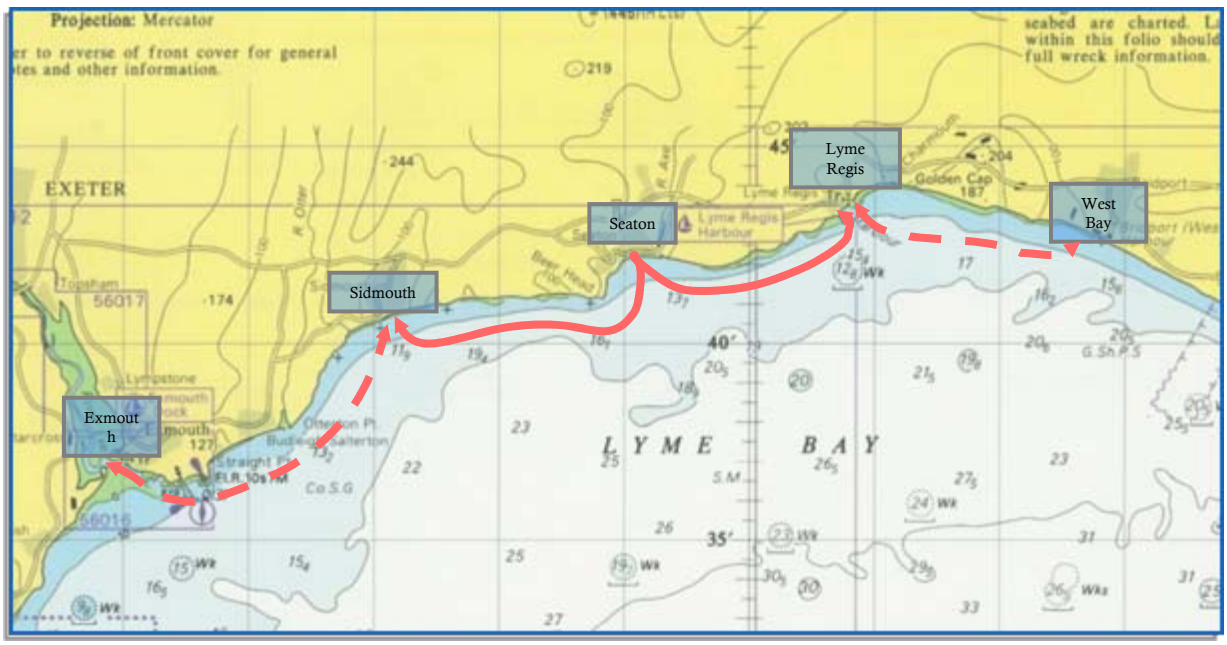
6.1) Introduction

Figure 6.1 shows the route from Sidmouth to Lyme Regis via Beer / Seaton. Positioning voyages are required daily to / from Exmouth. The distances are:

Journey Leg	Nautical Miles
Exmouth to Sidmouth	8.9
Sidmouth to Seaton	7.2
Seaton to Lyme Regis	5.5
Lyme Regis to West Bay	6.6
Route	
Sidmouth to Lyme Regis	12.7
Exmouth to West Bay	28.2

Discussions with operators indicate that passengers can become bored after about 30 to 45 minutes. Distances are such that a relatively fast vessel is required to keep journey times to acceptable length, indicating a requirement for speed of up to 20 knots.

Figure 6.1: East Devon Pilot Route



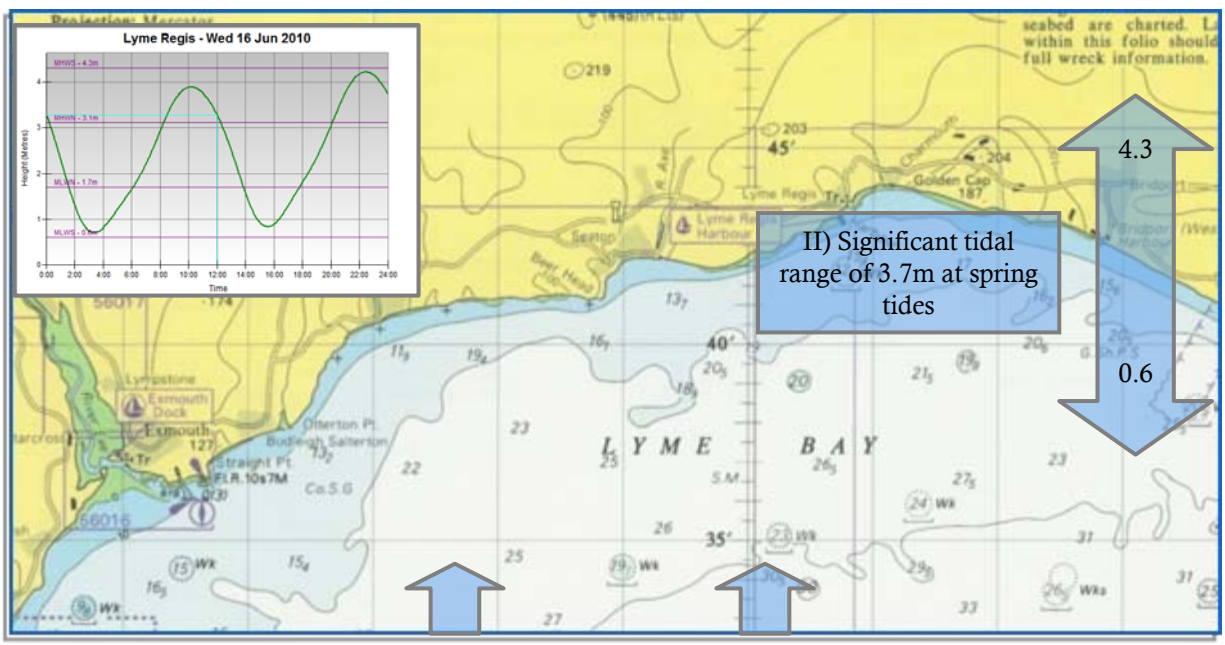
6.2) Marine constraints

The are summarised in Figure 6.2:

- Exposed coastline
- Tidal variation

An additional consideration is the current which can approach up to 1 knot.

Figure 6.2: East Devon Pilot Constraints



6.3) Landward constraints

Existing Conditions (See Figure 6.3)

- The X53 bus route runs through Sidford but does not include Sidmouth. Travel into Sidmouth therefore necessitates travelling on more than one bus.
- The X53 bus follows a route away from the coast between Sidmouth, Beer, Seaton, Axmouth and Lyme Regis. Marine travel therefore offers a more attractive alternative travel choice for visitors wishing to remain in sight of the sea.
- Proposed landing points all give direct access to the South West Coast Path National Trail (SWCP) and National Cycle Route (or other cycle routes).
- There is no rail access to these coastal communities. The nearest mainline station being at Axminster, connected by bus to Seaton and Lyme Regis or Honiton and Exeter for connections to Sidmouth.
- Provision is being made for transport interchanges along the A3052 allowing for easy interchange from car to bus and access to walking and cycling trails.

This pilot route would enable passengers to catch the X53 at Beer, Seaton or Lyme Regis and then give them a choice of travel mode to return to their starting point.

Figure 6.3 on the following page shows the existing transportation infrastructure in the vicinity of this pilot. Also shown are existing waterborne leisure services for sightseeing (as opposed to scheduled transport) that operate from Exmouth, Sidmouth, Beer, Seaton, Lyme Regis and West Bay.

Figure 6.3: East Devon Pilot - Existing Conditions

Existing Highway Issues (See Figure 6.4)

- Lyme Regis – Severe highway access restrictions because of steep, narrow roads, fronted by dominant building structures, in and out of the town's historic core. The constrained routes present particular difficulties for coach and lorry access. These difficulties of highway access through the historic core have necessitated the location of main car parks some distance from town's centre and its beach. An unintentional consequence is that many visitors try and circumvent the walks of between 10 and 20 minutes on steep inclines between car park and destination by circulating within the town attempting to find alternative parking. This merely exacerbates congestion within narrow town streets and conflict between pedestrians and motor vehicles.
- Similarly access into Beer and Sidmouth becomes congested in peak season. Access into Beer is via a steep, narrow hill and becomes congested in summer when used by coaches and visitor traffic. During the Sidmouth Folk Festival at the end of July/ beginning of August, several thousand visitors converge on the town and create significant delays throughout the local road network.
- "Honeypot" villages and camp/caravan parks along A35 and A3052 attract many visitors in peak season. Limited village parking and narrow lanes increase traffic volumes.

Thus, Lyme Regis and Beer suffer from very similar seasonal and weather influenced congestion issues due to their steep, narrow and constrained historic highway access routes into and out of them. Marine access directly to beaches and the core of both towns would alleviate visitors' negative experiences associated with land based access whilst enhancing the economic growth of the towns through increased visitor numbers, without proportional increases in detrimental environmental impacts of land based access.

Waterborne transport not only increases the choice of interconnecting travel modes in the East Devon and Dorset coastal areas, but also offers enhanced leisure and holiday experiences. Experience elsewhere has proved that such widened opportunities for the tourism sector through linking land and marine forms of transport have been very successful. An excellent and very relevant example of how innovative marketing, which fully embraces transport within the "holiday experience", operates is the area between Truro and Falmouth centred on the River Fal. The success of the partnership working in the River Fal area could readily be applied to this pilot area for example by creating a dual-centre stay base Sidmouth / Lyme Regis, interconnected by marine travel.

Figure 6.4: Existing Highways Issues

Additional considerations peripheral to the immediate pilot area

- Seasonal congestion by through traffic of the A35: at Town/Sea Road Roundabout, Bridport; and at The Crown Roundabout, Bridport.
- Between Bridport (Dorset) and Raymond's Hill (Devon) traffic is heavy and at particular points causes severe congestion. Chideock is a notable "pinch point" and traffic impacts heavily on village life through sheer volume, noise and pollution as witnessed by it being formally designated an Air Quality Management Area (AQMA). There has been little progress in identifying measures to reduce this high level of pollution in a rural village within the Dorset AONB.

The potential for the reduction of this through traffic by actively encouraging marine based travel choice alternatives would bring a very positive outcome for Chideock and other "honeypot" villages. Whilst the East Devon pilot area does not extend beyond Lyme Regis, information drawn from survey results suggest that West Bay is a destination people wish to visit. Substantial new landing infrastructure is already in place within the harbour. It is likely that including West Bay within this pilot would result in a beneficial effect on congestion at Crown Roundabout and Sea Road South, Bridport as well as Chideock.

West Bexington Car Park is a popular starting point for SWCP walking and is "at risk" from coastal erosion in the future. A landing point at West Bay, where there is adequate parking, would offer additional options for SWCP National Trail walking along this section of coast.

An additional consideration for the East Devon Pilot is the potential to extend travel by boat from Exmouth (or even Exeter via the rail link) along the Jurassic Coast to Lyme Regis (perhaps even West Bay) in a series of "hops" like the Italian service Metro del Mare (see Dorset and East Devon Waterborne Transport Scoping Study published September 2009).

Currently Stuart Line operate seasonal trips between Exmouth and Sidmouth.

6.4) Opportunities

The survey for the East Devon Pilot indicated that out of 839 respondents, 95% of visitors and 88% of residents would be interested in travelling by water transport (see Figure 6.5 below).

Respondents would typically be willing to pay (for an adult return fare):

- For one hop: £4 to £5 (i.e. Sidmouth to Seaton, and Seaton to Lyme Regis).
- For two hops: £5 to £6 (i.e. Sidmouth to Lyme Regis).

Visitors typically expressed a willingness to pay more than residents. For example, in the case of Sidmouth to Seaton, the mean was £4.99 for visitors, compared to £3.77 for residents.

Surveys have limitations when respondents answer such questions. In practice consumers typically express a willingness to pay which is below what they will actually pay.

The survey findings compare with the following actual fares with Stuart Line Cruises from Sidmouth:

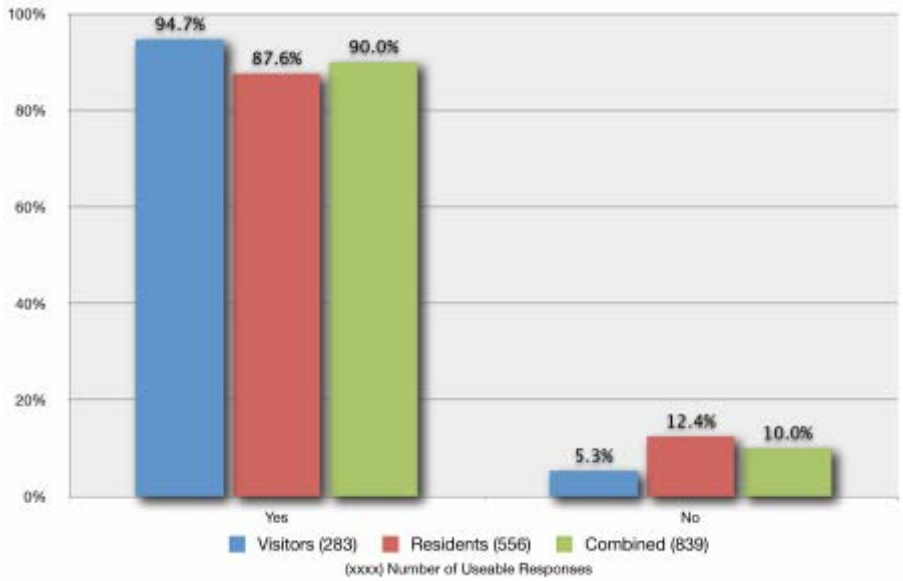
- £ 6 adult / £4 child Sidmouth Bay Cruise
- £8 adult / £6 child Jurassic Coast Cruise

The coastal footpaths in the Beer Head and the Otter Estuary areas together attract around 174,000 people a year (People Counter Project East Devon AONB).

This includes an average of 4,000 walkers per month over the winter season and 10,000 to 12,000 walkers per month over summer, many of whom are dedicated walkers on circular day trips or long linear walks. A good potential exists for a niche market to support these dedicated walkers by providing travel choice by linking in with water based services. (Dorset and East Devon Waterborne Transport Scoping Study Sept 2009).

Key coastal attractions located on the coast within this pilot area draw significant numbers of visitors per year – for example Seaton Tramway 86,000; Pecorama, Beer 57,000; and The Donkey Sanctuary, Sidmouth 190,000 (source SW Tourism 2008). The towns of Sidmouth, Beer, Seaton and Lyme Regis themselves attract significant visitor numbers each year in their own right. Current constraints on travel choice mean that most of these visitors' journeys are made by car.

Figure 6.5: Assuming the appropriate vessel for the sea conditions, would you be interested in travelling by Waterborne Transport?



6.5) Vessels

Suitability of various types of vessel have been considered. Green indicates positive suitability, red indicates unlikely to be suitable.

Type of Vessel	High Speed Capability	Shallow Draft	Passenger Comfort	Propeller Propulsion	Remarks
Conv. Monohull					Not suitable
HSC Catamaran					Suitable
HSC Monohull					Suitable
Hovercraft					Not suitable; noisy
SWATH Type					Not suitable
Landing Craft					Not suitable
RIB Type Craft					Possible

Comments

- High speed capability is required for these routes and up to about 20 knots is preferred.
- Shallow draft and propeller propulsion are recommended for these services.
- Passenger comfort is considered for vessel operating in exposed sea conditions and in shallow water, taking into account the journey times.
- A monohull may offer advantages over a catamaran, depending on specific design and comfort characteristics.
- A RIB could also perhaps be used on these routes, subject to sea conditions.

Conclusion

High speed capability monohull or catamaran is preferred:

- Passenger capacity perhaps around 70 to 90
- Service Speed up to 20 knots
- Shallow draft with propellers for shallow operations and fuel efficiency
- Aluminium construction
- EU Class D: summer only operation
- EU Class C: all year operation

The typical approximate cost for such a vessel would be in the region of £1 million to £1.8 million.

6.6) Existing Infrastructure

This section reviews the key characteristics of each location, and identifies proposals for creation of new landing points.

6.6.1) Sidmouth

Sidmouth offers a long exposed shingle beach, punctuated with three groynes. There is a small jetty to the east and two offshore breakwaters to the west (see Figure 6.6). Key aspects are highlighted in the photos overleaf.

Figure 6.6: Sidmouth

Sidmouth

Exposed shingle beach with two small offshore breakwaters at the west end.

