

Gourock-Dunoon Ferry Service – Feasibility Study of a Future Passenger and Vehicle Service with the Vehicle Portion being non-Subsidised

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Summary

Until July 2011, Cowal Ferries operated a passenger and vehicle ferry service across the Firth of Clyde between Gourock and Dunoon town centres. Since then, the Argyll Ferries town centre service has carried foot-passengers only, the service being provided by two passenger ferries. The Gourock-Dunoon route is the busiest ferry crossing in Scotland and the two existing ferry services (Argyll Ferries and Western Ferries' passenger and vehicle service) provide a key link between Cowal / Dunoon and the central belt.

In November 2012 MVA Consultancy, together with The Maritime Group (International) Limited, were commissioned by Transport Scotland to carry out a feasibility study on future ferry services between Dunoon and Gourock town centres. The overarching aim of the study was to determine the feasibility of a service with the vehicle-carrying portion of the service operating without subsidy and the passenger-carrying portion being subsidised in a manner compatible with EU law.

The stated Scottish Government policy objective is *'that there shall be a safe, reliable, frequent, commuter ferry service between Dunoon town centre and the rail terminal at Gourock. The service must be able to operate reliably throughout the year in the weather and sea conditions experienced on the Firth of Clyde and provide an acceptable level of comfort to meet the reasonable expectations of users including commuters, the elderly and disabled and tourists. It is the wish of Scottish Ministers that the ferry service shall carry both vehicles and passengers.'*

The study adopted an incremental approach. Firstly, the defensible subsidy associated with running a foot-passenger only service is determined. Secondly, the balance of costs and revenues associated with moving from a fit-for-purpose foot-passenger service (in terms of weather related reliability) to an equivalent timetable delivered with passenger and vehicle carrying ferries between the town centres is then determined. If the incremental costs of this move are greater than the incremental revenue generated, then this proposition is not feasible. If however the incremental revenue outweighs the incremental costs, then the proposition is deemed to be feasible. This is the definition of 'feasibility' adopted for this study.

Detailed analysis was carried out to arrive at the conclusions on the feasibility of a future passenger and vehicle service. This included outputs from a consultation exercise with local residents / stakeholders and users of the local ferry services, research on the appropriate vessel specification and existing harbour infrastructure, an assessment of historical carryings data on the route, fares analysis and projections of potential demand for the services.

The findings from the analysis were brought together under different vessel (ie timetable) and economic growth scenarios to forecast the incremental cost and revenue for different levels of service, and the key results are shown in the table below.

15-year Incremental Costs and Revenues, by Vessel and Growth Scenario (£'000)

PASSENGER & VEHICLE - Incremental Values compared to a Foot Passenger only service				
£'000	Static	Gradual Recovery	Trend Growth	Decline
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
2 vessel - 56% market share				
Incremental Revenue	£61,524	£64,074	£72,334	£53,733
Pier dues	-£28,755	-£30,011	-£33,736	-£25,307
Berthing dues	-£9,644	-£9,644	-£9,644	-£9,644
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£53,770	-£55,026	-£58,751	-£50,323
Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Market Share Tipping Point</i>	41%	39%	35%	47%
3 vessel - 62% market share				
Incremental Revenue	£69,182	£72,070	£81,381	£60,413
Pier dues	-£32,355	-£33,777	-£37,983	-£28,468
Berthing dues	-£12,084	-£12,084	-£12,084	-£12,084
Fuel	-£5,293	-£5,293	-£5,293	-£5,293
Vessels	-£12,393	-£12,393	-£12,393	-£12,393
Other costs	-£4,860	-£4,860	-£4,860	-£4,860
Crew	-£450	-£450	-£450	-£450
Total Incremental Cost	-£67,435	-£68,858	-£73,063	-£63,548
Net Revenue	£1,747	£3,212	£8,318	-£3,135
<i>Market Share Tipping Point</i>	57%	54%	48%	66%
WF Timetable - 64% market share				
Incremental Revenue	£71,505	£74,492	£84,118	£62,441
Pier dues	-£33,443	-£34,914	-£39,263	-£29,424
Berthing dues	-£13,071	-£13,071	-£13,071	-£13,071
Fuel	-£5,437	-£5,437	-£5,437	-£5,437
Vessels	-£16,524	-£16,524	-£16,524	-£16,524
Other costs	-£6,480	-£6,480	-£6,480	-£6,480
Crew	-£600	-£600	-£600	-£600
Total Incremental Cost	-£75,554	-£77,026	-£81,374	-£71,536
Net Revenue	-£4,049	-£2,534	£2,744	-£9,095
<i>Market Share Tipping Point</i>	69%	66%	57%	79%

It can be seen that a large majority of the incremental costs associated with moving from a foot-passenger service to a passenger and vehicle service are attributed to increased Harbour Dues: both Pier Dues (higher traffic levels), and Berthing Dues (larger vessel). These two elements account for around 70% of the total incremental cost in a two-vessel scenario, based on current published rates at both harbours.

The table shows, for example, that under a two vessel service, vehicle based carryings are forecast after an initial ramp-up to reach around 56% of the total market (ie the total of the Gourock-Dunoon and Hunter's Quay-McInroy's Point crossings). This is estimated to generate incremental revenue, ie compared to a passenger only service, over a 15-year period of £64.1m in a Gradual Recovery Scenario. This is sufficient to cover the incremental costs of £55.0m over the same period by £9.0m. The table also shows that under this scenario, the service would have a 'tipping point' (where revenue is less than the costs) equating to a market share of 39%, ie the service would be feasible with anything over 39% of the total market.

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The table also shows that under a two vessel service, if there was a faster recovery to Trend Growth (as seen pre-recession) on the route leading to an increase in total demand on the crossing, the incremental revenue would outweigh the incremental cost over the 15-year period by £13.6m and the service would have a tipping point at 35%. Under the Static demand scenario, the incremental revenue would outweigh the incremental cost over the 15-year period by £7.8m and the service would have a tipping point at 41%.

It is forecast that if an operator were to provide the same timetable service as Western Ferries currently provides, the market share would increase to 64%. However, the additional incremental revenue generated by the additional carryings would not outweigh the additional incremental costs and the service would have a financial deficit under all the economic scenarios considered, except the highest growth scenario.

Overall the table shows that, given the assumptions made here, a passenger and vehicle ferry service would be most feasible under a two vessel scenario. It could attract the level of market share, and therefore generate sufficient incremental revenue, to cover the various incremental costs of delivering the service. Note though that the purpose of this study was to explore the feasibility rather than the commercial attractiveness of a vehicle ferry.

It has been assumed that the current shoreside infrastructure and facilities could be used for a new ferry service in the short term, although investment would be required in the medium term to maintain and improve the service offering.

The absolute subsidy implied by the foot-passenger service is also clearly important (ie the 'defensible subsidy'). The foot-passenger vessel specified here has focussed on matching the weather related reliability performance of the previous 'Streaker' vessels, and thus the vessels specified would be anticipated to have higher costs than the existing passenger vessels on the route.

It has been estimated that a two vessel foot-passenger service would require an annual subsidy of around £2.9m, based on the vessels specified here. The current Argyll Ferries contract grants an annual operating subsidy of £1.7m per annum. In contrast, the previous Cowal Ferries service received an annual subsidy of more than £3m based on the larger Streaker vessels with their higher crewing levels. Any vessel scenario involving more than two vessels would require a substantially greater subsidy.

These 'core findings' were then subjected to a range of sensitivity tests focussing on some of the key variables influencing feasibility - crewing levels, gross tonnage of the passenger and vehicle vessel (this affects berthing dues), and the level of harbour dues. These tests underline the importance of the level of pier dues in particular to the overall feasibility of the service. The 'core findings' were based on current published rates at both harbours. In principle, harbour dues may be subject to a commercial negotiation at Dunoon to high volume users, although harbour dues at Gourock are not currently subject to negotiation. Argyll and Bute Council has noted that harbour dues are a significant part of the cost of the vehicle ferry service and consequently they would seek to minimise such charges and would be willing to review the basis upon which harbour dues at Dunoon are set in the context of the introduction of a new service. Such a review would be informed by: the facility's operating and staff costs; inspection, maintenance and whole life asset management costs; and any prudential borrowing costs required to fund future shoreside infrastructure associated with the new ferry service. There is scope for both harbour authorities / owners

Summary

to explore the basis upon which harbour dues are set in the future, provided they receive an adequate income to cover the costs of operation, maintenance and future investment.

The core findings also assumed no competitive response from Western Ferries due again to the level of uncertainty associated with this. However, in discussions with representatives of Western Ferries it was made clear that it is their stated intention to react to new competition in a way which seeks to protect their market share and commercial operation. There is however an alternative view that Western Ferries may not be able to mount or sustain a competitive response and therefore the company may have to retrench if it lost significant market share. It was not the purpose of this study to consider competitive response in detail. Nevertheless, a number of 'what if?' tests were undertaken to assess the sensitivity of the core findings to a competitive response from Western Ferries.

In summary there are a range of key potential 'upside' aspects (eg lower vessel gross tonnage, pier & berthing dues reduced through negotiation, Western Ferries retrenchment) and 'downside' aspects (eg higher gross tonnage, higher crewing levels and the nature of the response from Western Ferries) which could affect the viability of the service, and the balance of these would be crucial in determining the ultimate feasibility of the town centre passenger and vehicle service. Some of the inherent uncertainties associated with these aspects of the prospective service could be resolved as part of a market testing exercise whilst other aspects (in particular the response of Western Ferries) would only become apparent on commencement of the service.

This study has therefore demonstrated that, given the assumptions made and analysis undertaken here, a passenger and vehicle ferry service is feasible. This core finding is subject to the uncertainties explored through the sensitivity testing, but the study does provide an evidence base which could be used to inform discussions with potential operators. Ultimately, it is their judgement and level of interest in this proposition that will determine the future feasibility of a passenger and vehicle service between Gourock and Dunoon town centres.

1 Introduction

1.1 Background

- 1.1.1 MVA Consultancy in association with The Maritime Group (International) Limited was appointed by Transport Scotland in November 2012 to undertake a Feasibility Study into the operation of a passenger and vehicle carrying ferry service between Gourock and Dunoon town centres, where the vehicle carrying element of the service is required to operate demonstrably without subsidy. The study was led by a Steering Group which comprised Argyll and Bute Council, Dunoon Gourock Ferry Action Group (DGFAG), Inverclyde Council and Transport Scotland.
- 1.1.2 This study has its origins in the switch (following a European Commission ruling¹) from a passenger and vehicle ferry between the town centres (operated by Cowal Ferries) to a foot-passenger only service (currently operated by Argyll Ferries). The EC ruling notes that a vehicle carrying service could legally be operated so long as it does so without subsidy (ie subsidy is permitted for the foot-passenger element of the service only).
- 1.1.3 The Terms of Reference (ToR) for this study stated that *'The policy objective is that there shall be a safe, reliable, frequent, commuter ferry service between Dunoon town centre and the rail terminal at Gourock. The service must be able to operate reliably throughout the year in the weather and sea conditions experienced on the Firth of Clyde and provide an acceptable level of comfort to meet the reasonable expectations of users including commuters, the elderly and disabled and tourists. It is the wish of Scottish Ministers that the ferry service shall carry both vehicles and passengers.'*
- 1.1.4 The weather related reliability record delivered by the current foot-passenger service provided by Argyll Ferries is inferior to the level of weather related reliability achieved by the previous Cowal Ferries 'Streaker' vessels and this has been a matter of concern locally. As such a key consideration here is that the vessels assessed as part of this feasibility study should provide weather related reliability performance at least as good as the previous Streaker vessels.

1.2 Route History

Background

- 1.2.1 A ferry service between Dunoon town centre and Gourock town centre / railway station, a distance of about six kilometres, has operated since at least the nineteenth century. Since the 1940s this service was operated by a Government owned company (CalMac Ferries Ltd) with increasing dependence on subsidy. Western Ferries, a privately-owned company, began operating a competing commercial service in 1973. This operates between two different piers (Hunter's Quay on the outskirts of Dunoon and McInroy's Point, about two kilometres from Gourock town centre / railway station). This involves a shorter crossing than the Gourock Pier - Dunoon Pier service but one that is less convenient for passengers wishing to

¹ http://ec.europa.eu/energy/coal/state_aid/doc/decisions/2008/2008_0016_uk_c.pdf

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travel onwards by rail from Gourock or by bus from Dunoon. This service commenced using two vessels and was gradually developed through investment in shoreside infrastructure and vessels over the years. Four vessels currently operate the route providing a service every 15 minutes at certain times of the week, with a 20 minute service being more typical. Western are due to take delivery of two new vessels in August 2013.

- 1.2.2 In the early 1980s, Government recognised that the prime benefit of the town centre subsidised service was to foot-passengers and that there were difficulties in subsidising a vehicle service when an unsubsidised operator was providing a vehicle service on a broadly equivalent route. A range of solutions was considered and the approach that was adopted involved the continuation of the Caledonian MacBrayne service but with the subsidy to be targeted only on the passenger element of the service. The vehicle element of the service was expected to pay for itself on a commercial basis. In addition, timetable restrictions were put in place (in terms of frequency and length of operating day) to reduce the potential for the subsidised service to harm the commercial interests of the unsubsidised operator.
- 1.2.3 In 1999, the Scottish Executive began to consider the implications of the Maritime Cabotage Regulation for the Clyde and Hebrides Ferry Services run by the then Caledonian MacBrayne Ltd, including the Gourock Pier to Dunoon Pier service. Following public consultation in 2000, the Executive, in early 2001, sought the Commission's views on the proposed approach to tendering. This involved tendering the Clyde and Hebrides Ferry Services as a single network, with the proposal that the Gourock Pier to Dunoon Pier service should be designated as a passenger only service. In November 2001, the Commission indicated that it would not stand in the way of the Executive tendering the services in this way. In 2002, the Executive consulted on the detailed plans for tendering the network, including the passenger-only proposal for the Gourock Pier - Dunoon Pier route. The passenger-only service proposal was criticised by local stakeholders who wished a vehicle service to be retained between Gourock Pier and Dunoon Pier.
- 1.2.4 At that stage, the Scottish Executive sought further discussions with the Commission to establish what other approaches might be pursued in respect of Gourock - Dunoon. In 2003, the Scottish Executive consulted on a draft service specification for the Gourock - Dunoon service based on the approach outlined above. In mid-2004 the UK Permanent Representation to the EU presented a paper to the Commission on behalf of the Executive in respect of a possible state aid notification in relation to offering subsidy for a vehicle service where the existing restrictions would be removed. Following the response received from the Commission, but prior to reaching any conclusions about the Commission's response, the Scottish Executive decided to pursue an alternative option for the route which did not involve subsidy.