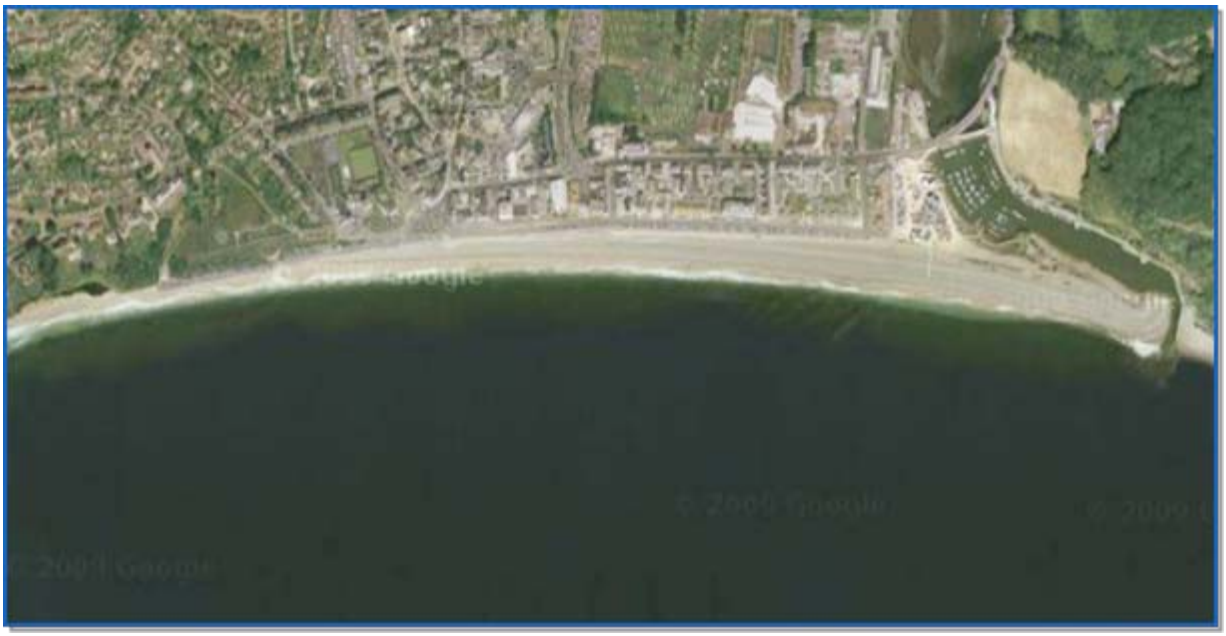
Sidmouth Beach backed by the Promenade and Town.

Sidmouth Beach east end showing small pier, slipway and groyne.

6.6.2) Seaton

Seaton also offers a long exposed beach, but in this case with no structures. To the east, and tucked behind it, lies Axmouth Harbour (see Figure 6.7). This dries and is cut off at LW spring tides, and has a narrow entrance with a shifting sand bar. This makes the Harbour unsuitable for a regular passenger service. Key aspects for Seaton are highlighted in photos overleaf.

Figure 6.7: Seaton



Seaton

Wide open shingle beach back by the Town with Axmouth Harbour at the east end.

Axmouth Harbour offers a narrow, shifting tidal entrance.

6.6.3) Lyme Regis

Lyme Regis has a facility with a sizeable inner harbour, and an outer harbour (see Figure 6.8), both drying at LW spring tides. A seasonal pontoon extended out of the outer harbour provides a LW mooring option. The photos on the following page provide further information.

Figure 6.8: Lyme Regis

Lyme Regis

Inner harbour dries with depths:
0.4m at LW neaps
-0.7m at LW springs.

Inner harbour entrance.

Outer harbour also dries with depths:
0.7m at LW neaps
-0.4m at LW springs.

Seasonal pontoon.

6.7) Potential Infrastructure

6.7.1) Sidmouth and Seaton

The shingle beaches at Sidmouth and Seaton are quite steep between high water and low water, and then shelve more gently below LW spring tides. Both are exposed to waves from the west round to the south and the east.

The simplest method of landing is currently practised by Stuart Lines, which uses a boat capable of nudging its bows onto the beach with a small drop-down ramp attached to the boat to gain access to the beach.

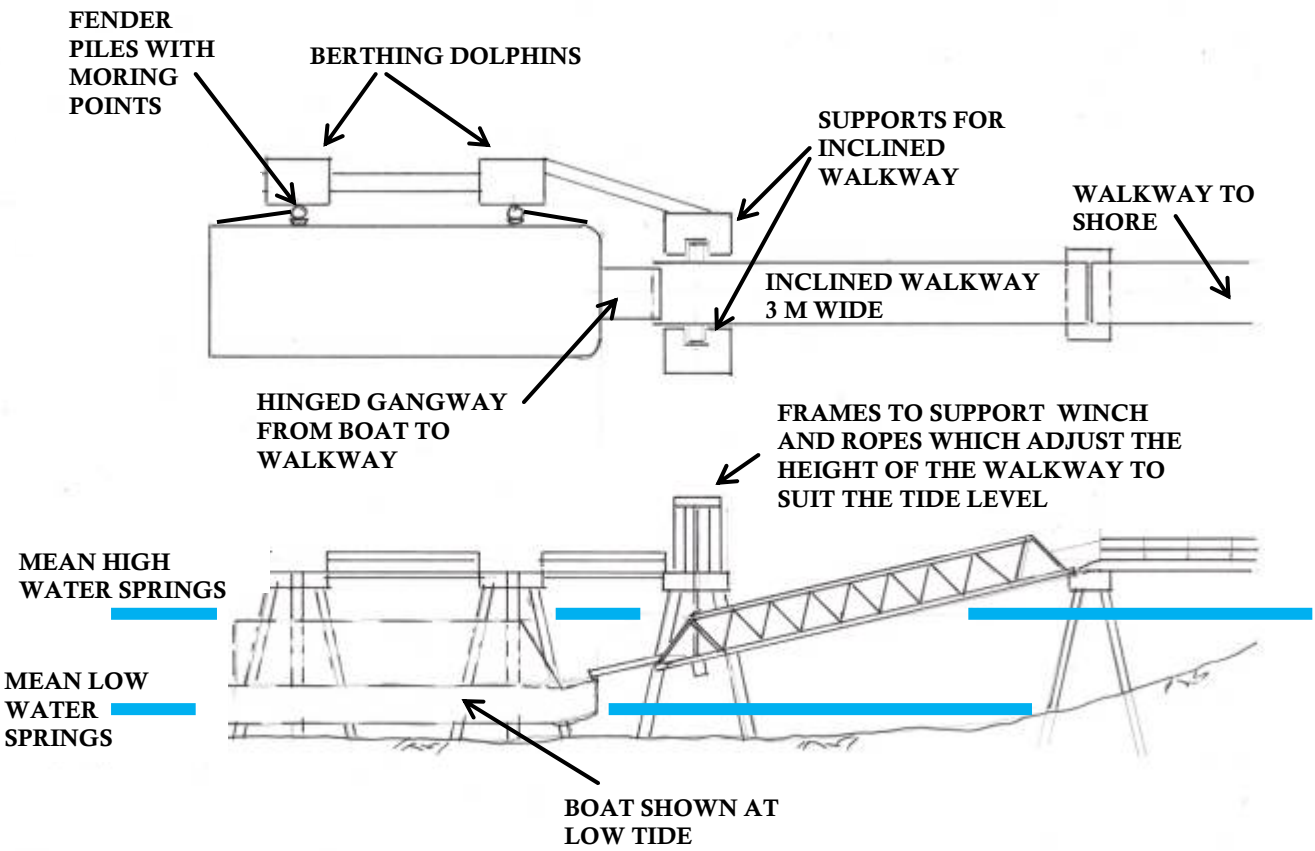
This has several drawbacks. The boat would have to be made strong enough in the bow area so that the hull is not damaged, and this is not consistent with operation of speedy lightweight aluminium vessels. Also this method is highly weather and tide dependent, as the boat would be pounded onto the shingle by any significant wave action.

As an alternative, some restraint could be provided by installing piled dolphins for the boat to moor alongside in the surf zone, with the ramp then lying from the boat onto the beach. However, this half-way house between beaching the boat and providing a fixed landing point will also lack robustness and cost in the region of £175,000.

For a regular boat service, reliability is essential if people are to trust and use it. It is vital to have a reliable method of embarking and disembarking passengers, and a fixed berthing point is proposed. An example in use on the neighboring coast (Alum Bay, by the Needles), is shown below.

For Sidmouth and Seaton, a potential solution might be to provide two berthing dolphins, an inclined walkway operated by a winch mechanism to raise and lower the walkway to suit the tide level, and a fixed walkway back to the beach above high tide. This is illustrated in Figure 6.9.

Figure 6.9: Possible Landing for Sidmouth and Seaton



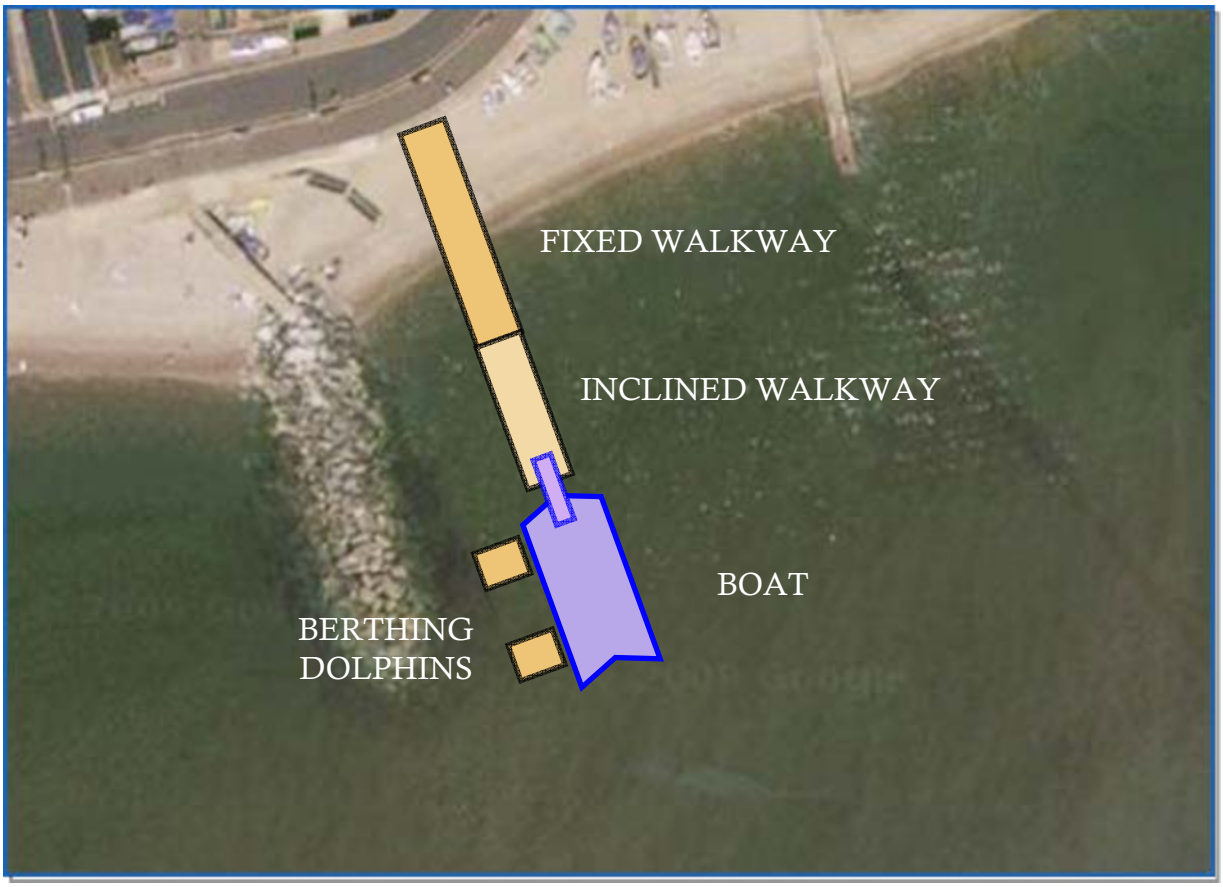
The boat would come alongside the berthing dolphins and the crew would moor the boat to the fender piles. One member of the crew would then climb up onto the top of a dolphin and walk to the winch support structure and lower the walkway to match the level of the boat. A hinged gangway would connect the boat to the walkway and passengers could then disembark. A key aspect of this concept is that no shore crew are required.

The inclined walkway would be removed for the winter months as would the decking of the fixed walkway, to reduce the amount of the structure that is exposed to winter seas.

The cost is estimated at about £650,000 for each location. Design studies would be needed to firm up the concept and costs.

Ideas for a location on the east side at Sidmouth is shown in Figure 6.10. The concept for Seaton is the same – location to be identified.

Figure 6.10: Possible Location for Sidmouth Jetty



Example of a similar sized vessel using this method of handling passengers (in Majorca). Dolphins are not needed here due to a more sheltered location.

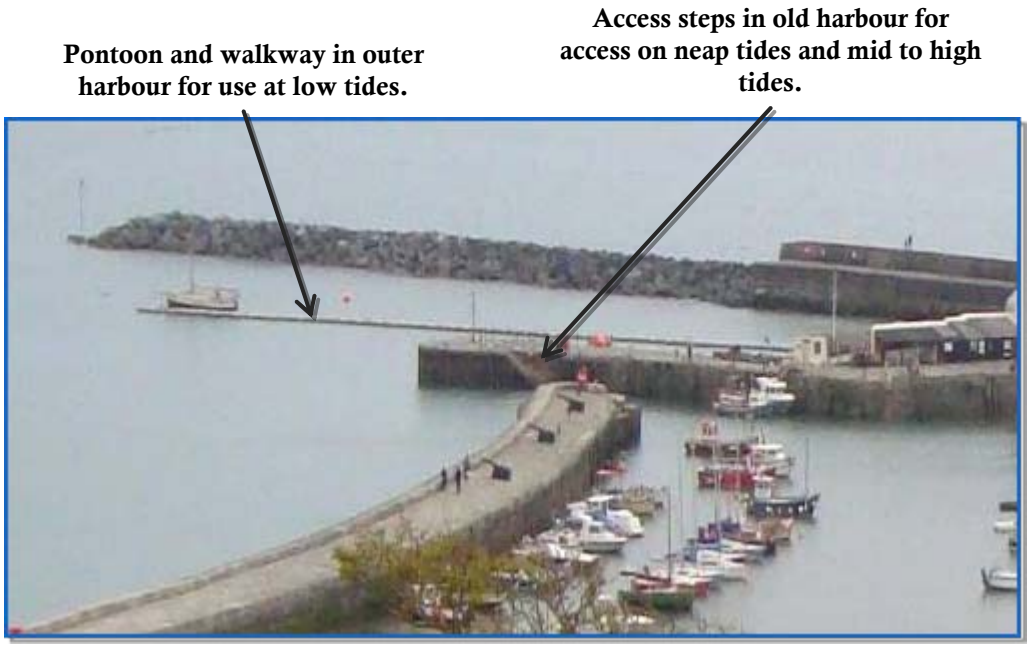
6.7.2) Lyme Regis

At Lyme Regis the boat could disembark passengers at the access steps at the outer end of the old harbour on neap tides and mid to high tides. For access at low water, the port already deploys a pontoon and walkway, and a sum of £50,000 has been allowed for additional length of the walkway and some strengthening and enlargement of the outer end. This is shown on Figure 6.11.

6.7.3) Overnight Lay-by

Although anchorage at Lyme Regis will be an option when conditions are right, lack of non-tidal facilities means that there will usually be a requirement to keep the vessel at Exmouth or possibly West Bay. At LW spring tides, both of these locations will present some constraints on the crew accessing the harbours at the time when they would ideally wish to.

Figure 6.11: Access at Lyme Regis



6.8) Route appraisal

There are significant problems of the "chicken and egg" kind in preparing the route appraisals. The methodology is as follows:

1.Assess potential for landing places, and estimate options and costs to provide these where necessary.

2.Based upon a feel for vessel types and sizes, in the context of demand data, identify potential vessels for operation on the routes.

3.Prepare "summer" (April to October inc.) timetables suited to the routes, and generate passenger trip volumes based on ideas of the travel patterns that might be experienced, whilst ensuring that vessel capacities are adhered to.

4.Benchmark fares to existing services where practical, and calculate revenues.

5.Assess operating costs based on a variety of inputs. These include allowance for maintenance and seasonal placement of new landing facilities where relevant.

6.Assess whether a route is likely to be viable to a private operator based upon the requirement to cover operating costs and a mortgage payment on a vessel, whilst generating a cash surplus equivalent to about 5% of revenues.

7.Apply common sense, and investigate the impact of alternative operational parameters or vessel types on route viability.

8.Assess the viability of routes from an overall financial and operational perspective, and identify the most promising options.

Some of the key principles and assumptions behind the analysis are:

- The maximum load factors (typically between 80% and 90% for a peak summer day), based on ideas of travel patterns, are adjusted by a demand factor (lowest in May and October), and by using estimates for operational downtime (lowest in August, highest for exposed routes).
- We assume that two, four man crews are employed seven months a year. Rest periods apply about every two hours. In practice it may be possible to operate some services with a crew of three.
- Fuel costs have been based on likely engine consumption at defined speeds, using a bulk fuel price of £0.40/l.
- Costs for licences and port dues have been based on information gathered, plus an allowance for a homeport mooring.
- Allowances have been made for costs such as insurance, owners MCA costs, advertising and shore support.
- New vessel maintenance costs are set at 3.5% of capital cost, but double this for secondhand vessels.
- A discounted cash flow analysis was prepared for the most promising options, identifying the real pre-tax IRR, assuming buildup of passenger numbers over three years.
- Where secondhand vessels are considered, there is an ever changing marketplace for small ferries, and the vessels available will vary over time.
- Estimates for infrastructure costs are subject to survey and design costings.

This methodology and these principles apply to the analysis for all routes, and are not repeated in sections 7 and 8.

6.9) East Devon Service

The vessel initially posited for this service is a fast monohull of 70 passenger capacity (see right). This example was built by Norwegian yard Batservice Mandal. We assumed modification to carry more passengers, and less powerful engines.

- Length overall: 23.81 m
- Beam: 5.00 m
- Draft: 1.35 m
- Service Speed: up to 20 knots

We also considered a catamaran design, which was significantly cheaper with capacity assumed at 90 passengers. The example to the left, the "Rathlin Express", operates to the north of Northern Ireland. We assumed more powerful engines similar to re-engined near-sister the Lady Iona.

- Length overall: 18.80 m
- Beam: 6.40 m
- Draft: 1.32 m
- Service Speed: up to 20 knots

A potential timetable for this service is shown in Figure 6.12. This offers 4 sailings per day. Journey times are similar to the X53 bus (although this operates only from Sidford, not Sidmouth town centre).

The approach taken for the analysis was to identify fares at which the service might be viable, and benchmark these. For one hop trips (e.g. Sidmouth to Seaton, Lyme Regis to Seaton), fares were set at £6.90 return, and £4.50 single for this analysis. Fares between Sidmouth and Lyme Regis (two hop trip) are £10.50 return and £7.50 single. Comments on this are:

- These fares look relatively high compared to mean fares indicated by the survey (noting its limitations).
- They are also somewhat more expensive than "cruise" fares (see 6.4).
- Fares on the X53 bus are about £2.50 for a single from Seaton to Lyme Regis, and about £4 for a day return from Sidford to Lyme Regis.

Considering the product that is predicated, i.e. a scheduled boat service on a modern vessel using dedicated facilities, and also that parties of two adults are likely to be typical (the survey indicates that over half of respondents were in groups of two), we consider that this is a potentially viable fare offering if the service is well marketed and well executed.

We also note that for the other pilot projects, where there are better established markets for water transport using proper facilities, market rates are about twice the level of stated preference fares.

Finally it is worth commenting that our capacity assumption for the catamaran (90 passengers) is conservative, since the Rathlin Express has a capacity of 100, and this upside could feed through to lower fares to satisfy the criteria for viability.

Figure 6.12: East Devon Potential Timetable (Option 1.4)

Eastbound	Sidmouth	Seaton	Seaton	Lyme Regis
Trip	Dep	Arr	Dep	Arr
1	8:50	9:15	9:25	9:45
2	11:15	11:40	11:50	12:10
3	13:40	14:05	14:15	14:35
4	16:05	16:30	16:40	17:00

Westbound	Lyme Regis	Seaton	Seaton	Sidmouth
Trip	Dep	Arr	Dep	Arr
1	9:55	10:15	10:25	10:50
2	12:20	12:40	12:50	13:15
3	14:45	15:05	15:15	15:40
4	17:10	17:30	17:40	18:05

Trip times		
Sidmouth - Seaton	0:25	mins
Seaton - Lyme Regis	0:20	mins
Sidmouth - Lyme Regis	0:55	mins

6.10) Results

Five outline options were developed for analysis based on different vessel types and speeds. These are summarised in Figure 6.13 with the financial assessments for each.

Variations between the options can be observed by identifying the **blue text** in Figure 6.13.

Figure 6.13: East Devon Service: Outline Financial

Option:	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**
Revenue case:	Base Case	Base Case	Base Case	Base Case	Hi Fare
Vessel:	New	New (15kt)	New (mix)	New (Cat)	New (Cat)
Capacity passengers:	70	70	70	90	90
Type:	Monohull	Monohull	Monohull	Catamaran	Catamaran
Cost '000:	1,800	1,800	1,800	1,000	1,000
Sidmouth to Seaton return fare:	£6.90	£6.90	£6.90	£6.90	£8.63
Sidmouth to Seaton single fare:	£4.50	£4.50	£4.50	£4.50	£5.63
Sidmouth to Lyme Regis return fare:	£10.90	£10.90	£10.90	£10.90	£13.63
Sidmouth to Lyme Regis single fare:	£7.50	£7.50	£7.50	£7.50	£9.38
Seaton to Lyme Regis return fare	£6.90	£6.90	£6.90	£6.90	£8.63
Seaton to Lyme Regis single Fare	£4.50	£4.50	£4.50	£4.50	£5.63
Trip rotations:	4	4	4	4	4
Departure of first sailing from Exmouth:	8:20	7:10	8:00	8:00	8:00
Arrival of last sailing:	18:55	20:05	18:55	18:55	18:55
Operational day:	10:35	12:55	10:55	10:55	10:55
Speed (up to) knots:	20	15	20	20	20
Average operational downtime:	26%	26%	26%	26%	26%
Location for overnight:	Exmouth	Exmouth	Exmouth	Exmouth	Exmouth
Revenues '000:	434	434	434	555	689
Operating costs '000:	-466	-423	-459	-432	-432
Operating P/L '000:	-32	11	-25	123	256
Mortgage '000:	-170	-170	-170	-94	-221
Cash position '000:	**-202**	**-159**	**-195**	**28**	**35**
Return on sales:	*NA*	*NA*	*NA*	*5.1%*	*5.1%*
IRR:	*NA*	*NA*	*NA*	*10.0%*	*NA*
Individual passengers carried / Fares bought:	57,343	57,343	57,343	74,848	74,848
Passenger trips (inc. out and back):	94,164	94,164	94,164	121,930	121,930
Passengers buying fares for Sidmouth:	16,298	16,298	16,298	21,730	21,730
Passengers buying fares for Seaton:	21,126	21,126	21,126	27,766	27,766
Passengers buying fares for Lyme Regis:	19,919	19,919	19,919	25,352	25,352
Proportion of fares that are return fares:	64%	64%	64%	63%	63%
Cost of infrastructure at Sidmouth '000:	646	646	646	646	646
Cost of infrastructure at Seaton '000:	646	646	646	646	646
Cost of infrastructure at Lyme Regis '000:	50	50	50	50	50
Total infrastructure investment '000:	**1,342**	**1,342**	**1,342**	**1,342**	**1,342**
Infrastructure funding:	Grant	Grant	Grant	Grant	Fares

6.11) Conclusion

The analysis indicates that of the options tested, a viable service would be possible with a vessel such as the Rathlin Express, assuming that infrastructure is grant funded (costing about £1.4 million). Fares would need to increase to a level that would most likely deter passengers if the cost of infrastructure was also recovered from fares.

A service speed of up to 20 knots is required because although a speed of 15 knots would save about £40,000 per annum, the operational day would be too long and the timetable unattractive.

Revenue is driven by the load factors illustrated in Figure 6.14.

The service would carry 75,000 passengers making 122,000 trips. By way of comparison, this is the same as the number of passenger trips generated by the CoastlinX53 Jurassic Bus service in mid 2006.

Distribution of passengers by month, and for each destination, is shown in Figures 6.15 and 6.16.

Figure 6.14: East Devon Option 1.4 Load Factors

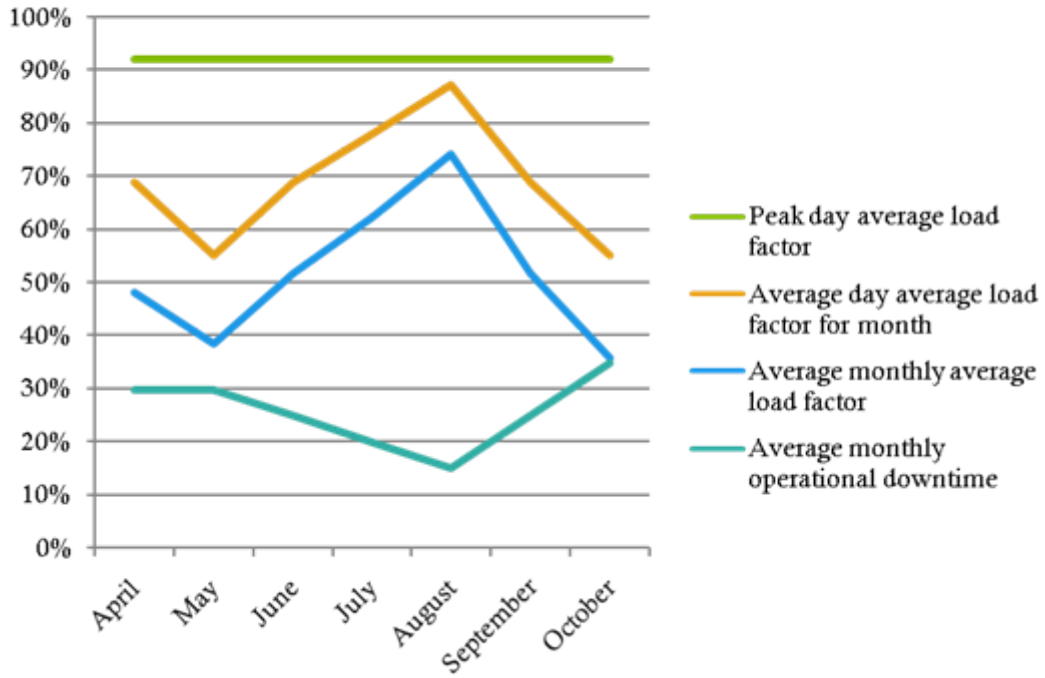


Figure 6.15: East Devon Option 1.4
Passenger Distribution

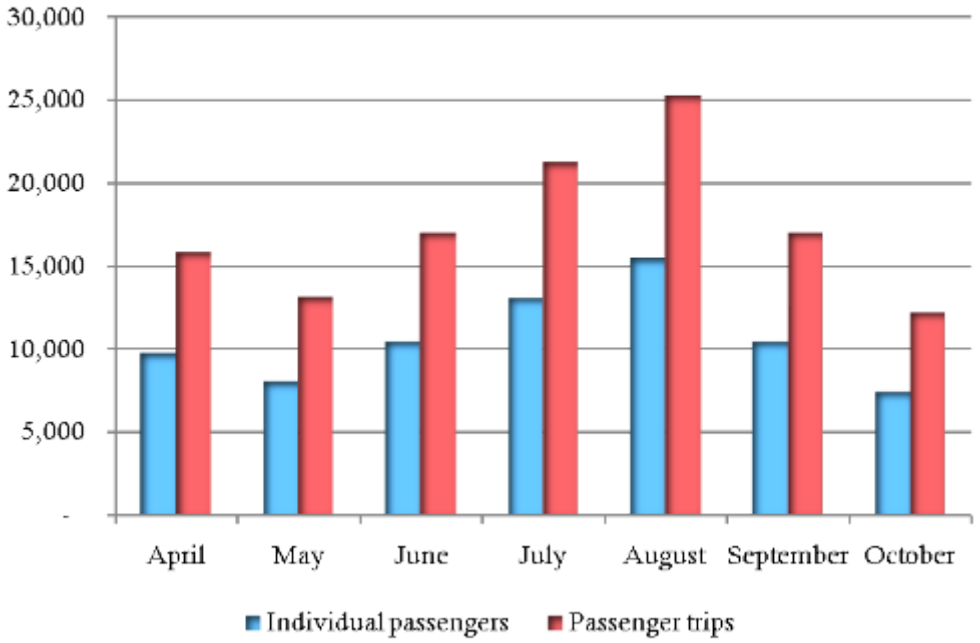
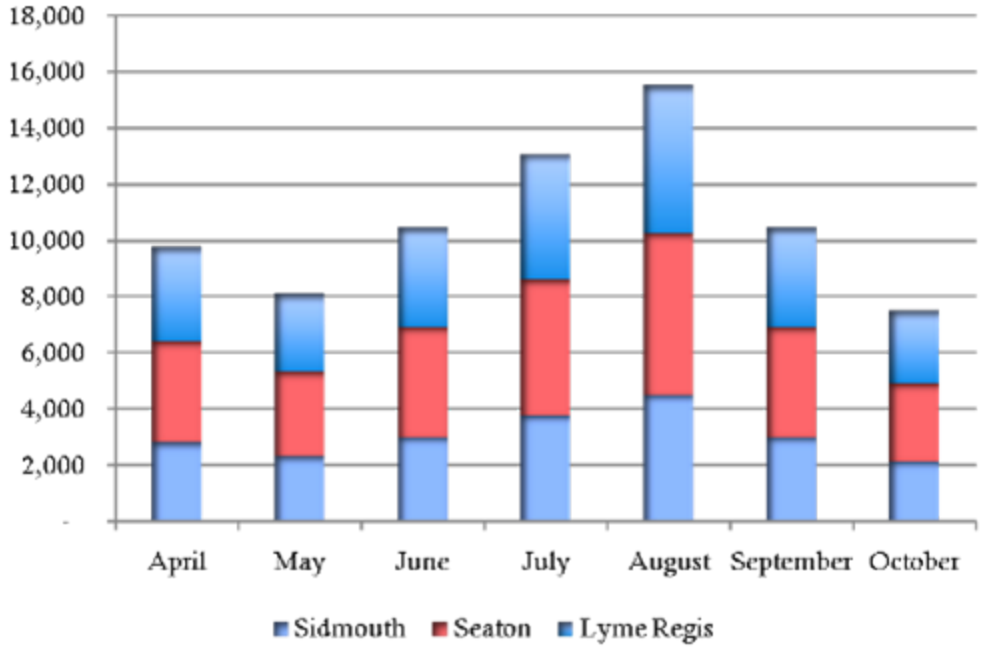


Figure 6.16: East Devon Option 1.4
Visitors by Destination



The following number of destination fares are generated for the three towns:

- Sidmouth: 22,000 pa
- Seaton: 28,000 pa
- Lyme Regis: 25,000 pa

In comparison with the total number of visitors to the towns, our view is that the visitor numbers we have generated are realistic.

Visitor numbers to East Devon included 2.6 million day visits and 0.8 million trips by staying visitors in 2007. In terms of local attractions, there are 190,000 visitors pa to the Donkey Sanctuary (Sidmouth), and 87,000 / 57,000 a year each to Seaton Tramway / Pecorama (2008 data).

The actual visitors to the towns themselves are presumably measured in hundreds of thousands. It seems likely then that the figures imply perhaps up to 5% of people visiting the towns will use a ferry service to travel between them.

We posit that about a third of these will buy single journeys, with further travel by foot / cycle / bus, or perhaps coast hopping.

People undertaking return fares may have gone by bus, but it seems highly likely that the broader appeal of the ferry, which will also provide a visible new point of interest for each town, will attract users who would not ordinarily travel by bus, and will supplant car journeys.

This will take a substantial number of car journeys off the roads.

Considering potential public sector funding, the point needs stating that Councils make large annual expenditures on roads, and that ferry terminals are (in effect) their maritime equivalent (see note below).