Recent Developments

- 1.2.5 The Gourock – Dunoon town centre route was put out to tender as a free-standing route in 2005. Although three companies were invited to tender for the route, no bids were received in the end. In the aftermath of this tendering process, Cowal Ferries (a subsidiary of the David MacBrayne Group Ltd) took over running of the route, and the service continued as before.
- 1.2.6 The Cowal Ferries service was latterly provided using a single Streaker, a side-loading vessel in line with the ferry terminal infrastructure at Gourock and the historic pier at Dunoon. This

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provided an hourly service each way and was supplemented by a passenger only vessel in the peak hours. This subsidised service was subject to a range of restrictions relating to service frequency and the length of the operating day which were introduced in the 1980s as noted above, the rationale being the presence of a nearby commercial operator (Western Ferries).

- 1.2.7 In the spring of 2005, to upgrade the deteriorating infrastructure, Dunoon seafront received a new breakwater located just to the south of the main pier. As well as protecting the Victorian pier, a new linkspan was installed alongside the breakwater to allow the berthing and loading of ro-ro (roll-on roll-off) ferries. This new linkspan was never used for a passenger and vehicle service though as the Streaker vessels which continued to serve the route required a side-loading facility at Dunoon. However, this new facility is clearly available for any future vehicle service, and is currently used by Argyll Ferries.
- 1.2.8 Following several complaints about Scottish ferry subsidies, including those paid to Cowal Ferries Ltd, the European Commission decided to undertake a formal and in-depth State aid investigation in April 2008. In November 2009, the European Commission published its Decision which accepted the justification for the continuation of subsidy to the Gourock-Dunoon town centre route (noting the sound economic and social justification for public support for a town centre passenger service) but required that this was (a) tendered by June 2011 and (b) subsidy was provided for passengers only. The winning bidder would be allowed to provide an unrestricted and commercial vehicle transport service, subject to appropriate accountancy measures and audit monitoring to prevent cross-subsidisation from the passenger service to the vehicle service.
- 1.2.9 Following a further open tendering process in 2011 (which allowed for a vehicle service to be provided at nil subsidy, in addition to the passenger service), Argyll Ferries (a David MacBrayne Ltd subsidiary) commenced a town centre foot-passengers only service on 1 July 2011, and this is being provided using two passenger ferries. These ferries, the twin-hulled MV *Ali Cat* and the mono-hulled MV *Argyll Flyer*, were built for side access. Here, they have to operate with stern access to the linkspans, making for awkward manoeuvring of the ships during berthing. Nevertheless, these two vessels are currently timetabled to provide a half-hourly service, tied broadly to Gourock train services to and from Glasgow, across a much longer operating day than was the case before July 2011. Cowal Ferries previously operated around 36 sailings per day, whilst Argyll Ferries now are scheduled to operate 58 sailings per day.

1.3 An Incremental Approach

- 1.3.1 As noted above, subsidy is permitted for the operation of a foot-passenger service. The approach taken here is therefore incremental in nature. The key issue is the balance of costs and revenues associated with moving from a fit for purpose foot-passenger service (in terms of weather related reliability) to an equivalent timetable delivered with a passenger and vehicle ferry between the town centres.
- 1.3.2 If the incremental costs of this move are greater than the incremental revenue generated, then this proposition is not feasible. If however the incremental revenue outweighs the incremental costs, then the proposition is feasible. This is the definition of 'feasibility'

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adopted for this study. The relative magnitude of these incremental revenues and costs is therefore the key issue for this study.

1.4 Argyll Ferries

1.4.1 It should be noted at the outset that this report is not explicitly concerned with the current foot-passenger only service. Rather it is focussed on the financial viability of a future town centre passenger and vehicle carrying service.

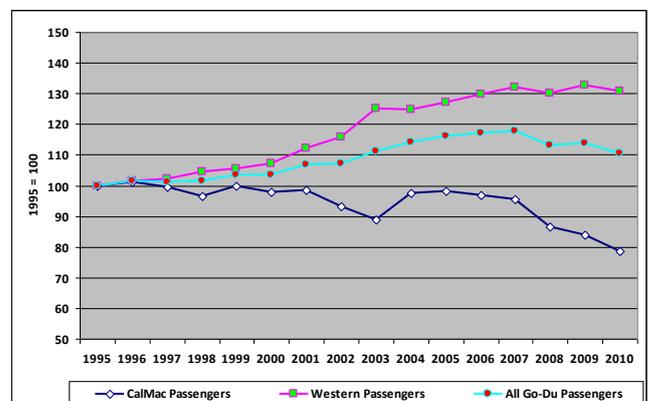
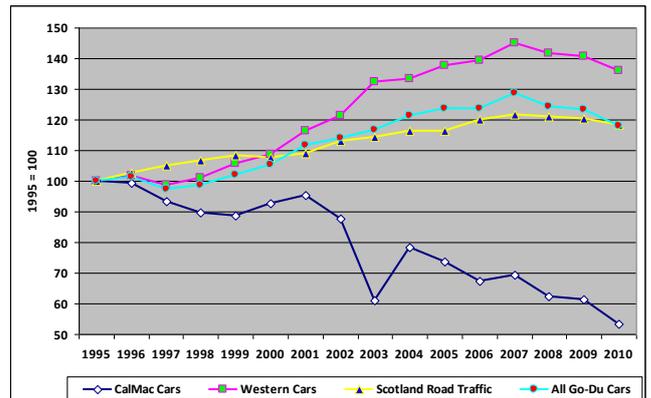
1.5 The Gourock-Dunoon Market

1.5.1 The key patronage figures for the route in 2010 (the last full year in which both Cowal and Western Ferries were operating) were:

- Passengers: CalMac 499k (28% share), Western 1,314k (72% share);
- Cars: CalMac 61k (10% share), Western 564k (90% share); and
- CVs (Commercial Vehicles) and Buses: CalMac 3k (9%), Western 33k (91%).

1.5.2 The charts below show how the market share of Western Ferries has grown sharply over time. The first chart shows car carryings indexed with 1995=100, with the second showing passenger carryings in the same way. Key messages from the graphs are:

- CalMac / Cowal car traffic declined by nearly 50% since 1995 (note that 2003 figures are affected by service disruption);
- overall total car route volumes have closely mirrored national road traffic levels – growing at an average of 1.2% per annum over this period;
- total and Western volumes peaked in 2007, with total route volumes down by 8% since then, declining at a faster rate than national road traffic (which is down by 3%);
- it is reasonable to assume that post June 2011, the majority of the 60k or so cars formerly on Cowal will have switched to Western – the other options being to travel by road via the Rest and be Thankful, to switch to travelling as a foot-passenger, or not travelling at all;
- at a total of 625k cars in 2010, this makes Gourock-Dunoon the



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busiest ferry crossing in Scotland by some margin, and significant in volumes by European standards;

- the decline in CalMac / Cowal passenger numbers has been less severe than car – however it has still experienced a greater than 20% drop since 1995;
- growth in total passenger volumes is less than car at 0.7% per annum over this period;
- Western Ferries passenger numbers have grown by 30% since 1995;
- as per the car trend, passenger numbers peaked in 2007; and
- by 2010, 75% of passengers on Cowal Ferries were foot-passengers.

1.5.3 By 2010, CalMac / Cowal's market share on the Clyde has dropped from 26% to 10% for cars and from 46% to 28% for passengers as shown below. The picture has been one of a steady transfer of volumes from CalMac / Cowal to Western Ferries over this time.

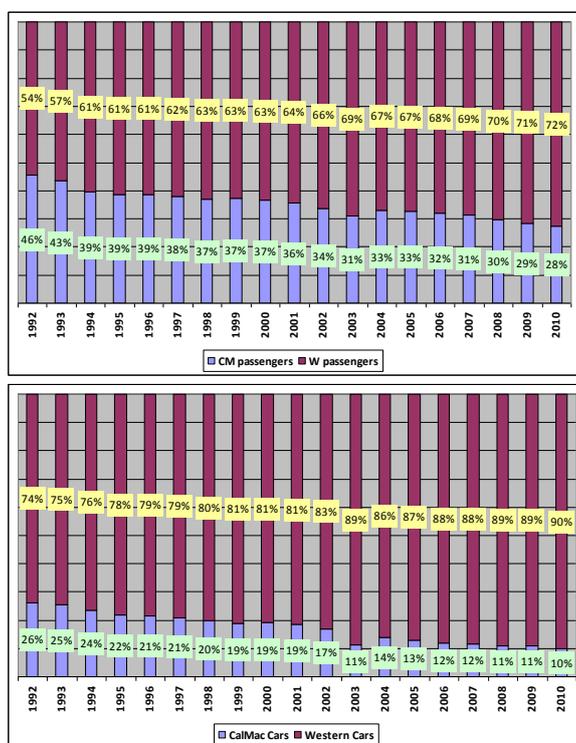


Figure 1.1 Transfer of volumes from CalMac / Cowal to Western Ferries

1.5.4 An important factor underlying these market share trends was the restricted nature of the Cowal Ferries operation. In addition to the timetable restrictions referred to previously, there were a range of ticketing practices (specifically the time expiry of tickets and the lack of transferability on multi-ticket purchases, and shore-based ticket purchasing only) which may have been contributory factors to this loss of market share over time. During this period Western Ferries also invested in new tonnage and therefore increased capacity and service frequency.

1.5.5 The market for foot-passengers on the Gourock-Dunoon town centre route (Cowal Ferries / Argyll Ferries) has also declined in recent years as follows:

- 2009: 390,711;

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- 2010: 373,690 (-4% year on year);
- 2011: 355,893 (-5%), including the first six months of the new passenger-only operation; and
- 2012: 341,300 (-4% year on year).

1.5.6 Within this current context of declining carryings, the purpose of this study is therefore to determine whether a new passenger and vehicle carrying service can generate sufficient carryings, and therefore revenue, to cover the cost and make the service feasible.

1.6 Structure of Report

1.6.1 The report is structured into the following chapters:

- Chapter 2: Consultation;
- Chapter 3: Socio-economic context;
- Chapter 4: Vessel specification;
- Chapter 5: Route data;
- Chapter 6: Route demand projections;
- Chapter 7: Incremental cost and revenue scenarios;
- Chapter 8: Sensitivity tests; and
- Chapter 9: Summary and conclusions.

2 Consultation

2.1 Introduction

2.1.1 An early part of the study was a wide ranging consultation exercise designed to elicit community and stakeholders views on the key study issues. This chapter sets out the details of the consultation.

2.2 The Consultations

2.2.1 The consultation process was developed in line with the requirements of the ToR, which envisaged:

- a public meeting in Dunoon;
- half-day stakeholder workshops in both Dunoon and Gourock;
- one-to-one meetings with stakeholders. This has included:
 - DGFAAG;
 - Argyll Ferries / David MacBrayne;
 - Western Ferries;
 - Clydeport;
 - Clyde Marine;
 - Caledonian Maritime Assets Limited; and
 - Maritime and Coastguard Agency.

2.2.2 A number of these meetings were focused more on collecting technical data for the study. We have not therefore reported on each meeting individually, rather we have focused on the key issues to emerge from the consultation process.

2.3 Consultation Event

2.3.1 The Gourock – Dunoon town centre to town centre ferry service has been an area of great public interest in Dunoon for many years. It was therefore seen as appropriate to open the consultation to as wide a public audience as possible. A public meeting, advertised via the local press, was held in the Queens Hall in Dunoon on Tuesday 18 December 2013 between 4pm and 8pm. The event was a drop in session where people were able to come along at their own convenience and discuss the issues with staff from MVA and The Maritime Group. The meeting was well attended, with some 400 people turning up to air their views. This was supplemented by a number of written submissions to the project team.

2.3.2 While there, attendees were presented with a short questionnaire which they were asked to complete. This was designed to help us understand issues such as:

- use of the current ferries – ie which service is used; journey purpose / frequency / destination; and type of ticket purchased;
- reason for the respondent's choice of ferry services; and

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- changes in travel patterns since the Cowal Ferries passenger and vehicle service was withdrawn in July 2011.

2.3.3 The findings from the questionnaire are the main focus of this Chapter, with a summary of issues emerging from the stakeholder consultation following discussion of the questionnaire returns.

2.4 Questionnaire Returns

2.4.1 There were 247 individual questionnaire responses. While this is a good response, given the size of the local population, it is important to note that this sample is not necessarily wholly representative of the wider views of the whole community, or indeed of all users of the ferry services. It could be that those who attended the public meeting may have done so because they had issues to raise. Conversely, those who did not have any particular issues with the current ferry arrangements may be under-represented in the sample. In addition, it is important to understand that many users of the services, particularly in the summer months, are visitors to the area and their views will not be reflected in the survey findings. As such it is important to note that the findings from the questionnaire survey were not used extensively in the analysis developed and reported later in this report. Nevertheless, the responses do provide a useful insight into the views of many local residents and users of the service.

Geographic Distribution of Respondents

2.4.2 Figure 2.1 below highlights the geographic distribution of respondents.

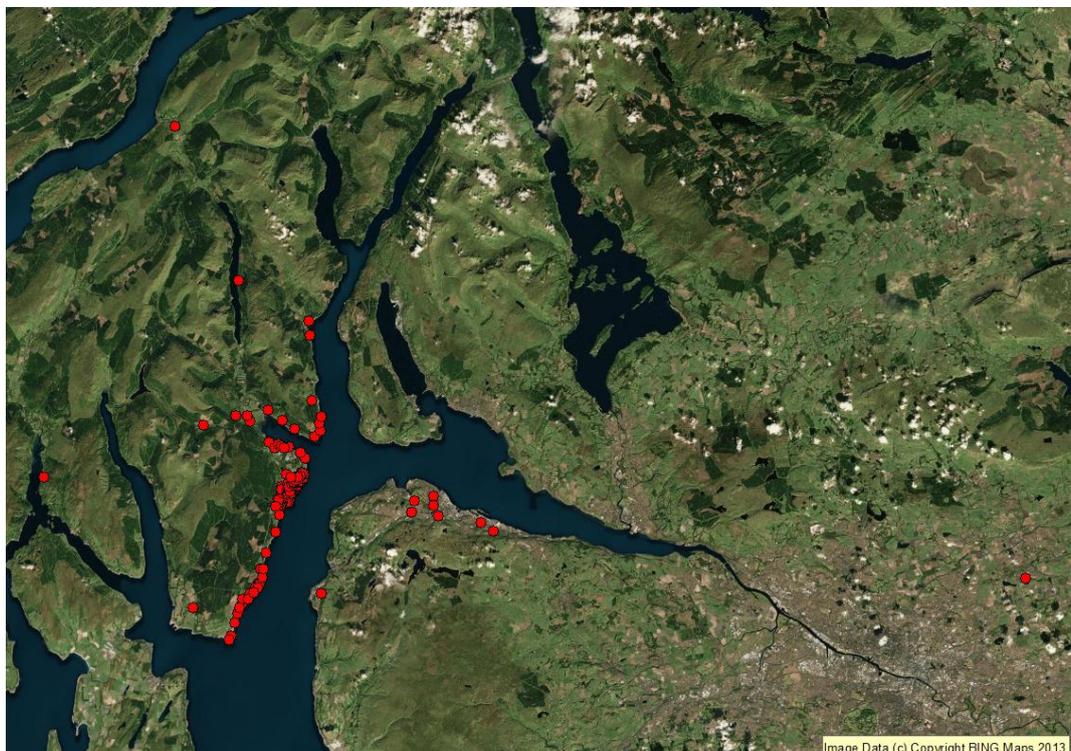


Figure 2.1 Respondent Home Postcodes

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2.4.3 As would be expected, the majority of attendees at the public meeting live on the Cowal Peninsula, with a large proportion in Dunoon itself. There is a fairly even spread of respondents from north and south of Dunoon, with a small number of respondents who live in Greenock and Gourrock.

Choice of Ferry Service

2.4.4 The questionnaire asked respondents which ferry service they currently use, Argyll Ferries or Western Ferries. There were 508 individual responses to this question (n = 508) and there was a roughly even split between the number of users of the two services, with the majority however using the Western Ferries service. This is illustrated in Figure 2.2 below.

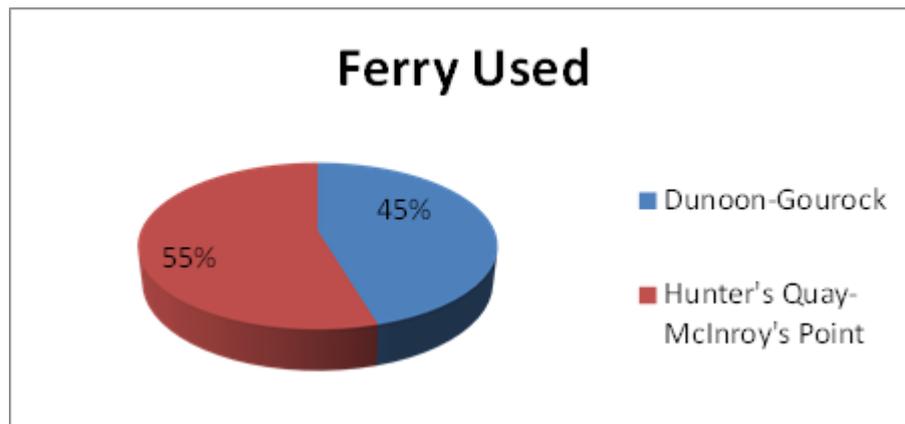


Figure 2.2 Respondents' Choice of Ferry Service

Journey Purpose

2.4.5 There were 853 individual journey purposes (n = 853) raised by consultees – the split of these journey purposes is illustrated in Figure 2.3 below.

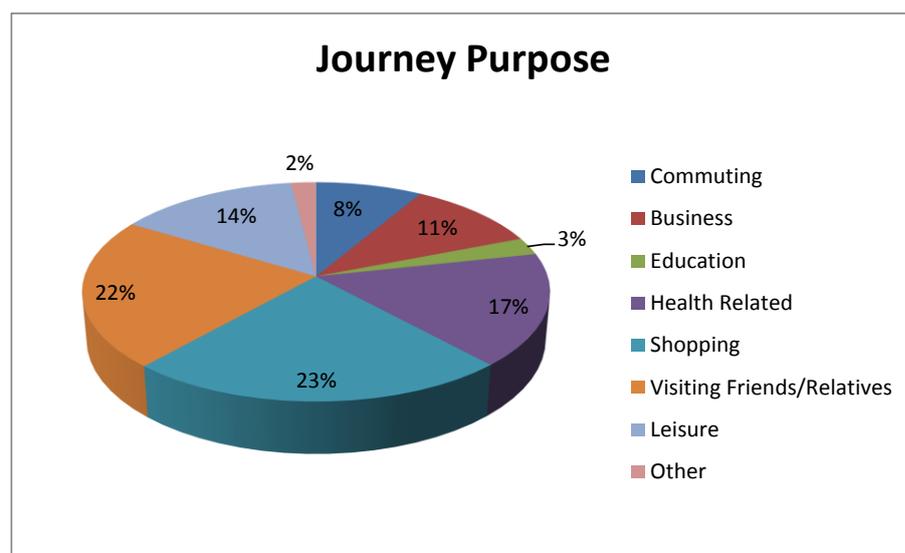


Figure 2.3 Respondents' Journey Purposes

2.4.6 Almost 60% of people indicated that the main purpose of their trip between Cowal and the rest of Scotland was for leisure, with the most prominent journey purpose being 'shopping'

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(23%), closely followed by 'visiting friends / relatives' (22%) and then 'leisure' (14%). The use of the ferry for health purposes is clearly important, with 17% of responses indicating this as a purpose for using the ferry. The 'commuting', 'business' and 'education' purposes account for a combined 22% of the total.

- 2.4.7 It should be noted however that the responses have not been weighted for frequency. For example, three people indicating that their main journey purpose was shopping might only make that type of trip once a week. However one person having a main trip purpose of work, may make that journey five times a week. So while more people may have indicated that their main trip purpose was shopping, more trips could be made for work.

Journey Destination

- 2.4.8 The questionnaire asked respondents to state their most frequent destination for each journey purpose when using the ferries. There were 735 individual responses (n=735), the results of which are shown in Figure 2.4 below.

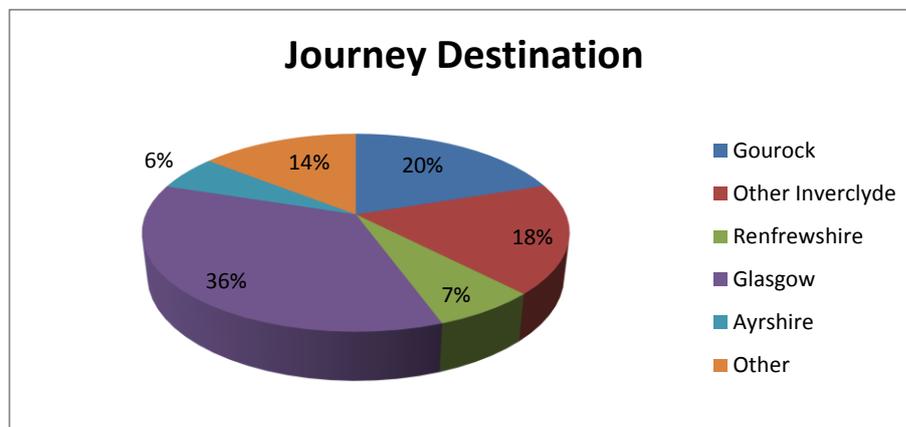


Figure 2.4 Respondents' Journey Destinations

- 2.4.9 The figure shows that the most frequent destination was west central Scotland (94%). Glasgow was by far the largest trip destination for the journey purposes indicated, accounting for 36% of the total. The survey suggests that 20% of the journeys were to Gourock. However, there is a possibility that some respondents selected Gourock because they were going to Gourock train station for onward travel – ie the town was an interim rather than a final destination.
- 2.4.10 Some 7% of the journeys indicated were to Renfrewshire. Given the predominance of shopping as a journey purpose, it is possible that a number of these trips were to Braehead Shopping Centre.

Mode of Travel

- 2.4.11 Figure 2.5 below highlights the mode of travel when using the ferry (eg foot-passenger, vehicle driver etc). There were 583 separate answers provided (n=583), again indicating that people were using different modes when on the ferries.

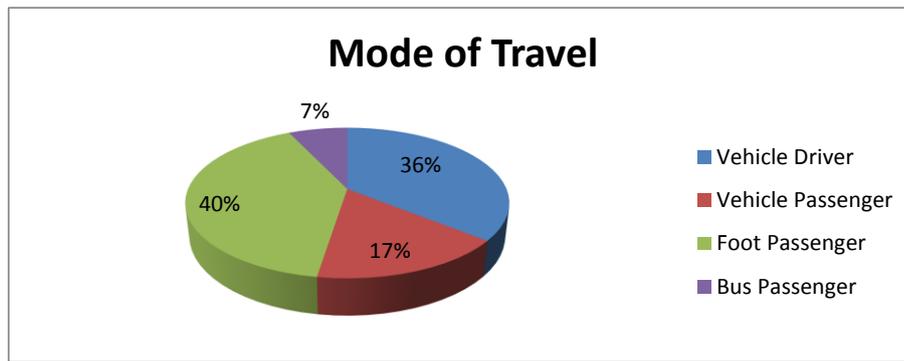


Figure 2.5 Respondents’ Mode of Travel on Ferry

2.4.12 Some 40% of responses said they travelled as a foot-passenger, while the next largest response was for a vehicle driver of 36%. Seventeen per cent of responses were for vehicle passenger, with only seven per cent explaining that they travel as a bus passenger on Western Ferries.

Type of Ticket Purchased

2.4.13 463 respondents (n=463) responded to the question about which type of ticket they typically use – the breakdown is provided in Figure 2.6 below.

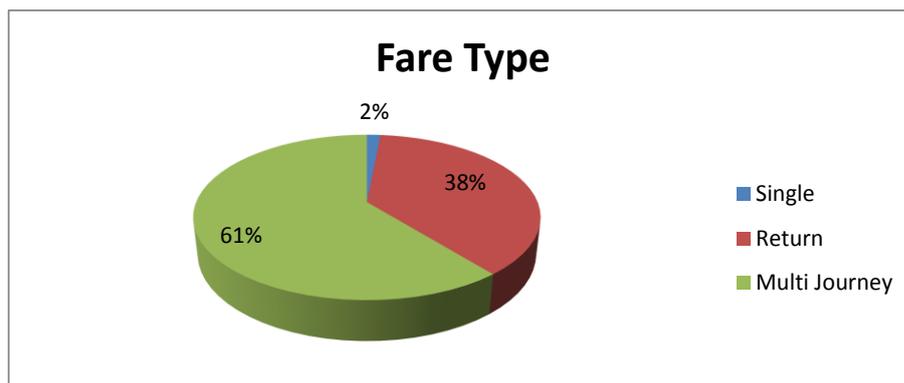


Figure 2.6 Respondents’ Ticket Type

2.4.14 A majority of respondents (61%) noted that they typically use a multi-journey ticket, with a further 38% using a return. Only two per cent of people typically use a single.

2.4.15 Of those who use a multi-journey ticket, 305 respondents (n=305) specified where they normally purchase such tickets. The results are shown in Figure 2.7 below.

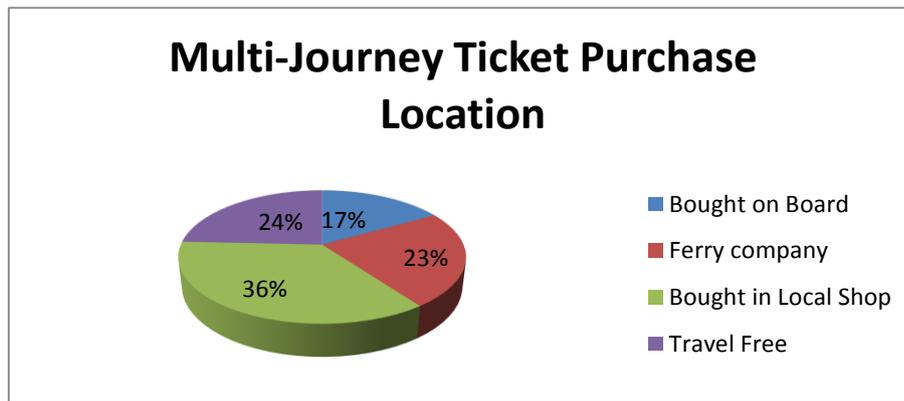


Figure 2.7 Multi-Journey Ticket Purchase Locations

2.4.16 The majority of multi-journey tickets are purchased in the local shops, possibly reflecting the level of discounts on offer. Only 17% of people buy their ticket on the ferry.

Reasons for Choice of Ferry

2.4.17 Respondents were asked their reasons for choosing a particular ferry for each journey – they were asked to select all options that apply. There were 854 individual responses (n = 854). The results are shown below in Figure 2.8.