Councils also provide substantial support for bus services, and the story of the CoastlinX53 service is instructive. In addition to an upgrade of infrastructure for the western part of the route, this service had £665,000 grant funding from the Rural Bus Challenge from 2003 up to 2007.

The service received the following support:

- At least £335,000 contributed to new buses, with a contribution from the operator of £565,000.
- In addition to this, revenue support of £283,000 was provided, including a further £108,000 via Devon County Council, and £65,000 from Dorset County Council.

NB: Devon County Council budgets indicate:

- *£79 million in 2009/10 for investment in roads.*
- *£7.4 million in 2010/11 on services that bus companies will not provide commercially. Of that, £2.2 million (29%) is due to come from the Rural Bus Subsidy Grant and the rest from Council funds.*

7) Weymouth – Portland Pilot

7.1) Introduction

Figure 7.1 shows the route from Weymouth Harbour into Portland Harbour. Depending on precise embarkation / disembarkation points, the distance is about 3.2 nautical miles (nm).

White Motor Boats Ltd currently operates a seasonal weather dependent service with three return trips daily (increased at peak times), using facilities at Brewers Quay and Portland Castle.

Figure 7.1: Weymouth – Portland Route

7.2) Marine constraints

These are summarised in Figure 7.2.

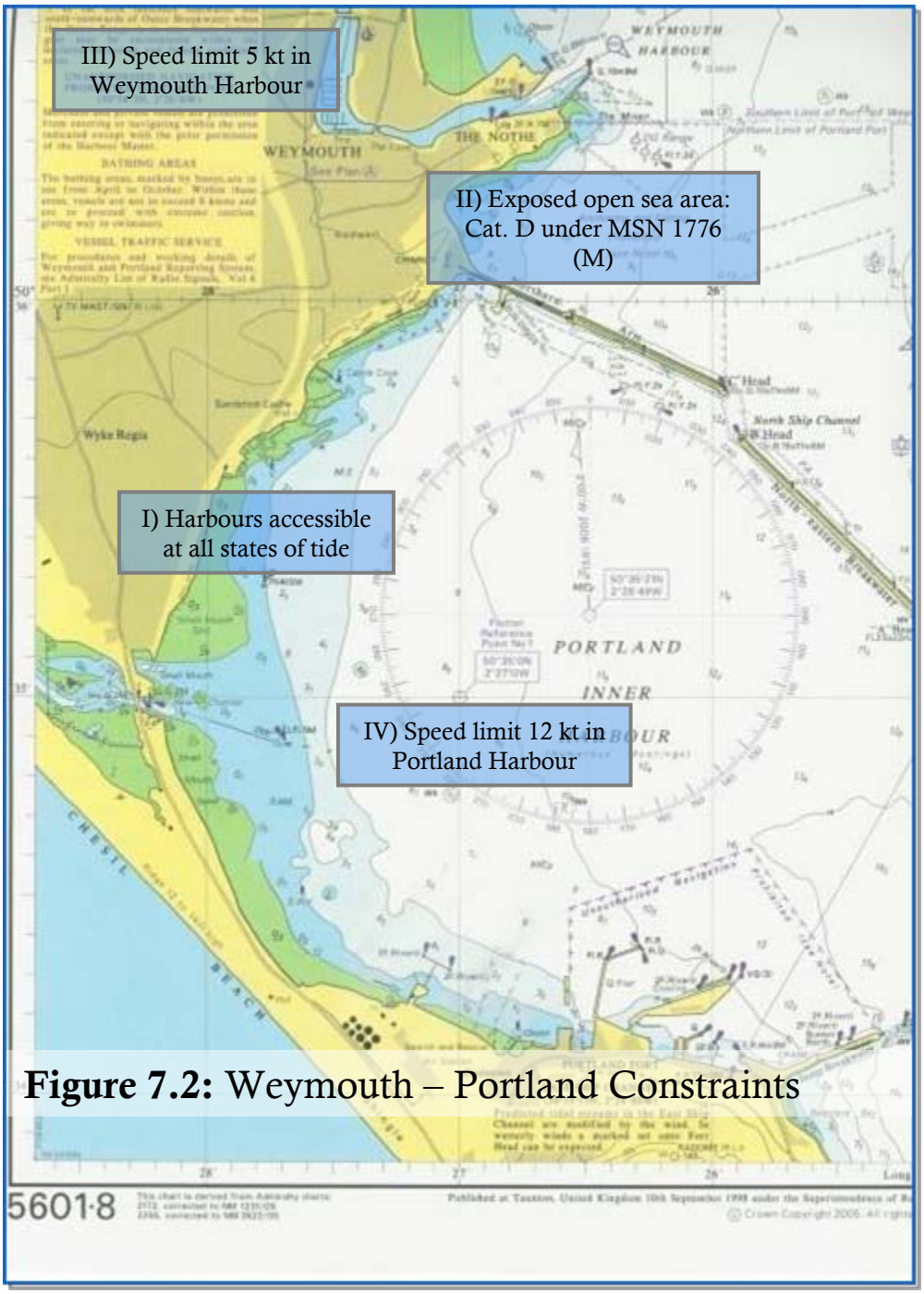


Figure 7.2: Weymouth – Portland Constraints

7.3) Landward constraints and opportunities

Existing Conditions (See Figure 7.3)

- The route between Weymouth and Portland is well served by buses. The X10 (shown on this map) operates an hourly weekday service; the No. 1 service (not shown) operates a regular (10 mins) service; the No. 10, a 20 mins service between these landing points.
- Weymouth itself is very well served by buses both internally and externally from other towns. The 31 from Axminster terminates at Weymouth, and the X53 (Exeter to Poole) serves Weymouth. However, neither of these routes serve Portland requiring a change at Weymouth. Only the X10 and No. 10 serve Portland from other towns, namely, Dorchester.
- Weymouth Rail Station provides a twice hourly service to London via Poole and Bournemouth.
- Both potential marine anding points offer good access to the SWCP.

The route between the Weymouth and Portland potential landing points is well served by regular bus services. This could have an adverse affect on demand for this waterborne transport route as there are good and well connected alternatives.

That said, Weymouth has around 50,000 residents (see Dorset and East Devon Waterborne Transport Scoping Study published September 2009) and attracts 1.8m visitor nights a year (SW Tourism 2007). This, coupled with the survey results that show that 90% of residents and 84% of visitors travel to Portland and 65% of respondents still travel by car (75% Residents, 54% Visitors) between the two, indicates that there is still scope to shift some of these trips to waterborne transport.

It is thought that waterborne transport is a more scenic alternative to bus and car and could attract leisure trips from those modes leading to increased demand. Whilst there is no footfall data available (as in East Devon Pilot), the SWCP Portland circular walking route is renowned as a high quality route, promoted through walking club's websites and is undoubtedly popular.

Portland is a well known climbing and bird-watching venue and recent investment in attractions such as the Portland Sculpture and Quarry Trails along with cameras to watch seabirds on remote ledges all broaden Portland's appeal. The addition of waterborne transport from Weymouth could therefore enhance the existing appeal and tap into several niche markets.

Figure 7.3 on the following page shows the existing transportation infrastructure in the vicinity of this pilot. Also shown are existing waterborne leisure services that operate from Weymouth, Portland, and Lulworth.

Figure 7.3: Weymouth – Portland Pilot - Existing Conditions

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Conversely to the leisure potential of this route, the geography of Portland means waterborne transport is unlikely to be good for commuting trips to Weymouth as the landing point would be at sea level and the majority of residences are set back from the coast and above sea level. However, the Osprey Quay industrial area on Portland is well sited to encourage commuting trips by waterborne transport for those travelling from Weymouth to this area.

With 1.8m visitor nights a year, the Weymouth area is a major tourist destination in Dorset, and in terms of demand it is thought that the leisure sector is likely to be the biggest market for this type of transport. With this in mind, the location of major holiday parks and tourist attractions needs to be considered when assessing demand. The Bowleaze Cove area of Weymouth contains one of the larger holiday parks in the area and is also a destination in itself due to the beach and attractions. Therefore, it may be advantageous to consider extending the pilot route eastwards to Bowleaze Cove in order to increase the potential demand. It is also believed that a further easterly extension to Lulworth Cove, a very popular tourist attraction with about 500,000 visits a year, could also serve to increase demand and the potential of this route.

Highway Issues (See Figure 7.4)

- Portland Road between the Buxton Road junction and Portland Beach Road suffers from peak hour congestion that is intensified by visitor trips during the summer months.
- Weymouth town centre is subject to significant seasonal congestion in particular the junctions either end of King Street and the Westway Road/ Abbotsbury Road junction.
- The Weymouth Transport Package and Weymouth Relief Road is currently bringing about major changes to the local highway network. The true effect of these improvements on traffic movements will not be known until they are fully implemented later in the year.

Weymouth is a major visitor destination in Dorset. It is also a major employment centre in the county and as such is subject to peak hour congestion. The pilot route as it stands would serve to mitigate some of the existing highway issues along the Portland Road corridor. However, the key highway issues in Weymouth tend to be focused on the town centre. Therefore, the only benefit will be from reducing demand for road space from those based on Portland, which represents only a small proportion of the total traffic flows.

It is likely that the full impact of the Weymouth Transport Package and Weymouth Relief Road highway works will not be apparent until all elements are fully completed, however demand for road space (through traffic growth) may outstrip the benefits over time.

A major contributor to town centre congestion during the summer months is 'parking search' trips. Often, many car parks in Weymouth are at or near capacity during the peak season, leading to increasing parking search miles around the town centre network. The removal of those trips originating in Portland would go some way to reducing the demand for town centre parking. However, it is felt that the possible Bowleaze Cove extension will further reduce this parking demand and thus the associated parking search trips and congestion.

It is questionable whether an extension of this pilot to Lulworth Cove would result in a reduction of traffic in Weymouth itself, as there are unlikely to be a significant number of trips originating from the Lulworth area into Weymouth.

However, the environmental impact of such huge seasonal volumes of traffic on the Lulworth area and its residents is heavy and unsustainable. Therefore, shifting those car based trips that originate in Weymouth (and are bound for Lulworth) onto waterborne transport, would have a visible impact on traffic flows to this destination and thus, reduce environmental impacts. It is likely that a Weymouth – Bowleaze Cove – Lulworth service could reduce a significant proportion of those trips.

Figure 7.4: Existing Highways Issues

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7.4) Opportunities

The survey for the Weymouth – Portland Pilot indicated that, 90% of visitors and 75% of residents would be interested in travelling by water transport (see Figure 7.5 below).

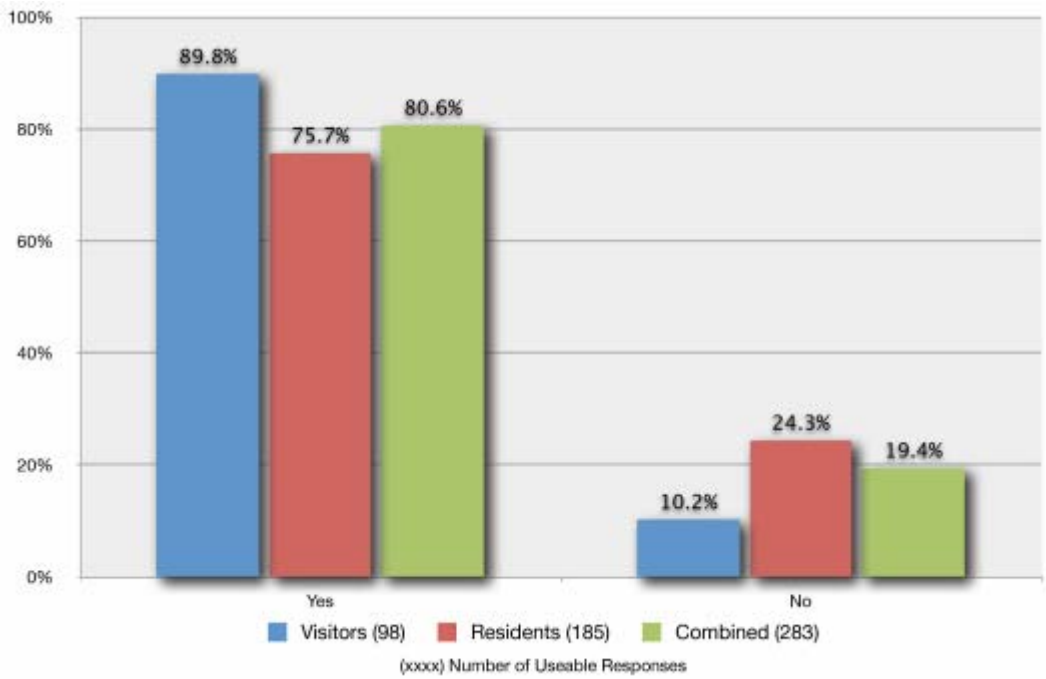
In terms of willingness to pay, analysis indicates that respondents would typically be willing to pay £3 to £3.45 for an adult fare, although some respondents obviously indicated that they would be willing to pay more.

Visitors typically expressed a willingness to pay more than residents. For example, the average was £4 for visitors, compared to £3.09 for residents.

As noted in Section 6.4, these types of surveys have limitations when respondents answer such questions. In practice consumers typically express a willingness to pay which is below what they will actually pay.

The survey findings are significantly lower than the actual fares being charged by White Motor Boats at £7.50 return, and £5 single.

Figure 7.5: Assuming the appropriate vessel for the sea conditions, would you be interested in travelling by Waterborne Transport?



7.5) Vessels

Suitability of various types of vessel have been considered. Green indicates positive suitability, red indicates unlikely to be suitable.

Type of Vessel	Speed Capability	Pax Comfort	Capacity & Deck Space	Remarks
Conv. Monohull				Possible
Catamaran				Best
Hovercraft				Not suitable; noisy
SWATH Type				No advantage → costly
Landing Craft				Not suitable
RIB Type Craft				Not suitable

Comments

- A speed of about 12-15 knots maximum is required.
- Passenger numbers and deck space to be maximised.
- A catamaran would probably be a good choice for this route as passenger capacity and deck space are greater than for a comparable length of monohull.
- Fuel economy may also be better for the catamaran.
- Low wash characteristics to be considered, since the ferry will require to be operated close to sailing and recreational craft, also erosion issues.

Conclusion

Slowish speed catamaran type with efficient low wash hull form preferred:

- Passenger capacity perhaps about 100
- Service Speed 12-15 knots
- Propellers for best fuel efficiency
- Aluminium or steel hull construction
- Falls under MSN 1776 (M) Category D

The typical approximate cost for such a new vessel would be in the region of £1.5 million.

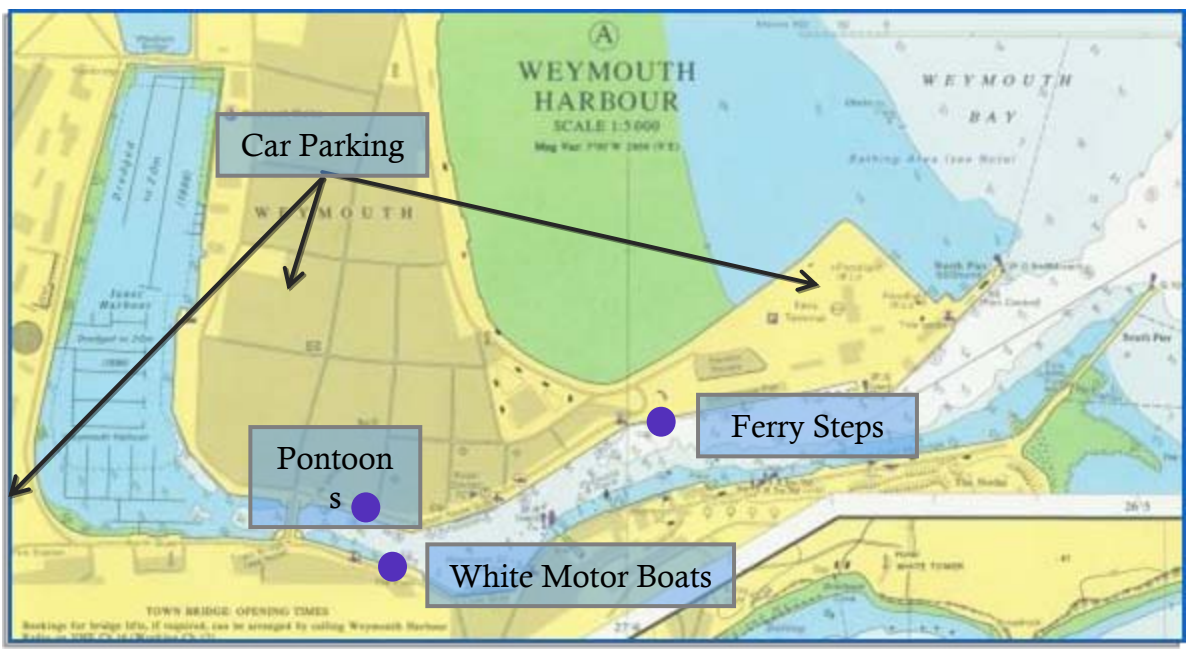
7.6) Infrastructure

This service should not require any investment in landing points as it should be possible to run between one of the options in Weymouth Harbour (downstream of the bridge) and a berth at Portland. Licences to operate are available in both Weymouth and Portland.