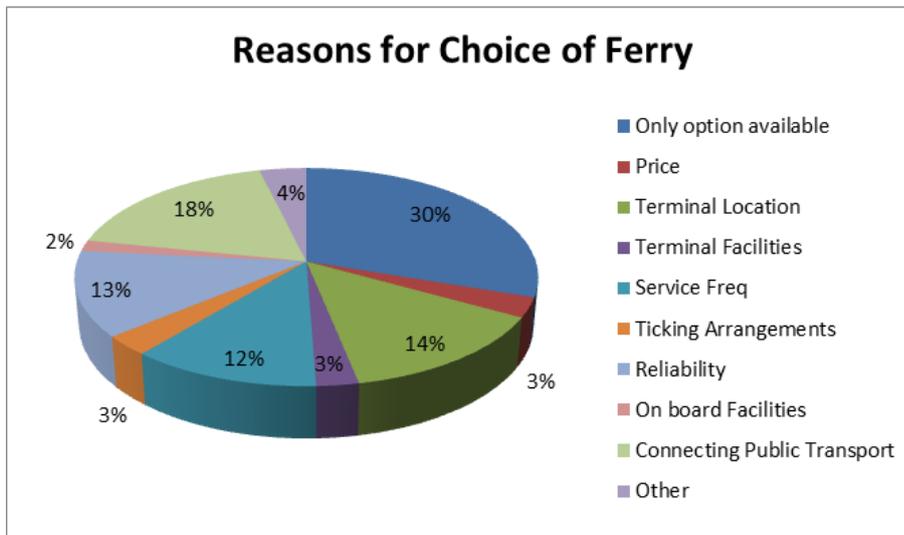


Figure 2.8 Respondents’ Reasons for Choice of Ferry Service

2.4.18 The main factor for the choice of ferry was that the selected route was the only real option available (30%). This is likely to reflect vehicle users on the Western Ferries service or foot-passengers travelling from town centre to town centre. The second most common reason is integration with connecting public transport.

2.4.19 Price, terminal facilities, ticketing facilities and onboard facilities were less influential in their ferry choice.

Use of the Ferry since the Town Centre to Town Centre Passenger and Vehicle Service was Withdrawn

2.4.20 Respondents were asked whether they are using ferry services across the Clyde 'More', 'Less' or 'About the Same' since the town centre to town centre passenger and vehicle service was withdrawn. 240 of the 247 respondents answered this question (n = 240). 117 respondents said that they use the ferry the same number of times as they used to, 109 respondents said they use it less frequently and 14 respondents said they use it more frequently.

Use of the Ferry Routes

2.4.21 Respondents were asked whether their use of the ferries has changed since the town centre to town centre vehicle service was removed in July 2011. This was a multiple response question and 356 separate responses were received (n = 356). The results are shown in Figure 2.9 below.

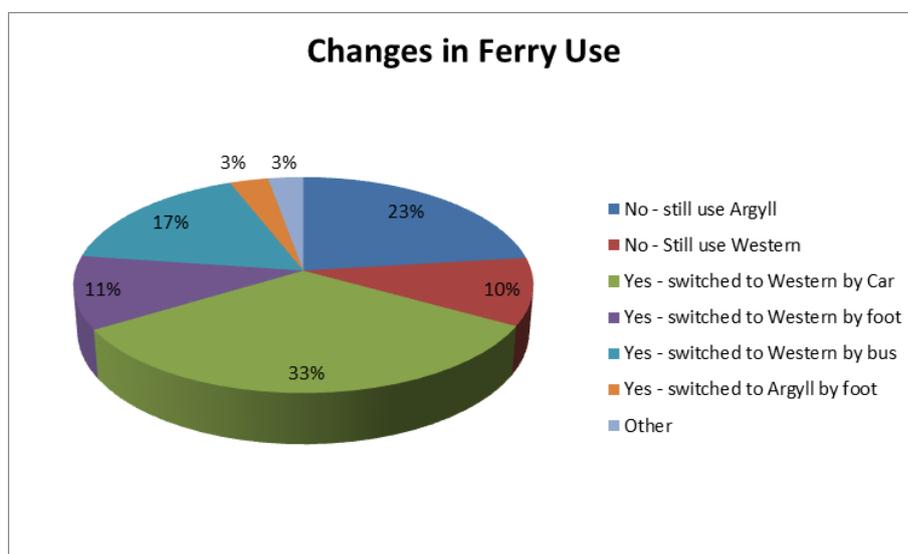


Figure 2.9 Respondents' Change in Ferry Use Since July 2011

2.4.22 The chart shows that 61% of the responses received suggested a shift of custom from Argyll Ferries to Western Ferries. While this sample will contain respondents who may have selected multiple 'switch to Western' options, the trend is nonetheless a clear one.

2.4.23 Following on from paragraph 2.3.1 on the representativeness of the sample, the responses show that 33% of people switched to Western by car after the removal of the town centre to town centre vehicle service. However only 10% of respondents continued to use Western after the removal of the service. Given that the majority of vehicle users tended to use the Western Ferries service prior to the town centre to town centre service being removed, this suggests that the Western Ferries vehicle users are underrepresented, and the previous Cowal Ferries users overrepresented in this survey.

Key Determinants in Using a New Town Centre to Town Centre Ferry

2.4.24 Respondents were asked to select the two most important factors which would determine their use of a new town centre to town centre passenger and vehicle ferry service. The maximum number of responses should have been 494, but we received 600 individual

responses, which means a number of respondents selected more than two options. Nonetheless, the responses appear reasonable and are illustrated in Figure 2.10 below.

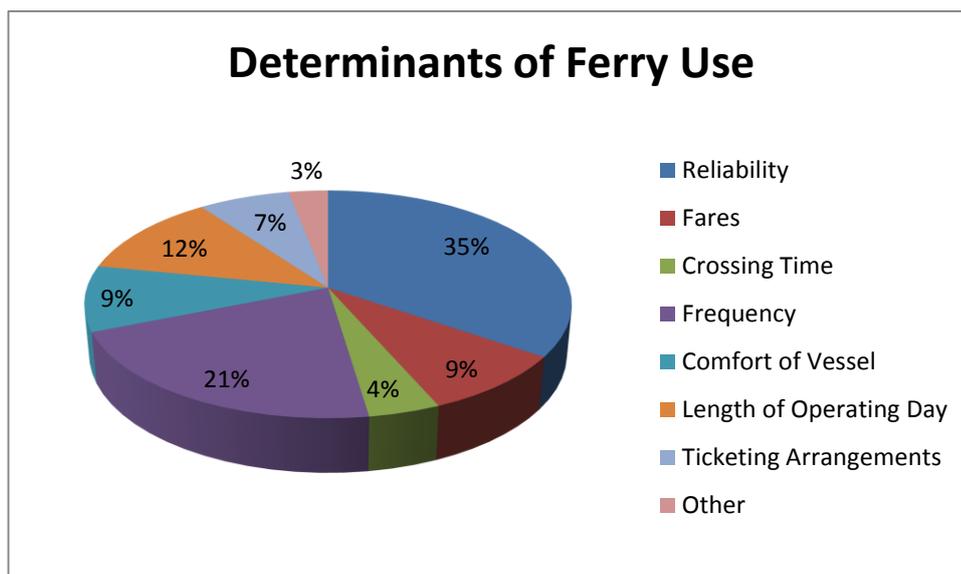


Figure 2.10 Most Important Factors for Respondents in their Potential Use of a New Town Centre to Town Centre Passenger and vehicle Service

- 2.4.25 The most important factor for respondents was reliability (35%), followed by frequency (21%). Other factors considered to be important is the length of the operating day, fares and the comfort of the vessel.

2.5 Other Emerging Issues

- 2.5.1 This section sets out a number of frequently recurring issues which emerged during the consultation. Note that whilst these are important considerations for any future ferry service(s) between Dunoon and Gourock, they are not directly relevant to the narrower remit of this study (ie to establish the feasibility of the passenger and vehicle service where the vehicle element is unsubsidised). This section does not claim to contain a statistically rigorous survey of Dunoon residents or stakeholders. It does however report the themes which were expressed to the study team during the consultation exercise.

The Passenger Only Vessels

- 2.5.2 The issue around the suitability and reliability of the current passenger only town centre to town centre service / vessels was the single biggest issue raised during the drop-in session – even more than the need for a passenger and vehicle service. There is widespread dissatisfaction with the comfort and reliability of the current Argyll Ferries vessels, the MV *Ali Cat* and the MV *Argyll Flyer*. Evidence shows that weather related cancellations are well in excess of the previous average for the Streakers. Large numbers of consultees complained that they have missed meetings, been late for appointments or have been late for work because of ferry cancellations. It was also suggested the issues with the passenger ferries send out the wrong message about Dunoon and Cowal more generally, in that they give the impression that the area is difficult to get to without a car and not an attractive place to visit or do business.

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2.5.3 A particularly large number of consultees explained that they do not feel safe using the Argyll Ferries' vessels. Various accounts of uncomfortable and indeed alarming crossing experiences were provided and a number of people claimed that they had now switched to using Western Ferries even though they explained it is less convenient and more car dependent for them.

2.5.4 It should be noted however that there have been inspections by the Maritime Coastguard Agency and no major safety breaches have been found.

Accessibility

2.5.5 A number of elderly consultees and a stakeholder representing people with disabilities noted that current access arrangements to the vessels are not fit for purpose. Boarding and alighting is seen to be difficult for vulnerable groups and a number of elderly people no longer use the passenger service as they are frightened about having a fall.

Dunoon as a Destination

2.5.6 There was a lengthy debate at the Dunoon stakeholder meeting regarding whether the lack of a town centre to town centre passenger and vehicle service is hindering the development of Dunoon. A number of representations were made about the loss of footfall in Dunoon town centre since the previous Cowal Ferries service was withdrawn. In addition, there was a fear expressed at the meeting that Dunoon could ultimately lose major events like the Mod and the Cowal Games.

2.5.7 More fundamentally, consultees, including a number of Councillors, believe that the current situation, coupled with the landslip issue at the Rest and Be Thankful, is sending out the message that Dunoon is 'closed for business'. They suggested that schemes like the restoration of the Queens Hall and shore-side improvements are being delayed by the ferry issue.

2.5.8 Others suggested that this theory was somewhat back-to-front. The view is that greater efforts need to be made to improve the quality of Dunoon as a destination, offering tourist, business and other leisure and retail amenities and this will make people want to visit. It was not the lack of a town centre to town centre vehicle service that was the problem. It was explained that while a good quality ferry service (passenger or passenger and vehicle) is seen as important in promoting the town, this is unlikely to be a panacea for all the town's problems. It was suggested that an improved ferry service could actually lead to further business leakage from Dunoon, as residents could travel more to Inverclyde and Glasgow, particularly the large retail centres at Braehead and Silverburn.

2.5.9 Others explained that many other towns, which haven't seen a ferry service removed, are also seeing less activity in their town centres. It was added that even towns that have a town centre vehicle service are continuing to see lower levels of visitors and activity, through, for example, the increased use of internet shopping.

Tourism

2.5.10 We undertook a telephone consultation with a prominent businessperson in the tourist sector who provided his views of the industry. It was explained that Cowal is very highly regarded by tourists but the one consistent comment is that Dunoon town centre is struggling. He

2 Consultation

would support a restoration of the town centre to town centre passenger and vehicle service, as there is a view that many people now bypass Dunoon.

- 2.5.11 It was also suggested that the loss of the CalMac hopper tickets that allowed tourists to take in Cowal as part of a wider holiday or excursion may have been damaging, although it was acknowledged that sales figures from CalMac would be required to substantiate this.

The NHS

- 2.5.12 The NHS commended the current service offered by Western Ferries, particularly the free 24 hour blue light service implemented by Western Ferries' staff. However, they regret the loss of the town centre to town centre passenger and vehicle service, as it offered a contingency option. One of the main goods moved by the NHS is medical gases, which Western Ferries cannot carry under their current certification. With the ongoing landslip problems at the Rest and Be Thankful, the NHS prefers to have a contingency ferry service, although the remedial roadworks at that site may lessen the problem.

3 Socio-Economic Context

3.1 Introduction

- 3.1.1 There has been local concern voiced that the socio-economic prospects of the Dunoon area have been damaged by the loss of the town centre vehicle ferry service in 2011. However, given that the change to the town centre ferry service is relatively recent, there is very little empirical published data to provide a substantive and controlled analysis of the before and after impacts of this measure.
- 3.1.2 This chapter therefore considers the local socio-economic context more generally to provide the background information.

A Brief History

- 3.1.3 Dunoon has been a historically prosperous place and is perhaps the most famous of the Glasgow 'tourist towns'. Its scenic location, yet proximity to Glasgow City Centre by both boat, rail and, also made it an attractive location for holiday homes. Once the granting of paid holidays for employees became a legal reality, Dunoon became a hugely popular destination for short breaks and day trips '*doon the watter*'. The popular steamer services, generally operated by the great railway companies, further expanded the day trip market, not just for Dunoon, but also for places like Hunter's Quay and Innellan.
- 3.1.4 However, as wider UK and then foreign holidays became more cheaply available during the 1960s and 1970s, the Cowal tourist economy declined gradually and then rapidly. The presence of the major American submarine base at the nearby Holy Loch helped cushion this decline somewhat, but its closure in 1992 resulted in a steady and long-term economic run-down of the town. Dunoon is now facing a number of economic challenges, including a high level of unemployment, vacant town centre premises and high benefit claimant rate. The next section considers this evidence in more detail.

3.2 Socio-Economic Data

- 3.2.1 This section provides an overview of the key socio-economic characteristics of Dunoon and the surrounding hinterland, stretching as far north as Hunter's Quay and as far south as Innellan and the southern tip of Cowal.
- 3.2.2 The principal data sources used to compile this section were:
- NOMIS Labour Market Statistics;
 - Scottish Neighbourhood Statistics;
 - a review of the Dunoon economy undertaken by EKOS as part of the CHORD programme; and
 - the Scottish Index of Multiple Deprivation (SIMD).

3.2.3 NOMIS² provides the most disaggregate labour markets statistics albeit these are based on the 2001 Census (2011 Census data is not yet available). This data is available at the ward level and we have compiled data from four relevant wards, namely:

- 04C23 Ardenslate – this ward covers the town centre pierhead, the majority of the Dunoon foreshore and the most easterly extremities of the town centre;
- 04C24 Milton – the area immediately to the west of Ardenslate, covering the western edge of the town centre and the hospital;
- 04C22 Kirn and Hunter’s Quay - the area immediately to the north of the town centre, covering the village of Kirn, northwards past the Western Ferries terminal at Hunter’s Quay; and
- 04C25 Auchamore and Innellan – the large rural hinterland to the south and west of Dunoon, covering Innellan, toward and west along the banks of Loch Striven.

Economic Activity Rate - NOMIS

3.2.4 The economic activity rate defines the proportion of the working age population who are actively seeking employment (ie in work or seeking work). A high economic activity rate is viewed as positive as it suggests an area has a deep labour pool and low dependency ratio (ie the ratio of economically active to economically inactive people). It is important to note that the latest figures of economic activity rates are from the 2001 census and are thus somewhat dated, but they do provide a useful snapshot of the area and the census does provide disaggregated data. Figure 3.1 below shows the economic activity rates for the four wards listed above as well as the Argyll & Bute and Great Britain averages. Note that NOMIS does not include equivalent ‘Scotland’ figures for 2001.

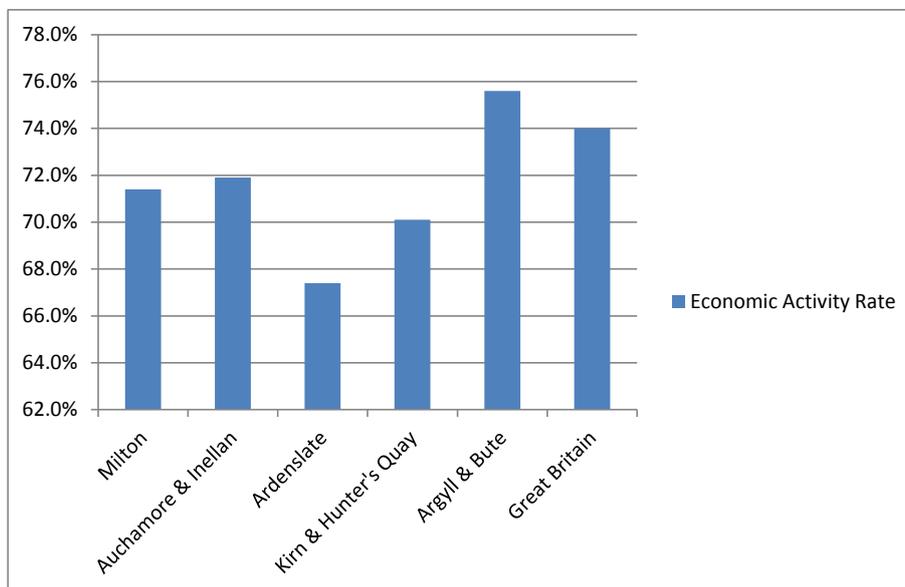


Figure 3.1 Economic Activity Rates (2001)

3.2.5 Figure 3.1 therefore shows that the four Cowal wards have a lower economic activity rate than the Argyll & Bute and GB averages (note that working age (16-64) economically

² <http://www.nomisweb.co.uk/>

inactive people are defined as: students, looking after family / home, temporary sick, long-term sick, and retired). The picture is particularly poor in Ardenslate (ie the town centre seaboard), where the figure was only 67%. The lower economic activity rate in both Auchamore & Innellan and Kirn & Hunter’s Quay is partially the result of a greater proportion of retired residents.

Employment by Occupation - NOMIS

3.2.6 Figure 3.2 below shows the 2001 employment by occupation for the four wards, Argyll & Bute and GB.

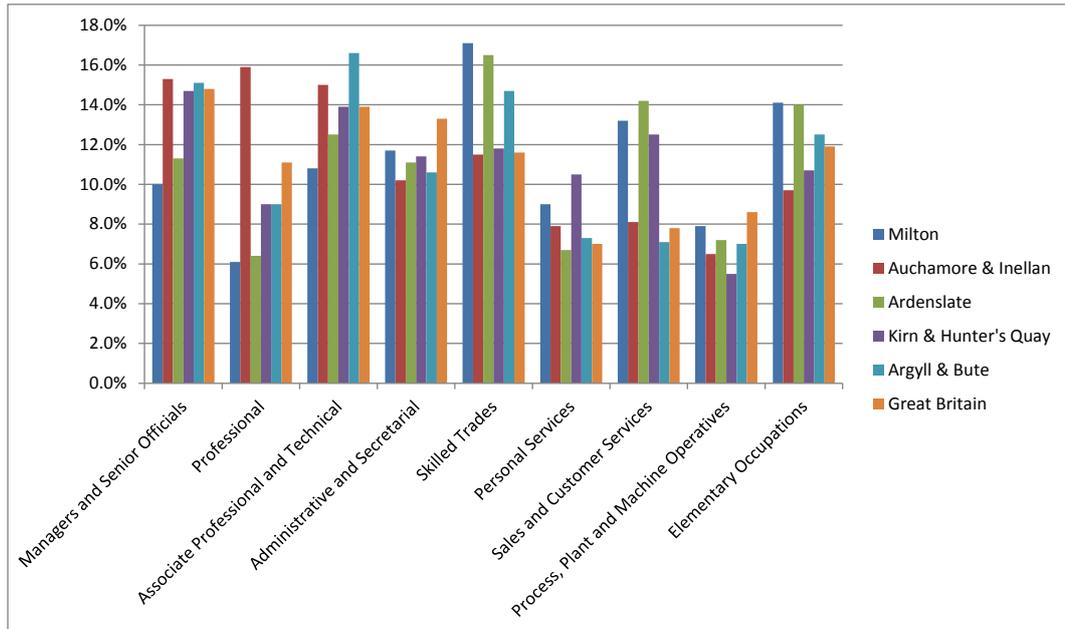


Figure 3.2 Employment by Occupation (2001)

3.2.7 The key point to emerge here is that the two wards that broadly comprise Dunoon town centre have a considerably lower proportion of the resident population concentrated in higher status / income occupations. In contrast, these wards tend to have a greater cluster of employees in elementary occupations.

3.2.8 This trend is reversed to some extent in the more affluent areas of Auchamore & Innellan and Kirn & Hunter’s Quay, which both more closely reflect the local authority and national averages.

Qualifications – NOMIS

3.2.9 The level of qualifications is generally seen as a meaningful barometer of the skills base of an area. Moreover, there is reasonably strong correlation between qualification levels and other socio-economic indicators such as economic activity, employment and levels of social deprivation.

3.2.10 Figure 3.3 below shows how qualification levels in the four Cowal wards compare with the Argyll & Bute and GB average.

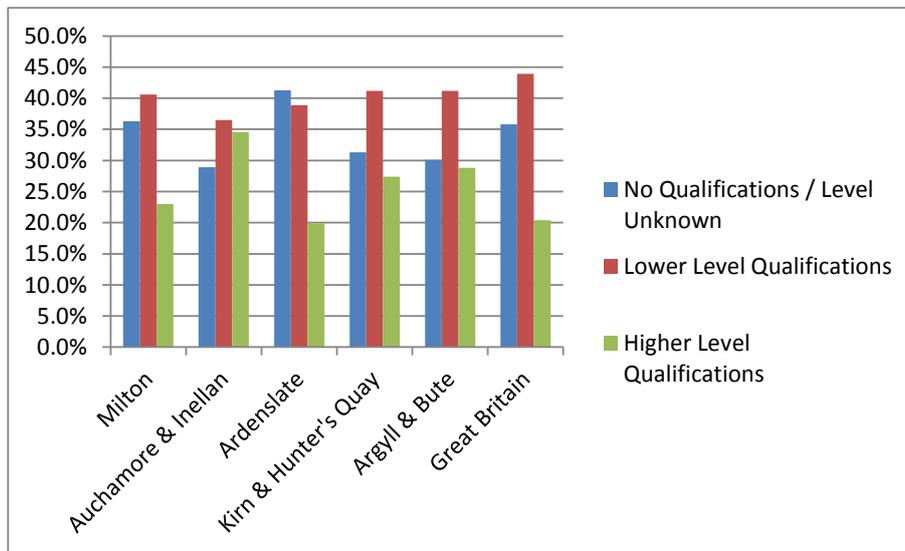


Figure 3.3 Level of Qualifications (2001)

3.2.11 Both Milton and Ardenslate wards have a high proportion of the resident population with no qualifications when compared against the Argyll & Bute and British averages. Both wards also have an unfavourable proportion of residents with higher level qualifications compared to the Argyll & Bute average, but they do actually perform well in terms of the wider British average.

3.2.12 Auchamore & Innellan and Kirm & Hunter’s Quay broadly conform with the local authority average and outperform the national average.

Job Seekers Allowance Claimants - NOMIS

3.2.13 Figure 3.4 below presents the percentage of the resident population eligible for work which is claiming Job Seekers Allowance (JSA) in 2013.

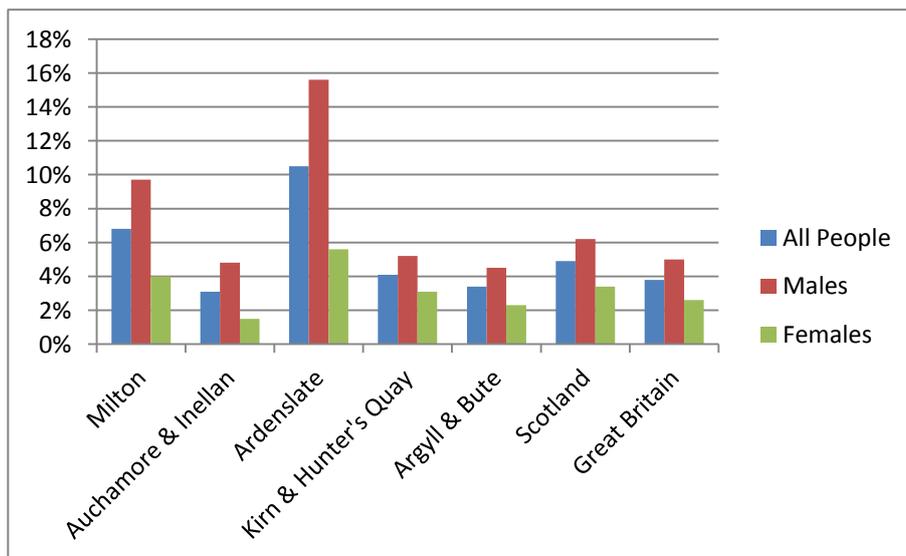


Figure 3.4 JSA Claimants (March 2013)

- 3.2.14 The figure clearly demonstrates that there is a significant problem of unemployment (particularly male unemployment) in both Milton and Ardenslate. The percentage of people seeking JSA is more than double the local authority and national average.
- 3.2.15 Data on wider benefit claims from NOMIS from August 2012 suggest that both Milton and Ardenslate have a larger proportion of the resident population claiming other non-JSA benefits, including incapacity benefit, lone parent allowance, carers allowance etc. One particular statistic stands out – 13.2% of Milton residents and 14.6% of Ardenslate residents claim some form of Employment Support Allowance and Incapacity Benefit compared to the local authority and UK average of just over 6%.
- 3.2.16 The claimant data does suggest that there is a concentrated unemployment problem in and around Dunoon town centre, with claimant levels substantially outstripping local authority and national averages. The two wards of Auchamore & Inellan and Kirn & Hunter’s Quay conform more closely to the local authority and national averages.

Scottish Index of Multiple Deprivation³

- 3.2.17 The notion of pockets of concentrated deprivation in and around Dunoon town centre is borne out by the Scottish Index of Multiple Deprivation (SIMD). The SIMD identifies small area concentrations of multiple deprivation across all of Scotland in a consistent way. The index is used to rank datazones from 1 (most deprived) through to 6,505 (least deprived). Figure 3.5 below highlights the SIMD rankings of the relevant Cowal datazones:

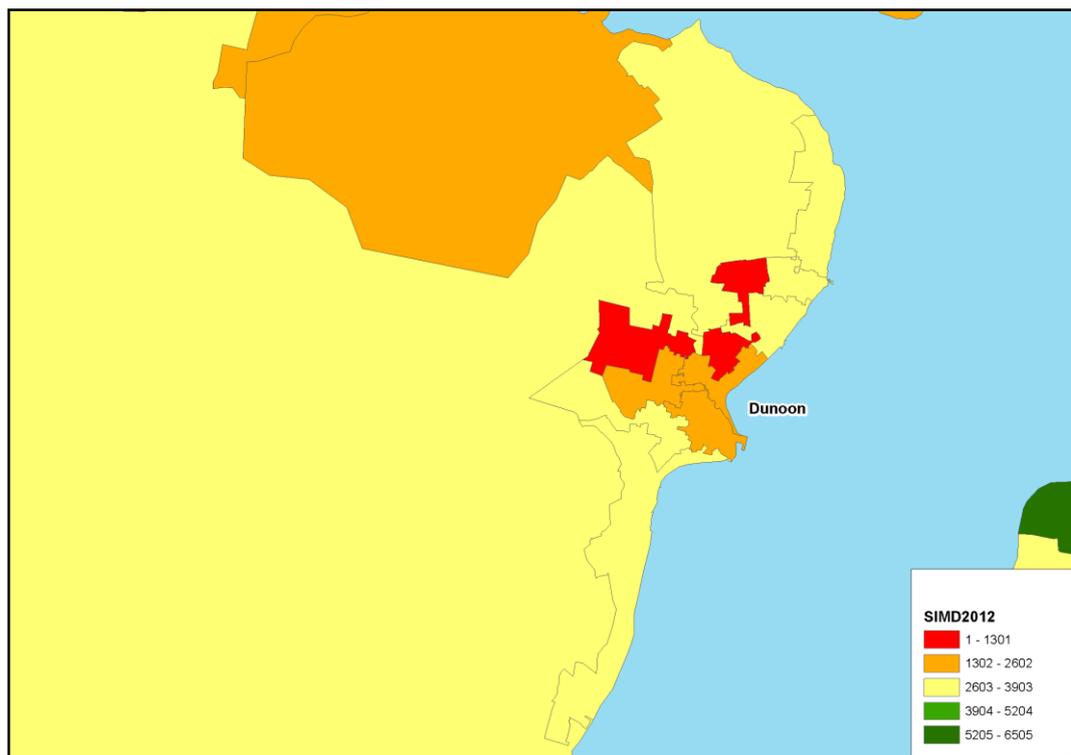


Figure 3.5 SIMD, Cowal (2012 Dataset)

³ <http://www.scotland.gov.uk/Topics/Statistics/SIMD>

3.2.18 The red shaded areas represent areas that are in the 20% most deprived in Scotland. The map demonstrates that the area to the north-west of Dunoon is included within this grouping. The actual ranking for two of these datazones suggests that they are in the top 2%-3% deprived in Scotland. The town centre and foreshore are in the second 20% most deprived. The wider Cowal area performs somewhat better – from Kirn northwards and southbound towards Innellan, there are very few areas of deprivation.