7.6.1) Weymouth

There are three key potential landing facilities, although none have adjacent car parking – see Figure 7.6.

Figure 7.6: Weymouth Parking and Marine Access



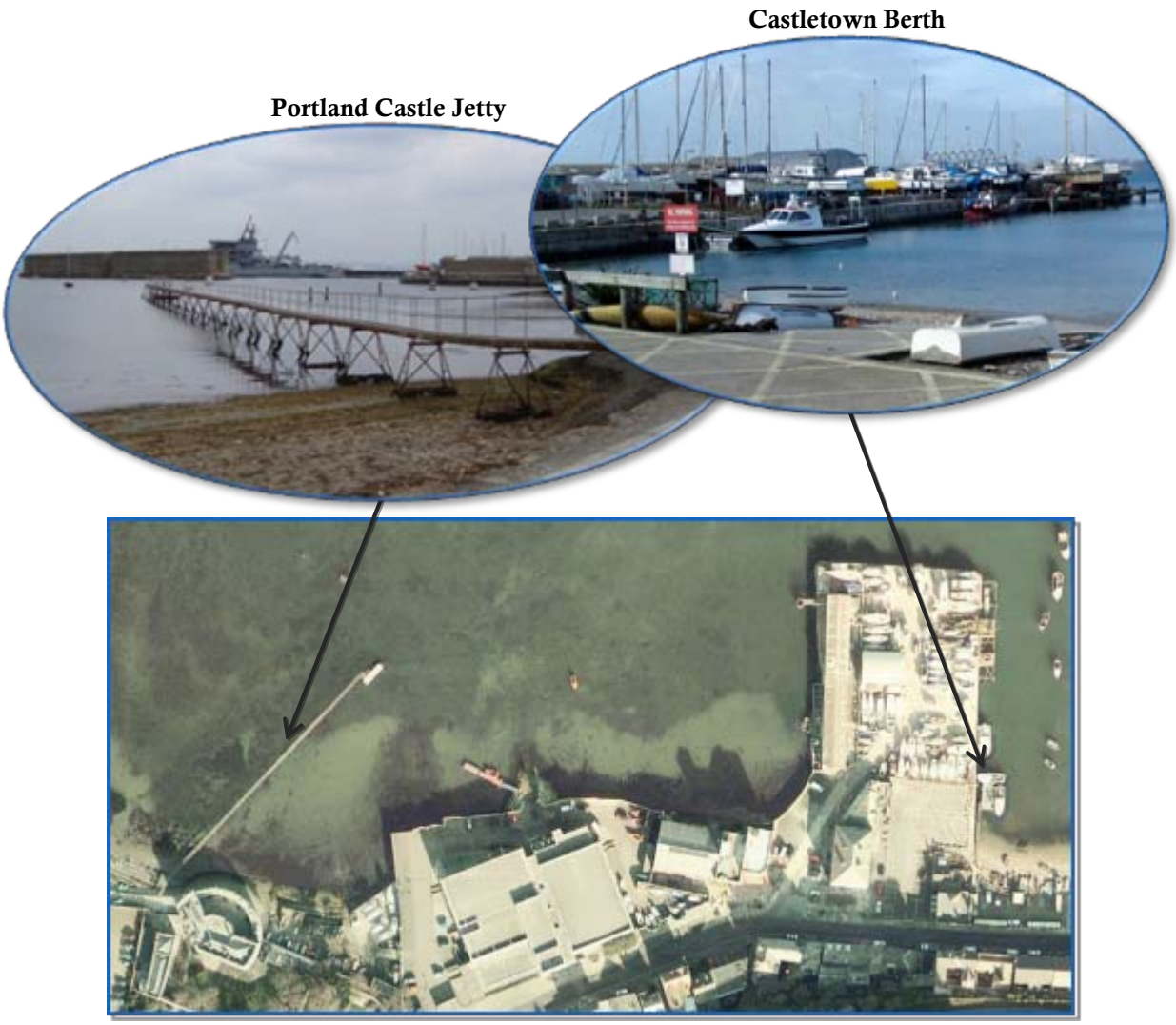
7.6.2) Portland

The commercial port is not available, but there are several other options at Portland:

- The berth at the foot of Stone Pier by Castletown Slipway
- Portland Castle Jetty
- Sailing Academy
- Portland Marina

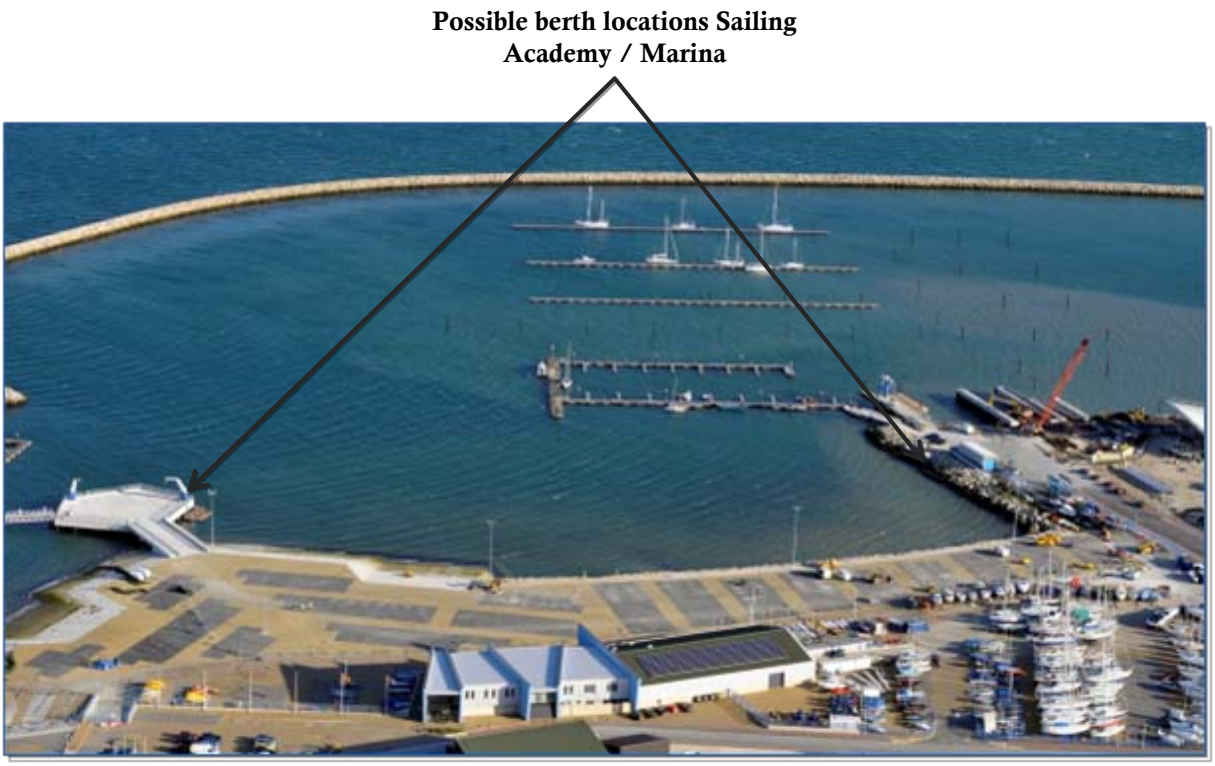
A boatyard operates on the pier at Castletown. The jetty at Portland Castle is currently used by White Boats, which is understood to be through a lease (see Figure 7.7).

Figure 7.7: Portland Landing Options 1



There may be suitable berths at the Sailing Academy and Portland Marina as shown in Figure 7.8.

Figure 7.8: Portland Landing Options 2



7.7) Weymouth – Portland Service

The type of vessel proposed is a catamaran of similar type to the image below.

- Length overall: 20m
- Beam: 7.00 m
- Draft: 1.4 m
- Service Speed: 15 knots

The potential timetable developed for the analysis of this service is detailed in Figure 7.9. The service offers 10 sailings per day. Trip time is the same as the No. 1 bus – 20 minutes to Weymouth Debenhams from Victoria Square (about 0.5 mile from Portland Castle).

Fares are set at £3.90 return, and £2.90 single. These compare as follows:

- Survey: £3 to £3.45 adult return.
- White Motor Boats: £7.50 return, £5 single.
- 501 open top bus service: Day ticket £5 adult, £3.50 child / concession.
- Weymouth / Portland No. 1 bus service: £2 return.

Figure 7.9: Weymouth – Portland Potential Timetable (Option 2.3)

Northbound	Portland	Weymouth
Trip	Dep	Arr
1	8:00	8:20
2	9:00	9:20
3	10:15	10:35
4	11:15	11:35
5	12:30	12:50
6	13:30	13:50
7	14:45	15:05
8	15:45	16:05
9	17:00	17:20
10	18:00	18:20

Southbound	Weymouth	Portland
Trip	Dep	Arr
1	8:30	8:50
2	9:30	9:50
3	10:45	11:05
4	11:45	12:05
5	13:00	13:20
6	14:00	14:20
7	15:15	15:35
8	16:15	16:35
9	17:30	17:50
10	18:30	18:50

Trip times	
One way (mins):	0:20

7.8) Results

Four outline options were developed for analysis. These are summarised in Figure 7.10 with the financial assessments for each.

Variations between the options can be observed by identifying the **blue text**.

Figure 7.10: Weymouth – Portland Service: Outline Financial Assessments

Option:	**2.1**	**2.2**	**2.3**	**2.4**
Revenue case:	Base Case	Hi Fare	Base Case	Base Case
Vessel:	New	New	2nd Hand	New (Small)
Capacity passengers:	100	100	100	30
Type:	Catamaran	Catamaran	Catamaran	Monohull
Cost '000:	1,500	1,500	700	400
Return fare:	£3.90	£4.58	£3.90	£3.90
Single fare:	£2.90	£3.41	£2.90	£2.90
Trip rotations:	10	10	10	9
Departure of first sailing from Portland:	8:00	8:00	8:00	8:00
Arrival of last sailing:	18:50	18:50	18:50	19:20
Operational day:	10:50	10:50	10:50	11:20
Speed (up to) knots:	15	15	15	12
Average operational downtime:	14%	14%	14%	14%
Location for overnight:	Portland	Portland	Portland	Portland
Revenues '000:	503	588	503	143
Operating costs '000:	-419	-419	-415	-268
Operating P/L '000:	85	169	88	-125
Mortgage '000:	-142	-142	-66	-38
Cash position '000:	**-57**	**28**	**22**	**-163**
Return on sales:	*NA*	*4.7%*	*4.4%*	*NA*
IRR:	*NA*	*NA*	*10.4%*	*NA*
Individual passengers carried / Fares bought:	136,962	136,962	136,962	32,843
Passenger trips (inc. out and back):	222,913	222,913	222,913	60,235
Passengers buying fares for Weymouth:	74,770	74,770	74,770	15,373
Passengers buying fares for Portland:	62,192	62,192	62,192	17,470
Proportion of fares that are return fares:	63%	63%	63%	83%
Total infrastructure investment '000:	**NA**	**NA**	**NA**	**NA**

7.9) Conclusion

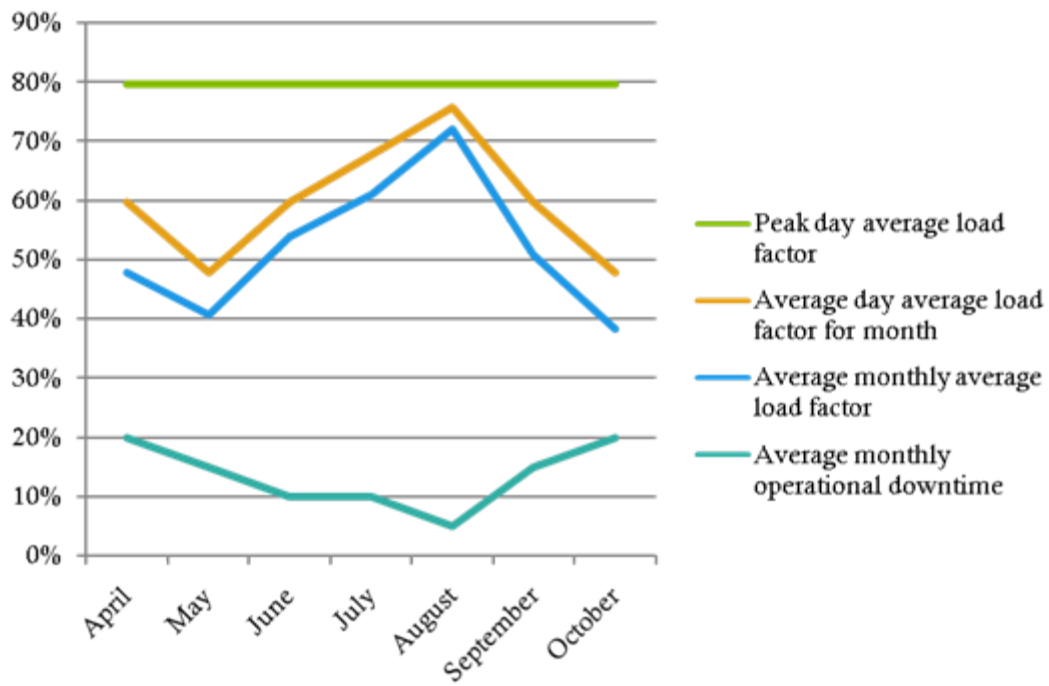
The analysis indicates that the most viable service requires a vessel costing £700,000. This is about half the cost of a new vessel, and implies that the vessel would be about 10 to 12 years old.

If a new vessel was purchased, fares would need to increase by about 17% to maintain viability.

Revenue is driven by the load factors illustrated in Figure 7.11.

The service would carry 137,000 passengers making 223,000 trips. Distribution of passengers by month is shown in Figure 7.12.

Figure 7.11: Weymouth - Portland Option 2.3 Load Factors



The following number of destination fares are generated for the two towns:

- Weymouth: 75,000 pa
- Portland: 62,000 pa

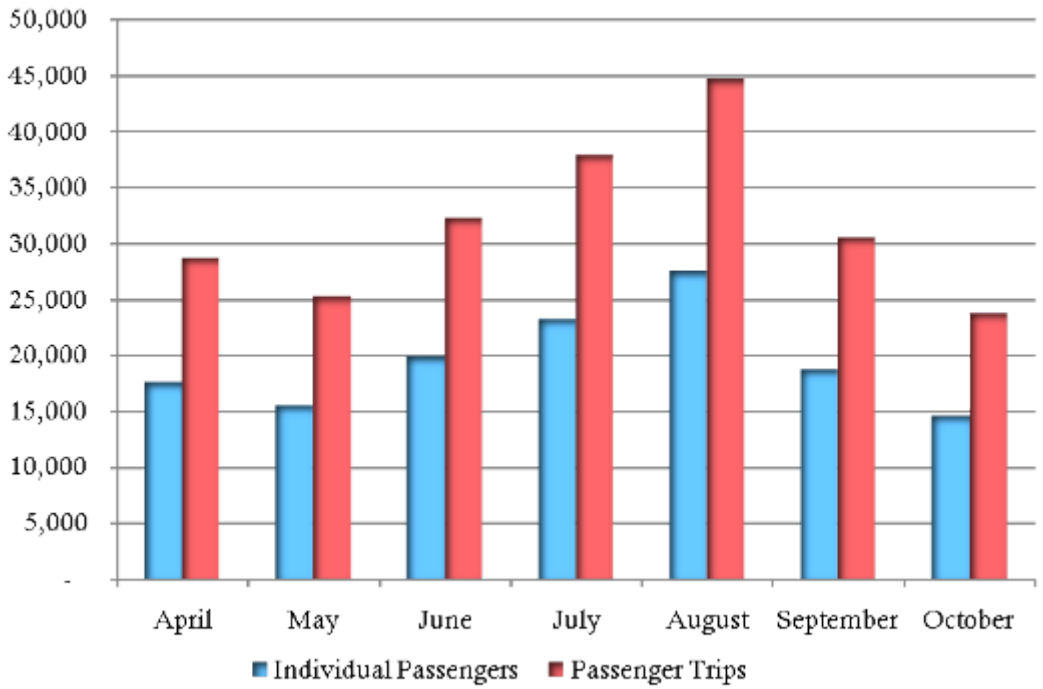
Visitor numbers to Weymouth included 1 million day visits and 0.5 million trips by staying visitors in 2007. In terms of local attractions, there are 22,000 visitors to Portland Castle.