Scottish Neighbourhood Statistics

3.2.19 Scottish Neighbourhood Statistics report some more recent data and at the 'intermediate geography' level including Dunoon, Cowal South and Hunter's Quay are of relevance here. The breakdown of the local population by age group is shown in Figure 3.6 below.

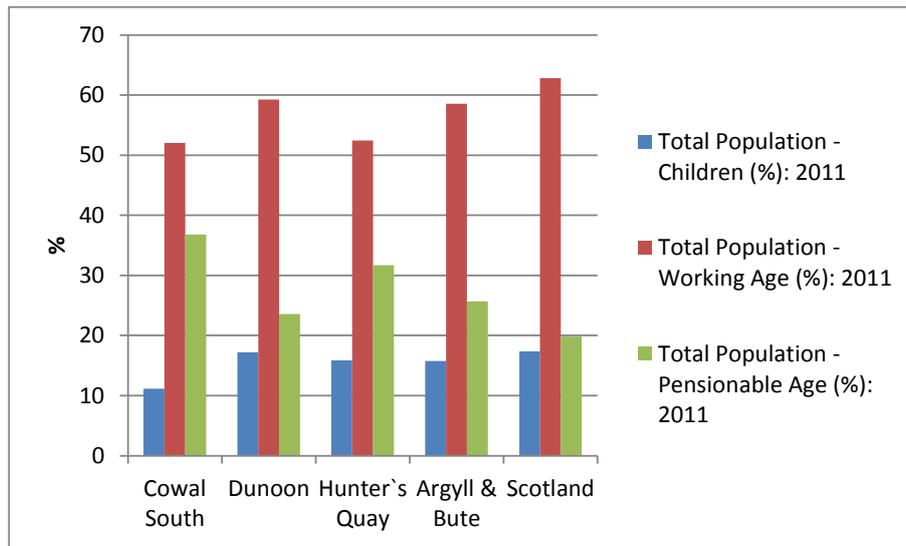


Figure 3.6 Local Demographics (2011)

3.2.20 Cowal South and Hunter's Quay both contain a high proportion of those of pensionable age – higher than the Argyll & Bute and Scotland figure. The profile of Dunoon is actually more typical of the Argyll and Bute picture. The relatively high proportion of working age population in Dunoon itself clearly means that access to potential employment opportunities is of particular importance here.

3.2.21 'Income Deprivation' (based on the combined count of claimants of a number of benefits) and 'Employment Deprivation' (based on a range of employment related benefits claims) are also available at this level, and these indicators are shown in Figure 3.7 below.

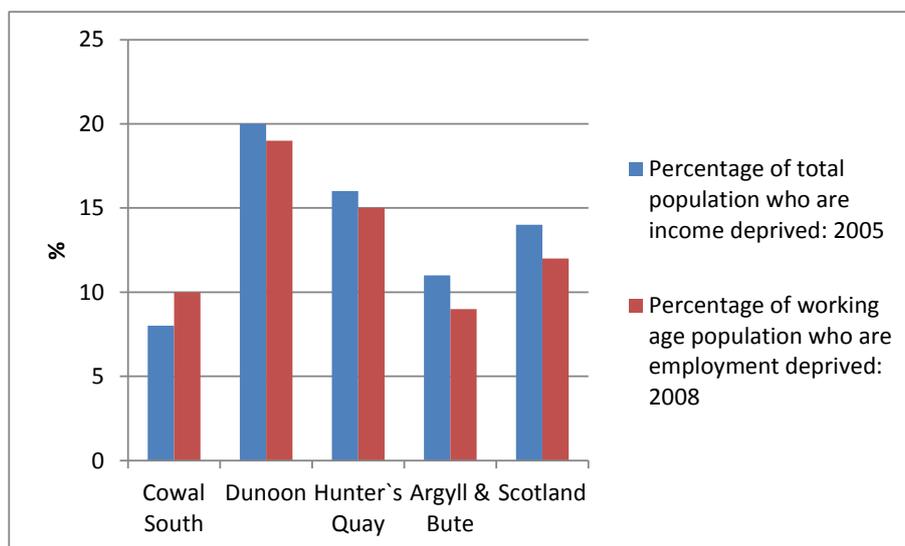


Figure 3.7 Income and Employment Deprivation (2008)

- 3.2.22 Once again it can be seen that Dunoon itself sees a higher proportion of its residents identified as income and employment deprived, compared to other local areas, Argyll & Bute and Scotland as a whole.
- 3.2.23 The evidence available therefore suggests that Dunoon town centre is suffering from a sustained run-down of its economy, with consequent impacts on employment and living standards. This scenario is seen in many indicators which precede the withdrawal of the town centre vehicle carrying ferry service, although some more recent data is presented later in this chapter.

Business Base

- 3.2.24 Research undertaken in 2008 suggests that there are approximately 450 businesses in the Dunoon locality, accounting for around 11% of the total business base in the Argyll & Bute area. Given its urban core and proximity to the central belt, Dunoon tends to host a number of larger (and often public sector) employers.
- 3.2.25 The Dunoon economy is very heavily orientated towards the service sector. In keeping with the town's past, the predominant private sector industry is 'distribution, hotels and restaurants', accounting for some 20% of total employment. However, there is also a large public sector presence within the town (53% of total employment), including the NHS at Dunoon General Hospital.
- 3.2.26 Dunoon has a lower proportion of residents employed in the 'manufacturing' and 'banking, finance and insurance' sector than the local authority and Scottish averages.

Town Centre Property

- 3.2.27 The CHORD research made use of Argyll & Bute Council health check data to baseline the town centre business property stock. At that time, there were 151 business units in Dunoon town centre, of which 16 were vacant. The vacancy rate has likely risen in line with many parts of Scotland as a result of the difficult economic conditions since this report was published in 2010.

3.2.28 The CHORD report suggested that there was very little forthcoming commercial development in Dunoon town centre.

Tourism

3.2.29 Dunoon is considered to be within the wider catchment area for Loch Lomond and the Trossachs National Park. Data from 2006/07 shows that Dunoon attracted 84,600 staying visitors who contributed an estimated £4.3 million to the local economy. Overall tourism (ie both day and overnight visitors) contributed £6.3 million to the local economy and accounted for approximately 3% of the total spend within the National Park area.

Summary

3.2.30 This brief review has highlighted a number of socio-economic issues associated with the Dunoon area.

3.2.31 This was underlined in a recent research exercise which compiled 'A Vulnerability Index of Scottish Towns', undertaken by SAC (Scottish Agricultural College) in 2011. The 'Vulnerability Index' provides a means of comparing the vulnerability of 44 different towns across Scotland.

3.2.32 This index was based on data relating to:

- the proportion of the local population of working age;
- the proportion of the local population claiming Job Seekers Allowance;
- the proportion of the local population working in the public sector; and
- a measure of income deprivation derived from the Scottish Index of Multiple Deprivation (SIMD).

3.2.33 In this index, Dunoon was ranked in the top four most vulnerable communities, together with Campbeltown, Stranraer and Girvan.

3.3 Impact of Vehicle Ferry Withdrawal

3.3.1 As noted above, few 'standard' local data sets are yet available to analyse the impact of the withdrawal of the vehicle ferry service on the town on a consistent basis. Scottish Neighbourhood Statistics do report on the proportion of the population by age group claiming key benefits⁴ in each quarter at 'intermediate geography' level however. This data is shown in Figure 3.8 below for Dunoon, in a time series between Quarter 1 2010 to Quarter 2 2012.

⁴ These are Job Seekers Allowance; Employment Support Allowance or Incapacity Benefit or Severe Disablement Allowance; Lone Parents Income support claimants with a child under 16 and no partner; Carers Allowance; Others on Income Related Benefit - Other income support (including IS Disability premium) or Pension Credit claimants under State Pension age; Disabled Disability Living Allowance (DLA); Bereaved Widows Benefit, Bereavement Benefit or Industrial Death Benefit.

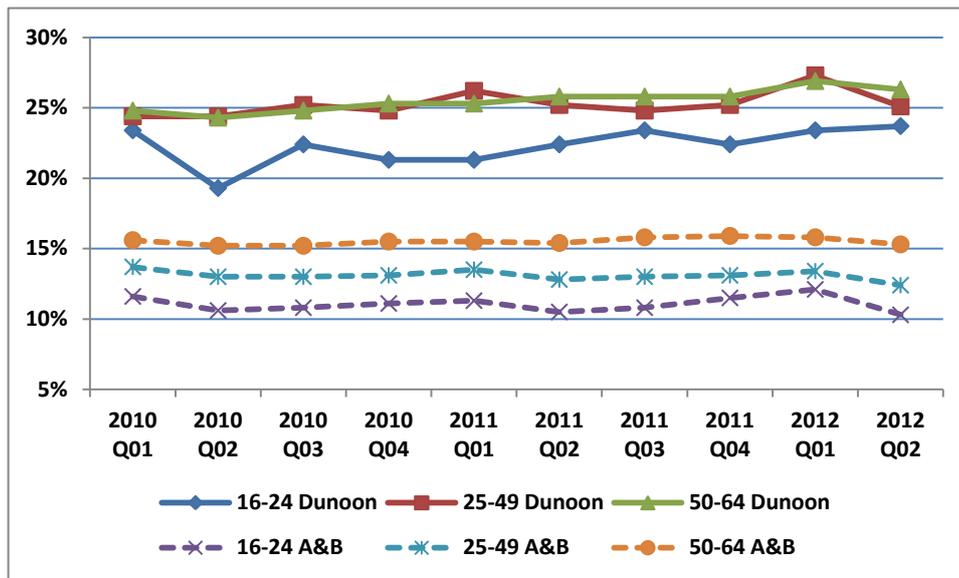


Figure 3.8 SNS Key Benefits Claimants – Dunoon and Argyll & Bute

- 3.3.2 This data underlines the general point that Dunoon has a far higher proportion of residents claiming key benefits compared to the Argyll and Bute local authority area in all of the working-age age groups.
- 3.3.3 The town centre vehicle carrying ferry service ceased at the end of Quarter 2 2011. Between Quarter 2 2011 and Quarter 2 2012, the proportion of residents claiming key benefits in all age groups at the Argyll & Bute level has decreased. In Dunoon however, this proportion has increased (16-24 and 50-64) or stayed the same (25-49). It is however not possible to be certain of any link between this and the withdrawal of the town centre vehicle carrying ferry without more detailed analysis.
- 3.3.4 There is however anecdotal evidence cited locally concerning the negative impacts of the current passenger only town centre ferry service. It has to be borne in mind however that there are clearly other communities across Scotland (on the islands and mainland) which have not been affected by a change to their ferry service but have also been suffering due to the current economic situation and factors such as the increase in internet shopping. While the limited evidence does suggest that the town of Dunoon has seen a decline in its recent economic performance, further research would be required to determine the extent to which the problems facing Dunoon are due to the removal of the vehicle carrying town centre to town centre ferry service.

4 Vessel Specification

4.1 Introduction

- 4.1.1 This chapter contains our considered view on the requirements with respect to vessel specification on the Gourock-Dunoon town centre ferry route for the purposes of cost and revenue modelling.
- 4.1.2 Our incremental approach to this issue means we have had to specify **foot-passenger only** and **passenger and vehicle** ferries.
- 4.1.3 This specification required for the study needs to be proportionate to the task, ie we are not designing vessels but attempting to establish outline specifications and associated broad and typical costs. The key requirement was to determine a credible set of vessel related costs for the purposes of financial modelling and the calculation of likely subsidy requirement. Given the level of uncertainty attached to the process, we have given a broad 'level of confidence' attached to each cost element.
- 4.1.4 Our methodology was to first establish how the existing route operated and the class of vessels currently in service. Secondly, meetings were held with all stakeholders to glean their views and ideas (this included operators and Masters of ferry vessels in the Upper Clyde). Thirdly, meetings were also held with customer groups and in particular with members of the DGFAG.
- 4.1.5 Existing ferry services were researched throughout the world of a similar operational parameter to the Gourock-Dunoon ferry route.
- 4.1.6 In establishing the optimum dimensions and specifications of the ideal vessel, navigational and regulatory restrictions were looked at including: the general weather conditions for the area; the tidal range, flow and rate; significant wave heights; wave frequency, wave length and period; and the existing infrastructure at the ports.

4.2 Service Restrictions

- 4.2.1 The jurisdiction of the whole of the Upper Clyde (apart from parts of the Gareloch, Loch Long and Loch Goil, which are designated Naval dockyard ports and are under the jurisdiction of the Queen's Harbourmaster) is covered by Clydeport Limited, based in Greenock. Local regulations on safe navigation and emergency are published in Clydeport's local Byelaws.
- 4.2.2 The area of the Clyde estuary where the service operates has a speed restriction for all vessels of 12 knots, imposed by Clydeport under their health and safety management system. Below a line drawn between Cloch Point and Dunoon Pier the restriction is 19 knots. It is questionable if the speed restriction of 12 knots is legally enforceable, not being enshrined in Byelaws and is more a mutually agreed speed limit by local fishermen, yachtsmen, local harbour authorities and the Royal Navy. Speed is restricted within harbour limits by local harbour authorities and enshrined in their own byelaws, to limit wash damage to harbour installations and moored vessels and craft.

4 Vessel Specification

- 4.2.3 The area (both Category C & D waters) is designated as a 1.5 metre significant wave area by the Marine and Coastguard Agency (MCA), for issuance of certificates. Category C waters apply to tidal rivers and estuaries and large, deep lakes and lochs where the significant wave height could not be expected to exceed 1.2 metres at any time. Category D waters are tidal rivers and estuaries where the significant wave height could not be expected to exceed 2.0 metres at any time⁵. The Cat C area for the Upper Clyde is between Cloch Point and the Dunoon Pier northwards, thus making the Dunoon Linkspan and breakwater just in Cat D waters. This line however, moves southwards in summer between 1 April and 31 October (to a line from Bogany Point, Isle of Bute to Skelmorlie Castle and a line from Ardlamont Point to the southern extremity of Ettrick Bay inside the Kyles of Bute⁶), allowing the *Argyll Flyer* and *Ali Cat* vessels to trade as Class V vessels. Both existing vessels have a Class IV and Class V designation, though when in Class IV mode the vessels operate with a dispensation from carrying a Rescue Boat and operate with crews of three (instead of four). The Master has a weather restriction placed on him and can only proceed to sea in 'favourable weather', taken to mean '*fine, clear, settled weather, such as to cause only moderate rolling and pitching*'⁷. The MCA has placed this restriction as the vessel itself will have to act as a rescue craft should a 'man-over-board' situation occur, there being no Rescue Boat fitted.
- 4.2.4 The distance between Gourock and Dunoon linkspans is 3.90 nautical miles, indicating that with the 12 knot speed restriction and allowance for manoeuvring, berthing and unberthing, the minimum time berth to berth would be 22 minutes, thus allowing four minutes to embark and four minutes to disembark passengers / vehicles at each end on a 30 minute service schedule. By contrast the Western Ferries route between McInroy's point and Hunter's Quay is shorter at 2.30 nautical miles, allowing that company to run their vessels more slowly within a 30 minute service.
- 4.2.5 Clydeport issues all Masters of ferries in the Upper Clyde with a pilot's Exemption Certificate (PEC). The Masters are certified as Boatmen by the MCA on the *Ali Cat* and *Argyll Flyer*. RoPax vessels may be required to have the Master certificated to a higher level.

4.3 Upper Firth of Clyde Weather

General Weather

- 4.3.1 The weather on the West Coast of Scotland is very variable at any one time, being influenced by the passage of depressions from the Atlantic, and rapid changes can frequently be experienced. The prevailing wind is between South and West, with a higher proportion of Northerly and Easterly winds in May and June, when an anticyclone is more likely to become established to the North of Scotland. Except in September and the winter months, gales are not common, although they may occur at any time. Fog as such is rare and visibility of less than two nautical miles is unlikely on more than three days per month in summer. Low cloud however, may more often obscure the tops of hills and heavy rain may reduce visibility for a time. On the whole, the best weather may be expected during May and June and

⁵ MCA Marine Notice MSN 1827(M)

⁶ MCA Marine Notice MSN 1827(M)

⁷ Glasgow Marine Office MCA

October is often found to have better weather than August⁸.

Gales

- 4.3.2 Gales (Beaufort Force 7 and above) in the Upper Clyde region are infrequent. The nearest Meteorological recording station is Greenock⁹. This gives an average recording taken over 21 years as being 14 days per annum, viz:

January	3.3 days;
February	2.9 days;
March	1.6 days;
April	0.5 days;
May	0.3 days;
June	0.2 days;
July	0.1 days;
August	0.3 days;
September	0.5 days;
October	1.3 days;
November	1.4 days;
<u>December</u>	<u>1.6 days; and</u>
Total	14 days.

- 4.3.3 HMS Gannet at Prestwick reports 15 days per year taken over a 19-year recording, supporting the above figures.
- 4.3.4 The predominant wind is S through SW though gales can usually be expected from SW through to W but are known from all quarters. The average duration of a gale depends on exposure and may last between five and seven hours in exposed places. Gales from S and SE are usually short lived. Storm force winds (force 10 and above) in the Clyde area are very infrequent and are only 2-3% (less than 10 hours per annum) of all winds above Force 7. Wind speeds in the Upper Clyde may vary greatly within very short distances due to the different degrees of shelter and the distance from a leeward shore. Thus a SSW Force 7 may affect berthing at Dunoon but be relatively sheltered in Gourock. Conversely a NE gale will affect berthing in both Dunoon and Gourock.

Visibility

- 4.3.5 Fog occurs in Greenock an average of eight days a year (stats over a 21 year period), mainly in December.

Rainfall/Snow

- 4.3.6 Precipitation is high, averaging 232 days over a 19-year period. Although evenly distributed throughout the year, precipitation occurs more in winter months than summer. Considering the latitude of the Upper Clyde, there is relatively little snowfall at lower levels.

⁸ Imran: Firth of Clyde Cruising Club Sailing Directions

⁹ Admiralty Sailing Directions NP 65 and Imran Clyde Cruising Club Sailing Directions

4.4 Tides and Tidal Flow

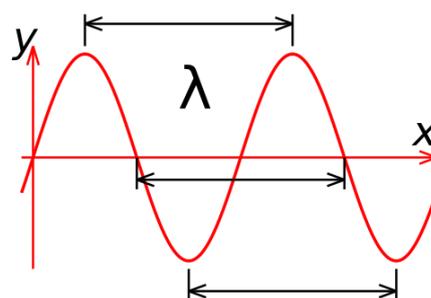
- 4.4.1 Spring Tides are about 1.6 times Neap Tides. Spring Tide Range is 3.0 metres and Neap Tide Range 1.9 metres. This is not excessive, but could be significant when looking at embarkation / disembarkation of passengers other than from a linkspan.
- 4.4.2 Tidal flow seldom reaches more than 1 knot at just before High Water Spring tide (HWS) in both directions, generally flowing up or down the line of the Firth. The stream does however split one nautical mile north of Cloch Point, one stream following the river and the other flowing into Loch Long.

4.5 Significant Wave height

- 4.5.1 The enclosed nature of the Firth of Clyde with its characteristic narrow fjords has a dampening effect which limits the wave field affecting the coastline of this area. Wave climate modelling¹⁰ indicates that the majority of the waves in the region come from the southwest and west. Significant wave height in the off shore zone rarely exceeds 1.6 metres in height whilst in the inshore zone they rarely exceed 1.25 metres in height. The Firth of Clyde is therefore not greatly affected by swell waves since they rarely extend into the area from the Irish Sea. The fjord coastline within the Firth of Clyde has inherently low wave magnitudes due to the shelter afforded by the surrounding landscape. Shelter will in effect reduce wind speed that in turn lessens wave fetch, resulting in a marked reduction in wave energy in comparison to more open areas of the Scottish coastline, outside the Firth of Clyde¹¹. The assumption that significant wave is seldom above 1.25 metres seems to be borne out in interviews with route ferry Masters.
- 4.5.2 Significant wave height for a SSW force seven wind near gale (28kts) is recorded as being 1.542 metres off Cloch Point.¹²
- 4.5.3 The highest recorded significant wave height between Cloch Point and Dunoon is about 2.5 metres during Southerly Storm Force winds.¹³

4.6 Wave Frequency, Period and Length

- 4.6.1 Wave period (or frequency) (x) can be described as the time it takes for two successive wave crests to pass a given point. The wavelength of a sinusoidal wave is the spatial period of the wave – the distance over which the wave's shape repeats. It is usually determined by considering the distance between consecutive corresponding points of the same phase, such as crests, troughs, or zero crossings, and is a characteristic of both travelling waves and standing waves, as well as other spatial wave patterns. Wavelength is



¹⁰ National Hydraulic Laboratory, Wallingford (1996)

¹¹ Admiralty Sailing Directions NP 65, Imran Clyde Cruising Club Sailing Directions and Met Office Assessment of significant wave height in UK coastal waters – 2011

¹² Clydeport Ltd. This statement is not validated or confirmed.

¹³ Admiralty Sailing Directions NP 65 and Met Office Assessment of significant wave height in UK coastal waters – 2011

commonly designated by the Greek letter *lambda* (λ). The frequency (x) is the velocity that the wave crests pass at a given point. The combination of these two wave phenomenon, plus the significant wave height (y), directly affects the motion of displacement vessels. The wave height can also be affected by the depth of water, proximity of adjacent landmasses or shallow water and a funnelling effect such as is found in fjords and estuaries. Shoaling water has a significant dampening effect on frequency, significant wave height and wave period. Likewise a funnelling effect can dampen frequency by friction and this phenomenon is sometimes recognised by having high winds and relatively low wave frequency and height. This is generally known in enclosed waters as the 'fetch' of the sea.

- 4.6.2 There is no data on wave period and frequency for the Upper Clyde region, though it can be safely assumed that it will not have a frequency above five seconds. However with professional experience and knowledge of other areas we can comment as follows.
- 4.6.3 It is known that the upper reaches of the English Channel usually produces wave periods of seven to 10 seconds in SW gales. The frequency can and will shorten if the tide direction is against the wind direction, which tends to 'heap' the sea. Conversely, wind and tide from the same direction tend to 'flatten' the sea and make frequency longer. A wave period of nine seconds usually equates to a wavelength of about 70 metres. By extrapolation, wave frequencies of seven seconds equate to about 60 metres and 10 seconds to about 85 metres. It thus follows that a period of about three or four seconds would produce a wave length of about 20 to 30 metres and a five second frequency about 40 metres.

4.7 Vessel selection for *the Gourock-Dunoon Ferry Route*.

- 4.7.1 The criteria and assumptions used here in considering suitable vessels, both passenger only and passenger and vehicle (RoPax), are as follows:
- the service requires vessels of high availability and reliability (the target being to provide a weather related reliability rating of 99.5% or better – the reliability performance achieved with the previous Streaker vessels);
 - the vessels should be of proven design suitable for service in fairly open estuarial waters;
 - the service across the Clyde estuary should be compared with vessels operating a similar essential service and in similar sea conditions;
 - the vessel type and design should be capable of operating all year round in the prevailing Clyde estuary weather and sea conditions. This applies to vessels specially built for the service or existing vessels acquired for the service;
 - the vessels must be capable of maintaining the service speed of 12 knots in all but the most extreme weather conditions experienced on the route;
 - propulsion systems fitted in the vessels will provide high manoeuvrability in the worst expected weather, especially for berthing at Dunoon and Gourock linkspans; and
 - the vessels will be able to use the berthing facilities at both Gourock and Dunoon.
- 4.7.2 In consideration of the above factors, other ferry operations in the UK and overseas have been analysed. Together with our own extensive experience in ferry operations globally, we it has been concluded that as an example, the ferry crossings to the Isle of Wight (IoW)

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operate comparable services in similar (or slightly worse) sea conditions to those of the Upper Clyde, (recognising that traffic numbers, numbers of passengers and operating restrictions with regard to vessel speeds are different to those required for the Dunoon Gourock service).

- 4.7.3 The data provided for the passenger only Gourock-Dunoon service which has been operating on the route since July 2011 was analysed and the many comments, qualified and unqualified, regarding the service performance have been noted. We have travelled the route on both vessels and reached the conclusion that vessels of a more suitable design and specification would provide a better sea keeping performance and more comfort for passengers. It should be noted though, that if a new, more suitable passenger only vessel was operating the route but this vessel was also subject to the MCA's service restrictions mentioned above regarding weather limits on sailing, these restrictions would undermine the new vessel's technical ability to achieve a high level of weather related reliability.
- 4.7.4 However, if the vessels carried a Rescue Boat it would mean that the vessel could operate without such restrictions and would be expected to deliver a high level of weather reliability. The costings in Table 4.2 are therefore based on the assumption that the vessels will carry a Rescue Boat. As such, the addition of a Rescue Boat may also require an additional crew member, after assessment by the MCA against their matrix in MSN 1823(M) ANNEX 2, which would increase staff costs¹⁴.
- 4.7.5 Regarding the RoPax service, we looked at the Western Ferries operation and apart from all the considerations of berths, facilities ashore and on board, distance of route etc they have a good record in maintaining a regular service even in bad weather. Again, we have studied the data available and comments regarding the service from various sources as well as travelling on the route in person. The vessels are obviously suitable for the route, though with limited passenger accommodation. It was noted that there is a tendency in heavy weather for seawater spray to come over the car deck. The ramps at either end are short and the adjacent bulwarks and gunwales are the same height, offering very little protection. This should be considered in the design of any new RoPax vessels for the Gourock-Dunoon route.
- 4.7.6 We do not think the GT (Gross Tonnage) figure plays a significant part in what constitutes an ideal vessel for reliability on the route (but it clearly affects port dues); the length, breadth and draft are more important with respect to sea-keeping qualities.
- 4.7.7 Though by no means scientifically tested in the study, experience shows that to find a vessel that will give a similar performance to the Streakers (a weather down-time of 0.5% or better), the overall length of a vessel must be above the most likely worst case scenario of wavelength, in this case assumed to be 40 metres. Maximum wave height will be assumed to be a worst-case scenario of 2.5 metres.
- 4.7.8 The vessel will also need to fit the linkspans at both Dunoon and Gourock and this is taken to be a maximum of 65 metres.
- 4.7.9 An outline specification of the vessel(s) needed was determined to be as follows:
- Length Overall (LOA): 40 to 50 metres, (though a RoPax can be up to 65

¹⁴ See Footnote 16

metre);

- beam: 11 to 15 metres;
- draft: 2.0 to 2.7 metres;
- service speed: 14.0 to 15.5 knots;
- navigational: X-Band Radar, Magnetic compass, Gyro compass, AIS, GPS, E/S, Speed Log, VHF though not limited to. (Navigational equipment fit to comply with MCA Merchant shipping Notice MSN 1823 (M) paragraph 19.1);
- capable of operating with a crew of 4¹⁵;
- passenger: 200 to 250 seated and all under cover (ie not seated on open decks);
- vehicles (cars): 40 (RoPax vessel only), with adequate protection from sea spray;
- adequate, compliant and safe access for embarkation / disembarkation of passengers and crew at all times;
- vehicular ramp at both ends of vessel (RoPax only) to facilitate swift loading / unloading of vehicles;
- vessel to be capable of operating day and night as a double header type of vessel (RoPax only);
- GT and crew numbers should be as low as safely possible;
- the vessel will need to be highly manoeuvrable in the worst expected weather, especially for berthing / unberthing, to enable quick turn-rounds in port; and
- capable of operating from both Gourock and Dunoon Linkspans.

4.7.10 The above specification applies to both Passenger only vessels and RoPax vessels (except where specifically mentioned).

4.7.11 These specifications are based on our knowledge of other similar routes with similar weather / wave patterns, and is given as our own best professional judgement. To ascertain the hull form of an ideal vessel for this particular route is outside the project's ToR. To do this, a technical feasibility project would be needed to produce a 12-month hydraulic study of wave patterns, tidal flow and weather for the Upper Clyde. Such a study would require accurate weather, wave and tidal data over a number of years. Whilst the weather and tidal data may be available it is doubtful if wave data exists with any accuracy, as wave rider buoys have not been in use in the Upper Clyde. A naval architect would then have to base hull form calculations on the findings of the hydraulic study to find the ideal ship and to model tank test his design.