The scale of this suggests that perhaps up to 5% of people visiting the area must use the ferry service, and this is not unreasonable given its price point.

It is estimated that about one third of individuals will buy single journeys. The option to travel from Weymouth or Portland and walk or cycle back could be attractive.

There is an obvious need to link the Portland end with buses such as the 501 and No. 1. Subject to this, or appropriate parking, the early services offer a commuting option to people working in Weymouth, thereby avoiding congestion into the town and any parking issues.

Figure 7.12: Portland – Weymouth Option 2.3 Passenger Distribution



8) Poole Bay Pilot

8.1) Introduction

Figure 8.1 shows routes linking Bournemouth and Poole to Studland and Swanage. Approximate distances are shown to the right. A daily positioning trip from the overnight mooring at Poole Town Quay could be a revenue earning voyage.

Leg	Nautical Miles
Swanage to Studland (landing site)	3.7
Studland to Sandbanks Jetty	2.8
Sandbanks Jetty to B'mth Pier	3.5
B'mth Pier to Studland	5.0
Swanage to Sandbanks	5.0

Figure 8.1: Poole Bay Routes

Several operators offer services in the pilot project area:

- **Blue Line Cruises:** Poole / Swanage

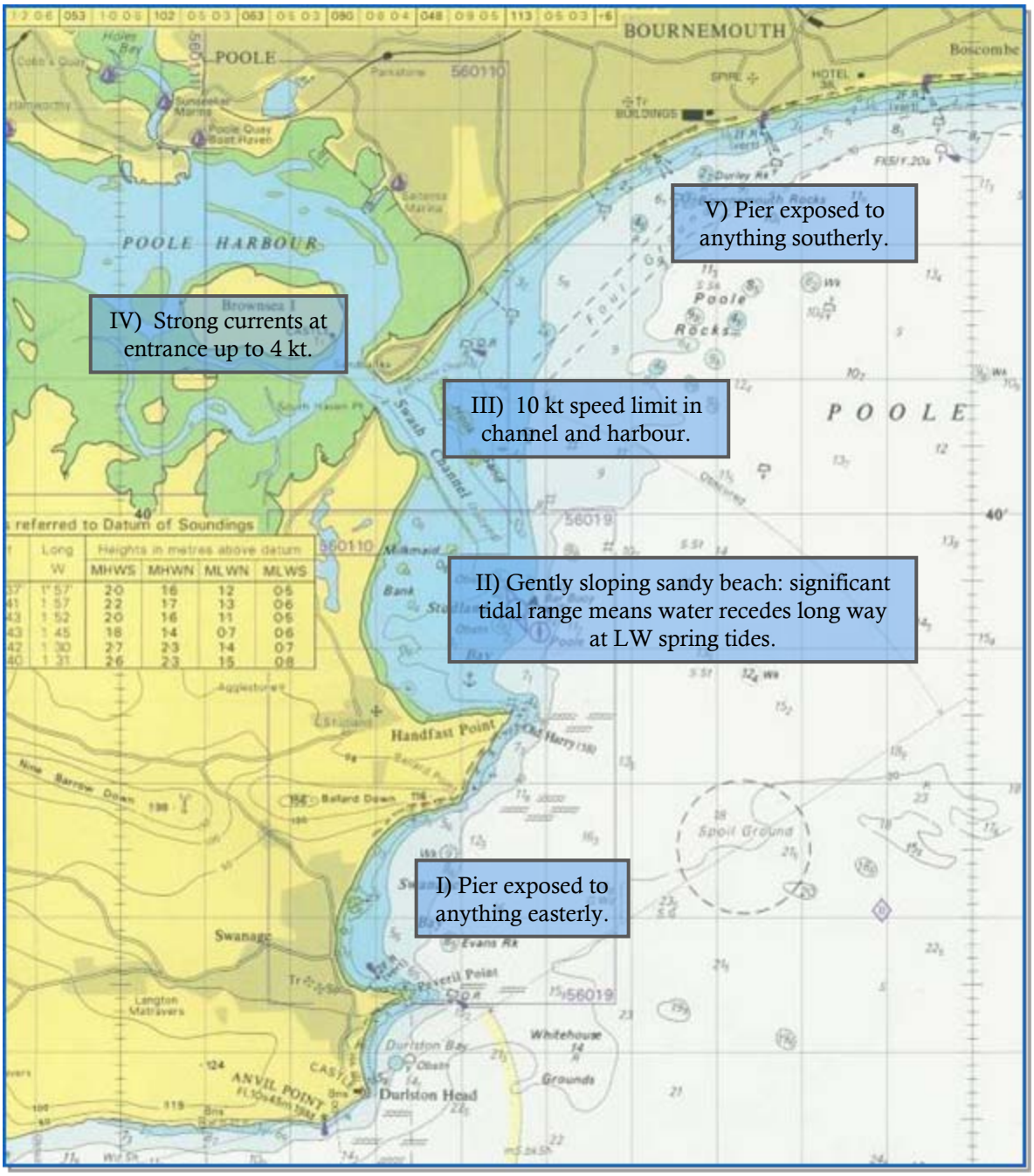
- **Brownsea Island Ferries:** Poole / Swanage

- **Dorset Cruises:** Swanage / Poole / Bournemouth

8.2) Marine Constraints

These are shown in Figure 8.2.

Figure 8.2: Poole Bay Marine Constraints



8.3) Landward Constraints and opportunities

Existing Conditions (See Figure 8.3)

- Poole – Bournemouth conurbation has a good bus network with bus stops close to potential landing points, town centres and within comfortable walking distance of major Bournemouth hotels.
- Isle of Purbeck is less well-served by public transport routes, particularly the southern part.
- Isle of Purbeck, Swanage and Poole Bay areas also attract large numbers of staying visitors at holiday parks, camp sites, B&B's.
- Many popular attractions and opportunities for a wide range of leisure activities within an eight mile radius currently accessed by car or coach.
- Loss of car park spaces and other well-documented environmental issues at Studland.

The conurbations good bus network with frequent services facilitates easy integration between bus and boat travel. The Bournemouth Pier landing point would be easily accessible on foot for visitors based at the major hotels in the resort and by bus for residents from the suburbs. In addition, the Isle of Purbeck and Poole Bay areas attract large numbers of visitors and residents who make trips to Bournemouth and Poole for leisure and shopping. Thus, there is huge demand for travel both ways across Poole Bay, particularly in the summer season. The demand is not just from visitors but also from residents.

Annual visitor figures from SW Tourism for 2007 reproduced in the initial scoping study (see Dorset and East Devon Waterborne Transport Scoping Study published September 2009) show that Studland Beach and Nature Reserve attract over 1 million visitors per year, Swanage Railway 202,000, Corfe Castle 135,000. There are many additional attractions and places to visit such as Swanage and villages like Worth Matravers, Kingston or Corfe.

This part of Purbeck is the conurbations playground for a wide range of leisure activities. Walking is very popular with some of Dorset's most scenic, tranquil and wild areas of the SWCP as well as the start/finish of this long distance trail at Shell Bay. There are many other walking trails and cycle routes for families or for more energetic enthusiasts. Therefore, it is likely that there will be a huge seasonal demand for two-way trips on this pilot route.

Waterborne transport has the potential to deal with large volumes of visitors and reduce the impact of motorised transport on the fragile environment of the Isle of Purbeck whilst offering the opportunity to make the journey part of their holiday experience.

Studland's beaches attract over 1 million visitors a year. The National Trust's visitor facilities there including car parks, information centre, café, retail shops and beach huts are seriously threatened by storm events and coastal erosion. A significant number of car parking spaces will disappear into the sea. Currently, in good summer weather, all car parks are full; traffic is queued to and from the chain ferry and seeking parking elsewhere. The impact of traffic on the environment, quality of life for residents and poor experience for visitors makes this situation unsustainable. Waterborne links across Poole Bay could significantly reduce traffic and improve congestion. However to overcome the environmental sensitivities of Studland Bay and beach, appropriate landing infrastructure would need to be designed which would not damage the marine environment and its wildlife.

Figure 8.3 on the following page shows the existing transportation infrastructure in the vicinity of this pilot. Also shown are existing waterborne leisure services that operate from Swanage, Sandbanks, Poole and Bournemouth.

Figure 8.3: Poole Bay Pilot - Existing Conditions

Existing Highway Issues (See Figure 8.4)

- A 35 Poole and Bournemouth internal network – subject to severe, all year round, heavy urban traffic congestion.
- A35 Baker's Arms roundabout – serious congestion particularly in summer months.
- A351 Wareham to Swanage - serious seasonal and weather-influenced congestion as this is the only road to the popular holiday resort of Swanage and Isle of Purbeck.
- Corfe Castle – "pinchpoint" on A351 with narrow streets, historic buildings, "honeypot" for visitors, limited parking.
- B 3351 Corfe Castle to Studland – narrow, rural road leading to the beaches of Studland, heavy use is seasonal and weather-influenced.
- Sandbanks (and Studland) – massive seasonal demand for chain ferry (shorter journey than A351) results in long queues in the summer months on both sides of harbour.

Both urban and rural congestion is severe within the area of influence of the Poole Bay Pilot. Heavy urban network congestion in the Poole – Bournemouth conurbation has been highlighted in South East Dorset Transport Study. Seasonal congestion problems affect the Baker's Arms roundabout and also the A351 (Wareham to Swanage).

Corfe Castle's topography makes it a natural pinch point for traffic on this road as well as a popular tourist village. Heavy, slow through traffic mixed with drivers seeking parking, pedestrians strolling about and crossing the A351 by means of light controlled crossing all contribute to acute congestion and driver frustration.

Purbeck's rural roads, not built or maintained for such heavy traffic flows in the summer season, lead to the popular beaches of Studland (B3351) and villages of the Isle of Purbeck. These are also favoured areas for walking and cycling. The environmental impact of such huge volumes of traffic on the area and its residents is heavy and unsustainable.

Many local visitors take their cars on the chain ferry from Sandbanks to Studland since the journey is shorter than the A351 and to avoid seasonal congestion of the A35 and A351; however this too poses problems for Studland (and Sandbanks). Ferry queues, on both sides of the crossing, present difficulties to the movement of traffic and parking provision is insufficient on fine weather days. This situation will become worse with the loss of car parking spaces through coastal erosion.

This area is, and will continue to be, popular for visitors, whether visiting for the day or staying at the many hotels, holiday parks or camp sites, and most of those visitors currently get around by car. However, their travel experience could be improved if some of the congestion were reduced. A passenger ferry service serving Studland and Swanage from Poole and Bournemouth would achieve an overall traffic flow reduction on the A35, A351 and B3351.

Figure 8.4: Existing Highways Issues

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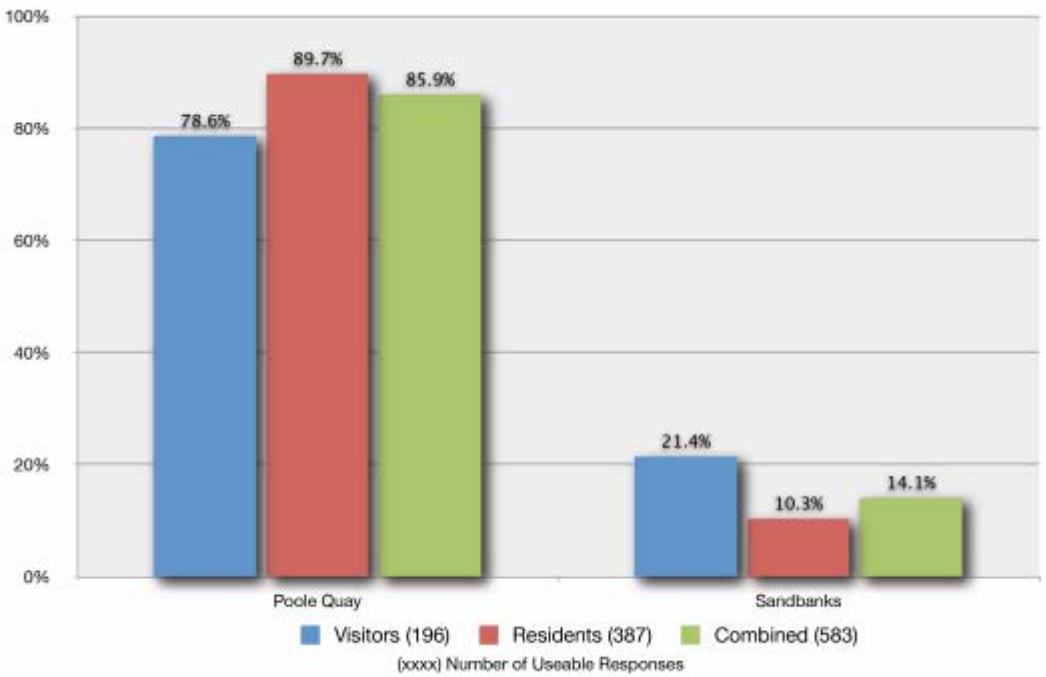
From the survey results (shown in Figure 8.5), information gathered suggests that Poole Quay should also be considered as an additional regular landing point e.g. Poole Quay – Sandbanks – Studland, as this landing is preferred by the majority of respondents. Notwithstanding the difficulties explained in Section 8.6, there is considerable merit to this suggestion since bus access to the landing point is easy and would serve to avoid exacerbating the existing chain ferry queues at Sandbanks.

Consideration could be given to extending this pilot to Christchurch. Resolution of highway capacity issues, identified in the South East Dorset Transport Study, is difficult and costly to achieve due to budgetary and environmental constraints. Some reduction in traffic flows could be alleviated in peak season by offering an alternative travel option which would be particularly attractive to visitors. There may be also opportunities to link to marine routes operating from the Solent.

Figure 8.5: Where would you rather the Poole landing point?



8.4) Opportunities

The survey for the Poole Bay Pilot indicated that out of 699 respondents, 88% of both visitors and residents would be interested in travelling by water transport (see below).

In terms of willingness to pay, analysis indicates that respondents would typically be willing to pay a return adult fare of:

- £3: Swanage – Studland.
- £4: Poole – Studland; Poole – Bournemouth.
- £5: Swanage – Poole; Bournemouth – Studland.
- £6: Swanage – Bournemouth.

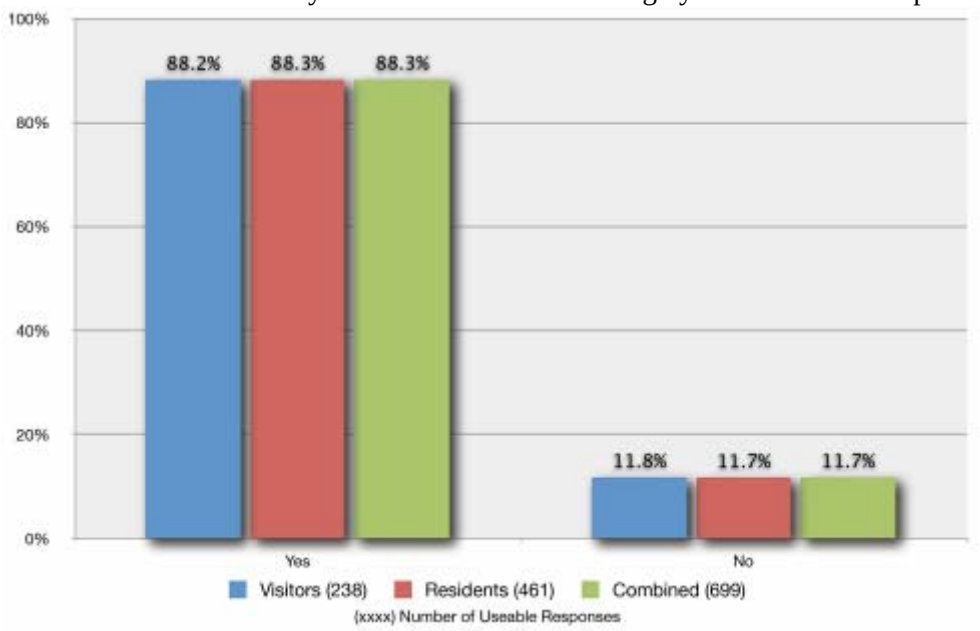
By definition, some respondents indicated that they would be willing to pay more.

Visitors typically expressed a willingness to pay more than residents. For example, in the case of Poole to Studland, the mean was £5.20 for visitors, compared to £4.05 for residents.

As noted previously, in practice consumers typically express a willingness to pay which is below what they will actually pay.

Actual return fares charged, e.g. by Dorset Cruises, are significantly higher: Bournemouth / Poole Town Quay to Swanage fare is £12.50 adult and £6.25 child.

Figure 8.6: Assuming the appropriate vessel for the sea conditions, would you be interested in travelling by Waterborne Transport?



8.5) Vessels

Suitability of various types of vessel have been considered. Green indicates positive suitability, red indicates unlikely to be suitable.

Type of Vessel	Speed Capability	Pax Comfort	Capacity & Deck Space	Remarks
Conv. Monohull				Possible
Catamaran				Possible
Hovercraft				Not suitable; noisy
SWATH Type				No advantage → costly
Landing Craft				Not suitable
RIB Type Craft				Not suitable

Comments

- A speed of about 15 to 20 knots is envisaged.
- Passenger numbers and deck space to be maximised.
- A Catamaran would probably be a good choice for this route as passenger capacity and deck space are greater than a comparable length of monohull.
- Fuel economy may also be better for the catamaran.
- Low wash characteristics to be considered, since the ferry will require to be operated close to sailing and recreational craft, also erosion issues.

Conclusion

Medium speed catamaran type with efficient low wash hull form preferred:

- Passenger capacity in the region of 150
- Service Speed 15 - 20 knots
- Propellers for best fuel efficiency
- Aluminium or steel hull construction
- EU Class D: summer only operation
- EU Class C: all year operation

The typical approximate cost for such a vessel would be in the region of £2.5 million.

8.6) Existing Infrastructure

8.6.1) Poole Town Quay

This is very congested and there are no licences available for operators to moor alongside the quay. Limited operations are possible from Poole Town Quay steps.

It is also about a six nautical mile round trip from the harbour entrance, and the speed limit of 10 knots means that this would take about 40 minutes, reducing vessel productivity if this had to be undertaken.

8.6.2) Sandbanks Jetty

Due to the fact that there is no space at Poole Town Quay, the time taken to get there, and the fact that Sandbanks is already a major gateway to Studland, this is the landing place adopted for appraisal.

The National Trust owns the jetty next to the chain ferry, and this therefore offers a very useful option.

Sandbanks Jetty

8.6.3) Studland

The beach at Studland is about four miles long taking in Shell Bay, Knoll Beach, Middle Beach and South Beach. With over 1 million visitors annually, the area is subject to extreme car congestion during peak periods.

There are no landing facilities, and leisure users access the beach via dinghies. The coastal and marine environment are both highly designated and sensitive.

8.6.4) Bournemouth Pier

Very useable subject to sea conditions.

8.6.5) Swanage Pier

Very useable subject to sea conditions.

8.7) Potential Infrastructure

8.7.1) Studland

It is proposed that a seasonal facility should be provided. This could comprise:

- An end pontoon of about 25m x 10m to use as the landing stage, moored with chains / cables such that they do not interfere with berthing of a vessel.
- Twin floating walkways of about 185m to the 2m contour, to facilitate orderly embarking / disembarking with a one way system.

Out of season, the end pontoon would be stored in Poole Harbour, and the floating walkway pontoons ashore in the nearby car park.

This very simple scheme will have a low visual impact, but be highly flexible. The budget cost is £500,000. With more detailed investigation into tidal range it may be possible to shorten the walkways.

Subject to survey, an appropriate location is towards the south end of Middle Beach (see Figure 8.7).

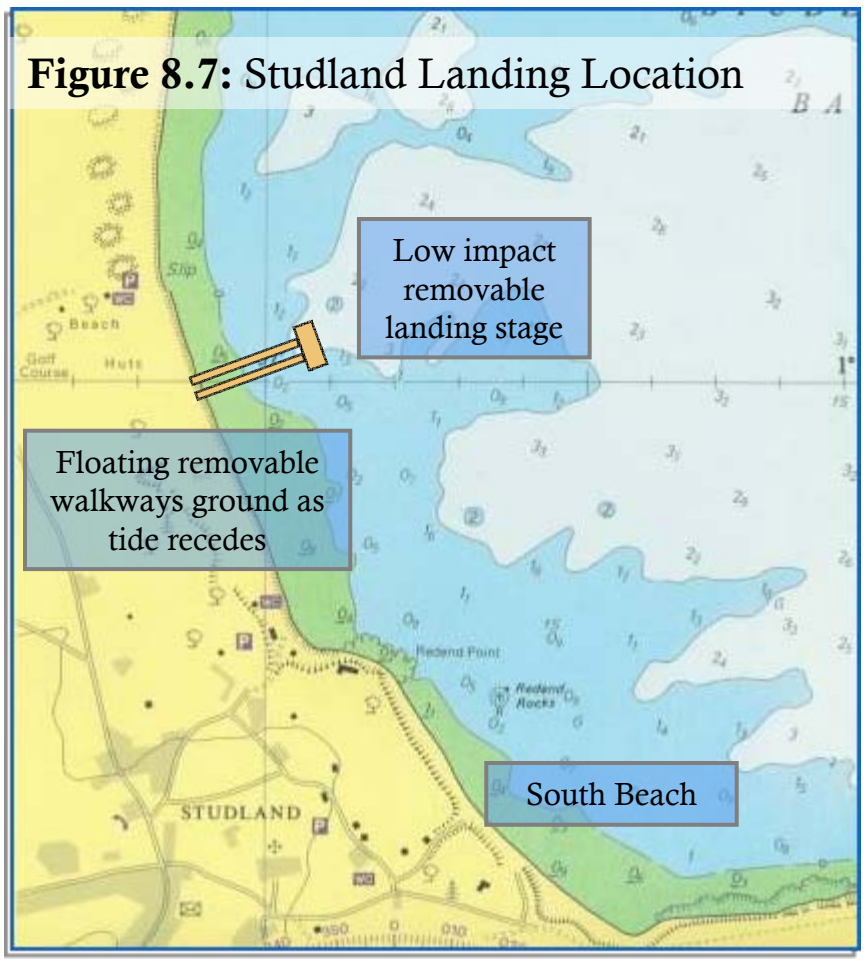


Figure 8.7: Studland Landing Location

This proposal is based on a well practised concept – the images below show two examples in Pembrokeshire.

The scheme is illustrated in the sketch in Figure 8.8.

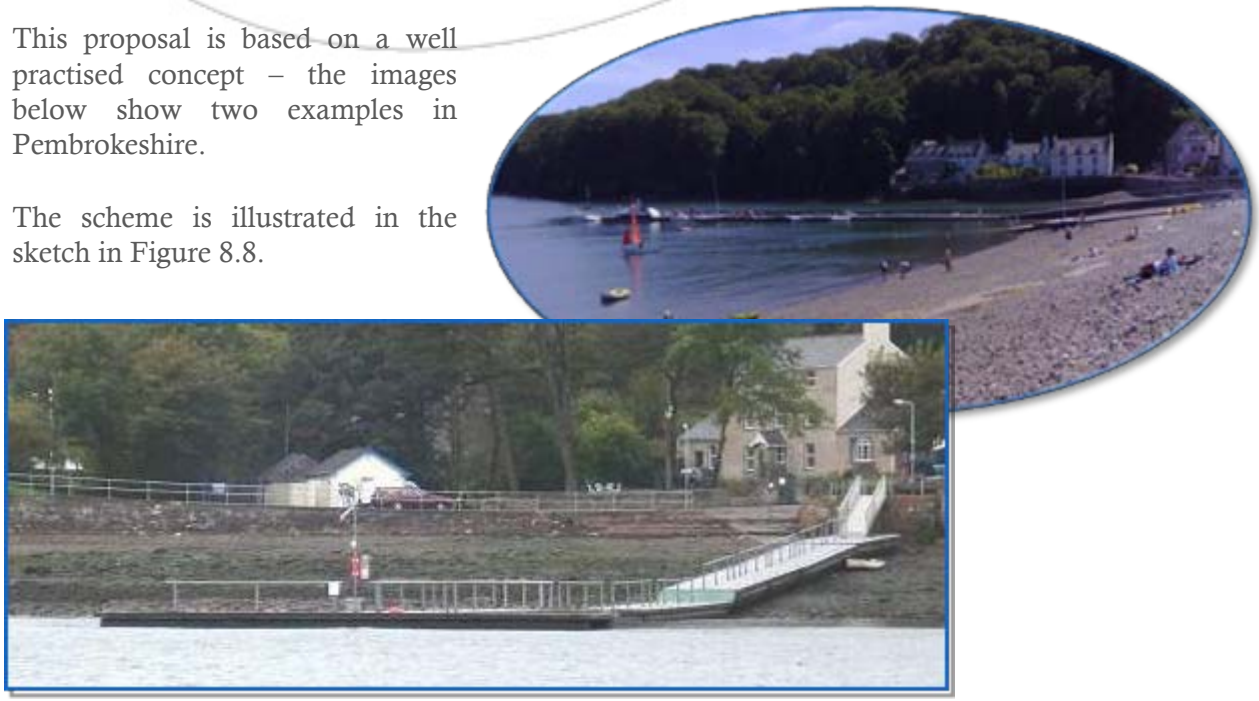
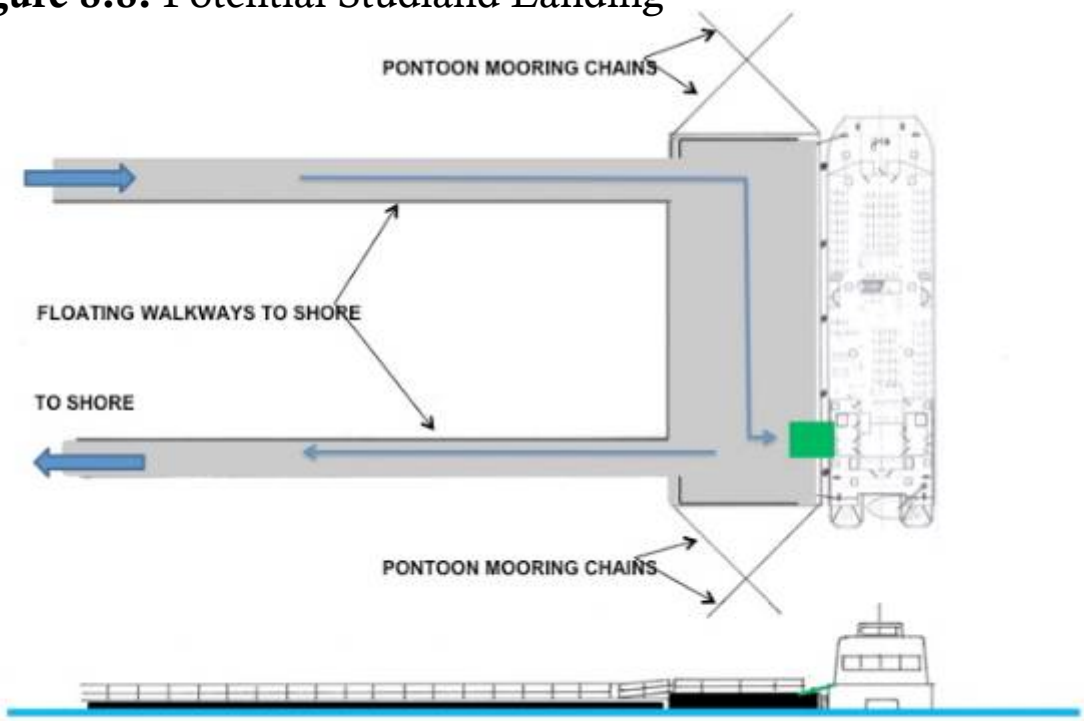


Figure 8.8: Potential Studland Landing



8.8) Poole Bay Service

A typical catamaran ferry for coastal waters is pictured below. This vessel was constructed by Oma Baatbyggeri of Norway. The key particulars are:

- Length overall: 26m
- Beam: 9.0 m
- Draft: 1.5 m
- Service Speed: up to 20 knots

An outline timetable for this service is detailed in Figure 8.9. The service offers four journeys per day, with a varying itinerary designed to serve the load centres, but also to incorporate Swanage at the beginning and the end of the day. The journeys are:

- Bournemouth → Sandbanks → Studland → Swanage → Sandbanks → Bournemouth
- Bournemouth → Studland → Sandbanks → Studland → Bournemouth (then repeated)
- Bournemouth → Sandbanks → Studland → Swanage → Studland → Sandbanks → Bournemouth

Journey times compare well with land transport options.

Bmth - Stud	Bmth Pier	Studland	Duration	Notes
Trip	Dep	Arr	mins	
1	9:00	9:40	0:40	via Sbanks
2	11:25	11:45	0:20	Direct
3	13:30	13:50	0:20	Direct
4	15:35	16:15	0:40	via Sbanks

Stud - Bmth	Studland	Bmth Pier	Duration	Notes
Trip	Dep	Arr	mins	
1		No service		
2	13:00	13:20	0:20	Direct
3	14:50	15:10	0:20	Direct
4	17:30	18:10	0:40	via Sbanks

Sbanks - Stud	Sandbanks	Studland	Duration	
Trip	Dep	Arr	mins	
1	9:25	9:40	0:15	
2	12:20	12:35	0:15	
3	14:25	14:40	0:15	
4	16:00	16:15	0:15	

Stud - Sbanks	Studland	Sbanks	Duration	
Trip	Dep	Arr	mins	
1		No service		
2	11:55	12:10	0:15	
3	14:00	14:15	0:15	
4	17:30	17:45	0:15	

Figure 8.9: Studland Service Potential Timetable

Bmth - Swan	Bmth Pier	Swan	Duration	Notes
Trip	Dep	Arr	mins	
1	9:00	10:05	1:05	via Sbanks & Stud
4	15:35	16:40	1:05	via Sbanks & Stud

Swan - Bmth	Swan	Bmth Pier	Duration	Notes
Trip	Dep	Arr	mins	
1	10:30	11:15	0:45	via Sbanks
4	17:05	18:10	1:05	via Stud & Sbanks

Sbanks - Swan	Sandbanks	Swan	Duration	Notes
Trip	Dep	Arr	mins	
1	9:25	10:05	0:40	via Studland
4	16:00	16:40	0:40	via Studland

Swan - Sbanks	Swan	Sbanks	Duration	Notes
Trip	Dep	Arr	mins	
1	10:30	10:50	0:20	Direct
4	17:05	17:45	0:40	via Studland

Bmth - Sbanks	Bmth Pier	Sbanks	Duration	
Trip	Dep	Arr	mins	
1	9:00	9:15	0:15	
4	15:35	15:50	0:15	

Sbanks - Bmth	Sandbanks	Bmth Pier	Duration	
Trip	Dep	Arr	mins	
1	11:00	11:15	0:15	
4	17:55	18:10	0:15	

PTQ - Bmth	PTQ	Bmth Pier	Bmth	PTQ
	Dep	Arr	Dep	Arr
	8:20	8:50	18:20	18:50

The various permutations make this analysis quite complicated. To avoid further intricacy, all trips for this service are assumed to be returns, although in practice many people might choose to go out one way with the new ferry service, and the other with the chain ferry (i.e. walking between these).

The headline Sandbanks to Studland fare is put at £4.50 return. This compares with the chain ferry £6.40 return for a car (and its occupants), and £1 return for a pedestrian. Assuming that people who arrive by car will have to pay for parking either at Sandbanks or on Studland, the value of taking the new service is both in the benefit of being transported to a location three miles along the beach without congested driving or a long walk, and also the intrinsic value of the ferry trip itself.

The Bournemouth to Swanage return fare is £10.50, which compares well with the Dorset Cruises return fare of £12.50 adult and £6.25 child. The £8.90 return fare for Studland compares even more favorably. Other fares have been set at appropriate levels.

Note that the vessel is assumed to overnight in Poole, and allowance has been made for the possibility that some people (30 per day paying £5 return) will use the ferry to take the 30 minute journey to Bournemouth for work in the morning.

8.9) Results

Four outline options have been developed for the analysis, and the financial assessments are detailed in Figure 8.10.

Variations between the options can be observed by identifying the **blue text**.

Figure 8.10: Studland Service: Outline Financial Assessments

Option:	**3.1**	**3.2**	**3.3**	**3.4**
Revenue case:	Base Case	Hi Fare	Base Case	Hi Fare
Vessel:	New	New	2nd Hand	2nd Hand
Capacity passengers:	160	160	160	160
Type:	Catamaran	Catamaran	Catamaran	Catamaran
Cost '000:	2500	2500	900	900
Bournemouth to Studland return fare:	£8.90	£11.84	£8.90	£9.70
Sandbanks to Studland return fare:	£4.90	£6.52	£4.90	£5.34
Bournemouth to Swanage return fare:	£10.50	£13.97	£10.50	£11.45
Sandbanks to Swanage return fare:	£8.90	£11.84	£8.90	£9.70
Bournemouth to Sandbanks return fare:	£6.90	£9.18	£6.90	£7.52
Trip rotations:	4	4	4	4
Departure of first sailing from Poole Town Qy:	8:20	8:20	8:20	8:20
Arrival of last sailing:	18:50	18:50	18:50	18:50
Operational day:	10:30	10:30	10:30	10:30
Speed (up to) knots:	20	20	20	20
Average operational downtime:	19%	19%	19%	19%
Location for overnight:	Poole Hrbr	Poole Hrbr	Poole Hrbr	Poole Hrbr
Revenues '000:	576	762	576	627
Operating costs '000:	-488	-488	-463	-463
Operating P/L '000:	88	275	113	163
Mortgage '000:	-236	-236	-85	-132
Cash position '000:	**-148**	**39**	**28**	**32**
Return on sales:	*NA*	*5.1%*	*4.8%*	*5.0%*
IRR:	*NA*	*NA*	*10.3%*	*9.0%*
Individual passengers carried / Fares bought:	74,429	74,429	74,429	74,429
Passenger trips (inc. out and back):	148,858	148,858	148,858	148,858
Passengers buying fares for Bmth:	11,197	11,197	11,197	11,197
Passengers buying fares for Sbanks:	6,587	6,587	6,587	6,587
Passengers buying fares for Studland:	53,352	53,352	53,352	53,352
Passengers buying fares for Swanage:	3,293	3,293	3,293	3,293
Proportion of fares that are return fares:	100%	100%	100%	100%
Total infrastructure investment '000:	498	498	498	498
Infrastructure Funding	Grant	Grant	Grant	Fares

8.10) Conclusion

The key findings are:

- Swanage and Bournemouth Piers provide useable facilities, albeit subject to particular weather constraints.
- Operation to/from Sandbanks and Studland are feasible in cooperation with the National Trust.
- Studland requires creation of some kind of landing facility.

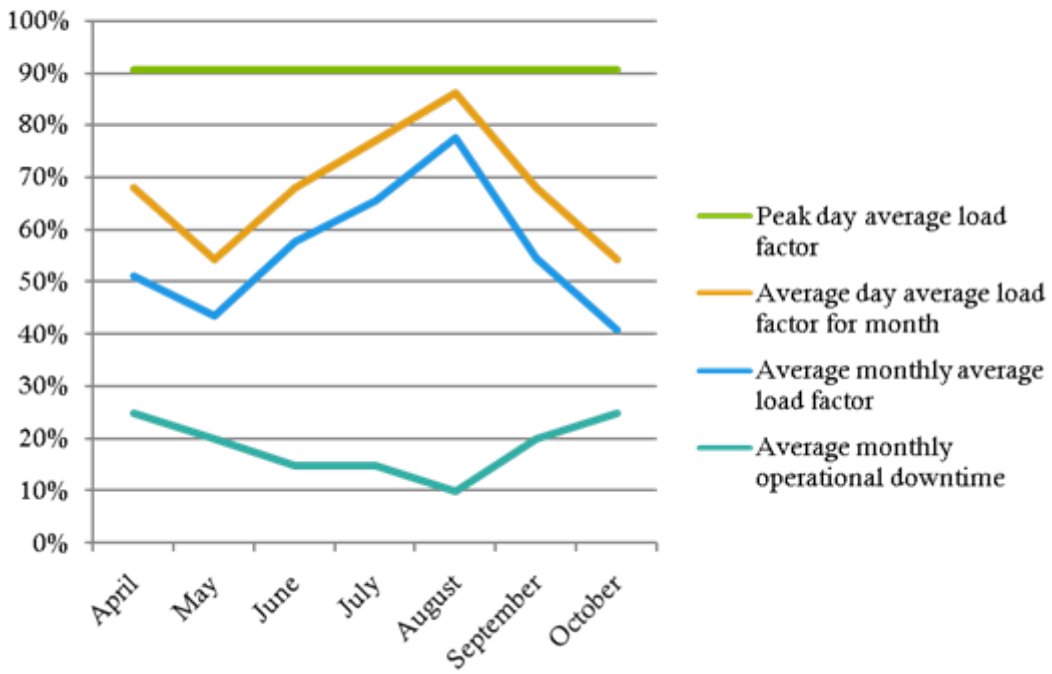
The analysis indicates that the service would be viable (assuming grant funding for a landing facility at Studland) if a vessel can be sourced at up to £0.9 million,. This is about a third of the cost of a new vessel, and implies the vessel would be about 13 to 15 years old.

If the capital cost for Studland was recovered through fares, these would have to rise by 9%. Whether this is advisable depends on people's "elasticity of demand" which is very difficult to predict for such a gap. In principle, fewer people will travel with a higher fare, and revenue may not increase as hoped.

If a new vessel was purchased, fares would need to increase by about 33% to maintain viability (with grant funding for Studland). This is likely to be too expensive.

Revenue is driven by the load factors illustrated in Figure 8.11.

Figure 8.11: Poole Bay Option 3.3 Load Factors



The service would carry 74,000 passengers making 148,000 trips. Distribution of passengers by month is shown in Figure 8.12.

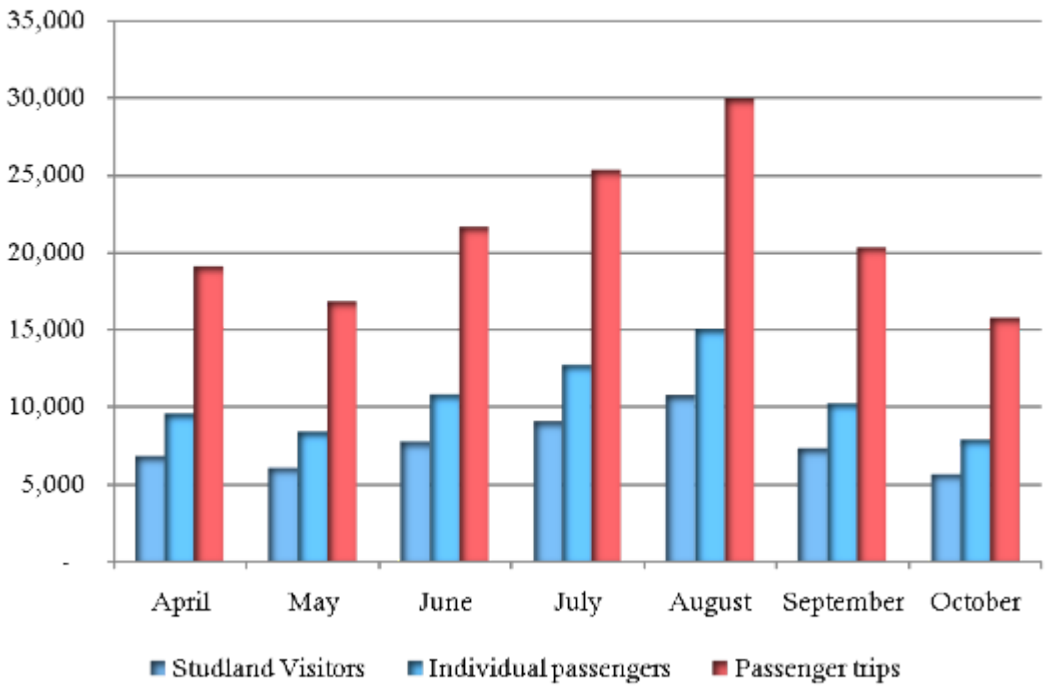
The following number of destination fares are generated:

- Bournemouth: 11,000 per annum
- Sandbanks: 7,000 per annum
- Studland: 53,000 per annum
- Swanage: 3,000 per annum

Studland attracts over one million visitors per annum. The scale of this suggests once again that up to 5% of people visiting the area must use the ferry service, and we feel that this is reasonable under the circumstances.

Other destinations receive large numbers of visitors, for example Swanage Railway over 200,000 annually, and Durlston Country Park 240,000. Thus there is likely to be ample demand for the service.

Figure 8.12: Poole Bay Option 3.3
Passenger Distribution



9) Conclusions

9.1) Key findings

It is concluded that waterborne transport can play a significant role if an environment can be created in which reliable services can operate with useful regularity at an affordable price. The survey strongly supports this conclusion.

There is a remarkable consistency amongst the conclusions for each Pilot Project.

Based on fares identified, and considering the product being offered, routes are likely to be viable at maturity for a commercial operator with vessel costs in the region of £0.7 million to £1.0 million.

Good opportunities appear to exist, not just for commercial transport operators but also for those such as land and visitor attraction owners or trustees that have wider interests in balancing the economic and ecological impacts of visitors and in the management of visitor choice. This could be particularly helpful where it not only aligns with the managing organisations' strategic policies on sustainable access, but also contributes to future area wide strategies and policies through consistent private and public sector car park management, which dissuades car access to attractions or sensitive landscape areas in favour of waterborne access to them.

The volumes of passengers required for commercial viability imply that the services must attract perhaps 5% of visitors to each location to use the service, and this does not seem unreasonable. This is a key factor, and it is believed that there are few other locations in the UK where potential demand is of such a scale in accessible marine locations.

The services are orientated towards the leisure market (both local people and visitors), and will contribute to a significant reduction in car use during peak periods on the following roads:

- A3052 East Devon coastal road.
- A353 linking Weymouth and Portland.
- The A351 and B3351 and local roads accessing Swanage and Studland.

Regarding landing facilities:

- The Weymouth – Portland service could operate from existing facilities.
- Capital costs for infrastructure for the East Devon service are in the region of £1.4 million, and would have to be grant funded.
- Capital costs for Studland of about £0.5 million might possibly be funded through fares, but a grant would be highly preferable to support lower fares and higher demand.

If no infrastructure is put in place, there will be no services!

9.2) Vessels

If the infrastructure is provided, this study shows that it is is possible to operate a viable commercial service when it matures. New vessels would be preferable, and cheaper to maintain, but would either require subsidy or more generous assumptions to be financially viable.

The study is based upon the concept of buying a vessel for a route, and then operating it. This may indeed happen, but equally likely is that existing operators such as Dorset Cruises and Stuart Lines will move to provide new services based on the new infrastructure provided, possibly using their existing vessels, or accelerating or modifying plans for new vessels. Thus, the private sector will innovate and respond to the prospect presented, with itineraries based on the market opportunities as they perceive them.

Some operators may look for suitable second hand vessels. The shipbroking industry tends to apply a % of new cost rule of thumb as a guide for second hand values, although in practice market pricing applies – prices rise when demand is high, and vice versa.

At any given time, there may or may not be a suitable vessel available. A vessel may be bigger / smaller or faster / slower than sought, leading to a revised itinerary. A vessel may require modification (e.g. to increase passenger numbers or power), as well as refurbishment.

A review of vessels presently available illustrates current options.

1991, 175 pax, 29m

1988, 149 pax, 20m, US$ 980,000

1985, 200 pax, 29m, GB£640,000

2002, 196 pax, 26m

9.3) Key risks

From a financial point of view, the key risks are:

- Demand does not materialise at the price point estimated.
- Operational downtime is higher than anticipated.
- Operating costs are higher than anticipated, for example due to changes in fuel price or for regulatory reasons.

It is inevitable that there is considerable uncertainty around some of these issues at this pioneering stage.

It is self-evident that no private operator will make any financial commitment until there is an irrevocable move to provide appropriate infrastructure.

The risks to a private operator in attempting to start a service are significant. It may be that a subsidy similar to that for the establishment of the CoastlinX53 Jurassic Bus service is required.

For Poole Bay, an organisation such as the National Trust or a local authority with influence over local car parks would be in a position to encourage more use of the ferry service, e.g. through applying capacity constraints on cars and higher car park charges.

It is important to note that there are also upside financial risks to the appraisal:

- The Poole Bay market might support a two vessel service given the visitor numbers at Durlston and Swanage.
- Passenger capacity might be increased. For example the Rathlin Express (model vessel for East Devon service) has an actual capacity of 100. The second hand vessels generally offer more capacity than those adopted for analysis of the Portland-Weymouth and Poole Bay services.
- It is possible that a three man crew could be used either habitually or at times of year when demand is relatively low (in fact the Rathlin Express operates with a two man crew – albeit at times under particular circumstances).

The public sector also has a major role in supporting the viability of services in terms of:

- Integration of other public transport service with the marine options.
- Marketing and promotion and generation of demand.

Failure of the public sector to discharge these roles is a significant risk to a private operator.

9.4) Recommendations

The study identified substantial opportunity for expanding travel choices along the study coast with consequent, significant relief from the impact of current car-based access. Solid research evidence indicates that alternative access to visitor attractions and sensitive landscape areas by waterborne transport could be piloted through three viable services. These findings were endorsed by the Local Transport Plan.

9.4.1) East Devon Service

There is no prospect of any significant regular ferry service without investment in infrastructure. Being realistic, this will take about 2½ to 3 years – perhaps 18 months for design and obtaining permissions, and 12 months to construct (i.e. a summer season for works, followed by a winter non-operational period).

Discussions with operators should be progressed to obtain their future support in principle, but the main effort must go into preparing a business plan and justification for infrastructure investment. This will need to deliver policy objectives, and demonstrate economic and environmental benefits offered by the schemes. Proper technical studies are needed to decide the precise location on where, what and how to build.

9.4.2) Weymouth to Portland Service

Investment in infrastructure is not needed, and this service could be operating in 2011 if a suitable vessel can be found. Assuming that the local authorities will not themselves set up a ferry company, it is essential to enter into discussions with operators such as White Motor Boats Ltd. to see how they can be encouraged to provide a passenger service carrying higher volumes.

A business plan will need to be prepared by whichever operator is willing to investigate this. Assuming that some local authority revenue support might be required to get a service going, the local authorities concerned will need to prepare a justification for this based on economic and environmental benefits, and any other relevant criteria.

9.4.3) Poole Bay Service

Partnering with the National Trust is required, since it is the owner of the land at Studland and the jetty at Sandbanks, is a potential funder of infrastructure, and indeed a potential vessel owner and operator.

The easiest path would be for the National Trust to own the vessel, even if this is operated by a third party. In this case, a business plan should be prepared which can provide the basis for an investment decision on infrastructure and a vessel. Both of these will require an assessment of the economic and environmental benefits and any other criteria. This plan might also consider options for actual operation of the service by the private sector. Some technical studies will be needed. The alternative path is for private operators to be engaged as potential investors in vessels in a three way partnership.

9.4.4) Next steps

Consistent with bringing forward any new ideas, there are of course many alternative ways to progress. It may be that private sector investment initiatives and innovative partnerships may be the route to unlocking necessary investment particularly for vessel and landing infrastructure development and procurement.

Opportunities exist for example in European partnership ventures to unlock EU funding through the development of a network of European Ferry operators. Undoubtedly such ventures offer the opportunity to share expertise, knowledge and experience.

Without a doubt the evidence brought forward through this feasibility study indicates that the Dorset and East Devon coast has a demand, as yet substantially untapped, for widening travel choices by including waterborne transport. There could be significant opportunities for entrepreneurial waterborne transport operators.