4.7.12 Finding such a ship (or two!) is no easy task and there are not many readily available that fit the bill.

¹⁵ This figure is based on the matrix found in ANNEX 2 Manning Matrix of MSN 1823 (M). The specification given above is marginal between 4 or 5 crew members and will depend on the designer of the vessel. Any designer should therefore aim to maximize the matrix to reduce crew members to 4. Applying the Matrix gave a figure of between 105-110 (ie as per the Matrix, 4 crew members, the Matrix Index being between 99-110). However a sensitivity case using 5 crew members has been included should the designer meet all other criteria, but find the matrix figure be unavoidably 111 or above (Matrix Index for 5 crew members being 111-130).

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- 4.7.13 We have looked at the current market and consulted with ship broking associates within the group and have not found any suitable vessels for sale that would meet the criteria for operating the route or be economical to operate.
- 4.7.14 However, our research shows the following passenger only vessels were available at the time of writing (throughout the world) and are shown here to give an indicative second hand price to assist the financial modelling of the study, though some are slightly outside our recommended specification criteria.
- Cezayorti Hasan Pasa GT 2,695t, built 1997, in Australia. LOA 59.90m x 17.50m beam x 3.25m draft. 490 Pax, Class DNV, speed 24 kts. Price US\$4.7/4.8 mio;
 - Turgut Reis GT 2,695t, built 1997 in Australia. LOA 59.90m x 17.50m beam x 3.25m draft. 490 Pax, Class DNV, speed 24 kts. Price US\$4.7/4.8 mio;
 - Sea Star GT 887t, built 1991. LOA 45.25m x 10.50m Beam x 2.50m draft. 400 Pax, speed 12 kts. Price US\$2.3/2.4 mio;
 - Cloud X, GT 1,010, built 2012. LOA 37.52m x 18.09m beam x 3.5m draft. 365 Pax, speed 20kts, price US\$1.4/1.5; and
 - Bequia Express built 1972, GT 630t, LOA 51.59m x 10.04m beam x 2.92m draft. 250 Pax, speed 13kts, price - offers.
- 4.7.15 Therefore, the likelihood of finding a second hand passenger only vessel to meet the suggested outline specification is remote, and to meet such a specification new vessels will probably have to be designed. We caveat this statement that any such vessel designed and built from new, be it a passenger only vessel or a Ropax vessel should be designed and built with a resale value and worth, at their half-life of 10 or 12 years.
- 4.7.16 As part of the research Clyde Marine was visited (as requested by Transport Scotland) and an examination of their vessel *Clyde Clipper* was undertaken at Greenock. The Managing Director of Clyde Marine stated that the vessel was designed and built specifically for the route in anticipation of bidding for the contract. It is 27m LOA x 11.2m x 2.2m draught. Whilst it is larger than the two current vessels on the route, 1m longer than the *Argyll Flyer* and 4m wider in the beam and should perform better than either of the current vessels, she does not conform to the specification outlined here and would therefore only produce a short-term solution. She was used on the route for a short period when the *Argyll Flyer* was being readied for service, and more recently last summer as an extra vessel during the Cowal games period. There appears to be no data regarding winter service to compare reliability rates with the current vessels.
- 4.7.17 This research has concluded that the Wightlink Ferries Ryder Class passenger catamaran vessels, *Wight Ryder I* and *Wight Ryder II* currently providing a service between Portsmouth and Ryde (IoW) would potentially be a suitable type of passenger only vessel for the Gourock-Dunoon crossing. Built in 2009 with LOA of 41.5m x 12m beam x 1.6m draft, 260 Pax, speed 20 knots, they have a 100% operating efficiency in all weathers experienced since coming into service. The area of operation of all Wightlink ferries namely the East and West Solent are classified as Category C waters¹⁶. A



¹⁶ MCA marine Notice MSN 1827(M)

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vessel of this design with a reduced speed of 14-15 knots would provide a reliable passenger only service with a high degree of reliability. The Wightlink vessels were Built by FBMA in the Philippines at a cost, including shipment, of UK£3.125 million each. They are not built as High Speed Craft.

4.7.18 Various RoPax vessels were considered, but not many vessels were identified in the size category considered here. Some examples of the vessels considered are as follows:

- Coastal Double Ended Car-Truck / Day Passenger Ferry built Greece 2005, 50m x 15.30m x 2.8m moulded depth with 1.8m max draft, Daewoo 4 x 400hp with 4 x Veth rudder props, 12/14 knots, 60 European type cars and around 500 passengers, 3 ensuite crew cabins for 6; and
- Sylt Express, 660 dwt on 3.7 m draft, built Fiskerstrand, Norway 07/2005, dims: 88.16 x 16.1 m, 3,652 GT, 600 passengers, 80 cars (or 10 trucks + 40 cars), M/E 4 x Mitsubishi S12R-PTK - 4,400 kW total, Propulsion: 2 electrical Azimuth propellers Schottel STP 1212 >abt. 16kn @ abt. 210 g/kwh, MDO.

4.7.19 However it has been concluded that the best example of a suitable RoPax vessel for the Dunoon / Gourock route would be that found on the Lymington / Yarmouth (Isle of Wight) ferry crossing. Wightlink Ferries operate two RoPax services to the IoW from Portsmouth and Lymington. The Lymington vessels are too large for the Gourock-Dunoon service, but a scaled down version of a similar design with some modifications and increased speed would be a suitable type of vessel. They are 62m LOA x 16.03 x 2m beam x 2.3m draught, speed 11 knots they are double ended RoRo with a capacity for 360 passengers and 65 cars. They have a floating mezzanine deck for cars and have Voith Snyder propulsion units and were built in Croatia at a cost of €10 million. The mezzanine deck was 25% of the cost and the sophisticated propellers 15%. Thus, if the mezzanine deck and propulsion units were scaled back, the vessel could be built for a cost in the region of £6 million.



4.7.20 The new CMAL Hybrid Ro Pax ferry to be introduced during 2013 is considered too small and too slow, though a larger vessel of this class would probably serve the route well: LOA 43.5m (142ft) x Beam 12.2m (40ft); DWT35t; Speed 9 knots; Passengers 150, Cars 23, Commercial Vehicles 2, Fully laden 44t HGVs, but with space for 4. These are reported to cost £10 million each.

4.7.21 The estimated acquisition costs for new vessels used in calculating the business plan should be, viz:

- Passenger only vessel: UK £3,000,000; and
- RoRo Passenger vessel: UK £6,000,000.

4.7.22 When looking at new vessels the specification should also consider the resale attractiveness to potential buyers worldwide.

4.7.23 We do not consider additional crew would be needed over and above the crew numbers currently operating the *Argyll Flyer* and the *Ali Cat*, though a higher class of certification may be required for the Master of a RoPax. This also applies to shore based operations. Four crew members operate the Wightlink passenger only ferries and Western Ferries operate their RoPax vessels with crews of four. However if a Rescue Boat is to be carried and in

4 Vessel Specification

accordance with MCA MSN 1823 (M) ANNEX 2, crewing matrix, the Ropax vessel may require an additional crew member and a higher qualification for the Master. This calculation is borderline¹⁷ however and this is reflected in Table 4.2 below.

4.8 Infrastructure

- 4.8.1 The Linkspan at Gourock is in need of refurbishment in the medium term. We understand that this is in the CMAL investment programme but there are issues with replacing / refurbishing the linkspan whilst maintaining a service there. The current infrastructure could however be used in the short term for any new ferry service. CMAL has confirmed that were a new vehicle carrying service to be introduced, the linkspan would require significant attention within 18 months to two years. Note also that the linkspan at Gourock is used as a port of refuge for other west coast ferry services, so the linkspan does require to be maintained regardless of the presence or otherwise of a ferry service between Gourock and Dunoon.

4.9 Vessel Outline Specifications and Estimated Operating Budgets

- 4.9.1 Table 4.1 below provides a summary of the proposed vessel specification described in the preceding paragraphs.
- 4.9.2 Table 4.2 below then shows a table of approximate operational costs associated with these vessels. Given the level of uncertainty surrounding many of these values, the table includes a reference to the level of confidence attached to each value.
- 4.9.3 Argyll Ferries figures have been used where we consider there will be no change in costs. Cost estimates are for one vessel.

¹⁷ See footnote 16.

Table 4.1 Proposed Vessel Characteristics

Vessel Outline details	Passenger only vessel	Passenger & RoRo Vehicle Vessel
LOA	40m - 50m	45m – 65m
Beam	12m – 15m	14m – 16m
Draft	1.2m – 2.5m	2.3m – 2.7m
GT ¹⁸	190-520 (median 355)t	500 – 1,100 (median 800)t
Service Speed	14 - 15.5 knots	14 - 15.5 knots
Type	Catamaran (Displacement)	Monohull RoPax
Passenger No.	250	250
Car No.	N/A	40 min
Propulsion System	Propellers	Azimuth propulsion system for high manoeuvrability
LSA	Life rafts (+Rescue Boat)	Life rafts (+Rescue Boat) (MES)
Construction	Steel/Aluminium or composite materials	Steel or steel hull/aluminium superstructure
Engine power region	780kW	1100kW
Est Consumption	1.24mt/day	1.68mt/day
Fuel	MGO LS	MDO LS

GT – Gross Tonnage is a unitless number based on the total volume of the enclosed spaces of a vessel.

Thus: $GT = K \times V$

where V = Total Volume of enclosed spaces in the ship

where K = multiplier based on total volume = $0.2 + (0.02 \times \text{Log}_{10} \text{ of } V)$

Example: A vessel of 12,000m³ total volume would have a $K = 0.2 + (0.02 \times \text{Log}_{10} 12,000)$, therefore $K = 0.2 + (0.02 \times 4.0792) = 0.2816$.

The GT would therefore be $0.2816 \times 12,000 = 3,379$.

Volume is specific and measured to a strict formula by the registry or assigning authority.

¹⁸ The range of Gross Tonnage (GT) for a passenger and a RoPax vessel varies considerably and will depend on the final configuration decided on by the designer and owner of the vessel. We have found that generally a passenger only vessel as described by us in paragraph 4.7.8 has a GT of between 190t to 520t (this being a vessel equivalent to the **Clyde Clipper** though of 40 m LOA as opposed to 27m LOA) to the **Wight Ryder II** which has a GT of 520. We have therefore taken a median tonnage of 355t for calculation purposes. *The largest suitable reviewed vessel **MV WIGHT SKY** (see 4.7.18) which trades between Lymington and Yarmouth on the Isle of Wight has a GT of 2,546. This design could be modified to provide an acceptable GT of 1,100 (removal of additional mezzanine car deck and reduction in navigational space and passenger accommodation, including lifts) and thus this figure was used as the upper GT of the desired range. The lower figure of 500GT was taken from the existing Western Ferries vessels, which we know to work safely and efficiently, albeit with limited foot-passenger accommodation.*"

Table 4.2 Approximate Proposed Vessel Operational Costs

<i>Level of Confidence in assumptions</i>	Ship Costs per Vessel (Direct) (£'000)	Passenger only vessel	Passenger & RoRo Vehicle Vessel
<i>Medium</i>	Crew	390	400 (4 crew) / 500 (5 crew)
<i>Medium</i>	Crew agency	10	10
<i>Medium</i>	Staff cost/overheads	130	130
<i>Medium</i>	Fuel ¹⁹ & Lube oils (subject to price variation)	332	451
<i>Medium</i>	Ship maintenance & repairs	85	111
<i>Medium</i>	Spares & stores	28	42
<i>Medium</i>	Dry-Docking costs	54	82
	Berthing & traffic dues	See Chapter 7	See Chapter 7
<i>Medium</i>	Insurance	26	66
<i>High</i>	Management fees	104	104
	Total Expenditure	£1,159	£1,396 / £1,496

4.10 Noted Suggestions

- approaches at a later date could be made to the MCA to have the Category C / Category D delineation line moved from Cloch Point to Dunoon Pier to Cloch Point to the head of the new Breakwater opened in the Spring of 2005 (a distance of 80 metres). This will allow the vessels to be in Category C water at all times and allow them to trade as Class V (and less expensive) vessels;
- approaches at a later date could be made to the MCA to allow other approved methods of rescue for Man-over-board other than a Rescue Boat ie lasso method used by Wightlink on their Class IV vessels Wight Ryder I and Wight Ryder II (including a mechanical means of lifting from the water); and
- approaches should be made to Clydeport Limited and Upper Clyde users to increase the speed restriction from 12 knots to 15 knots.

¹⁹ Fuel costs taken for MGO at Falmouth 12th March 2013

5 Route Data

5.1 Introduction

- 5.1.1 The total volume of passengers, cars and commercial vehicles travelling across the Firth of Clyde between Gourock and Dunoon is clearly a key issue in estimating the forecast volumes on any new town centre ferry service and hence the revenues generated. This Chapter takes a detailed look at the trends associated with both Cowal / CalMac and Western Ferries in recent years to provide this context.
- 5.1.2 The focus of this analysis will be on the vehicle based market. The incremental approach adopted here means that the number of foot-passengers will always be the same in the calculation made, ie by switching from a town centre foot-passenger only service to a passenger and vehicle service for a given timetable, no additional foot-passengers would use the route (assuming that everything else remains the same, ie that there is no change in reliability, fares, frequency etc). This assumes a fit for purpose foot-passenger ferry service is in place and the revenue figures have been derived from town centre foot-passenger demand levels which precede the issues associated with the current ferry service.
- 5.1.3 There are two key issues which have affected travel volumes across the Firth of Clyde in recent years and both introduce significant uncertainty when forecasting future ferry volumes here:
- the first is the impact of the ongoing economic difficulties since the economic downturn which began in 2008. As will be seen below this has led to a sharp drop in overall travel volumes between Gourock and Dunoon and this is associated with lower travel volumes in general across the country on road, rail, bus etc; and
 - the second is that the trend data since 2010 has also clearly been affected by a major change to the supply of ferry services in mid-2011 with the commencement of the Argyll Ferries foot-passenger only service.
- 5.1.4 In addition it is important to understand the main components of the market and this is also explored here.

5.2 Route Carryings

- 5.2.1 The Gourock-Dunoon route is by some distance the busiest ferry crossing in Scotland. This is illustrated in Figure 5.1 below where total passengers carried in 2011 is shown for the Gourock-Dunoon routes and all other CalMac routes in Scotland. The total Gourock-Dunoon market is highlighted in red.

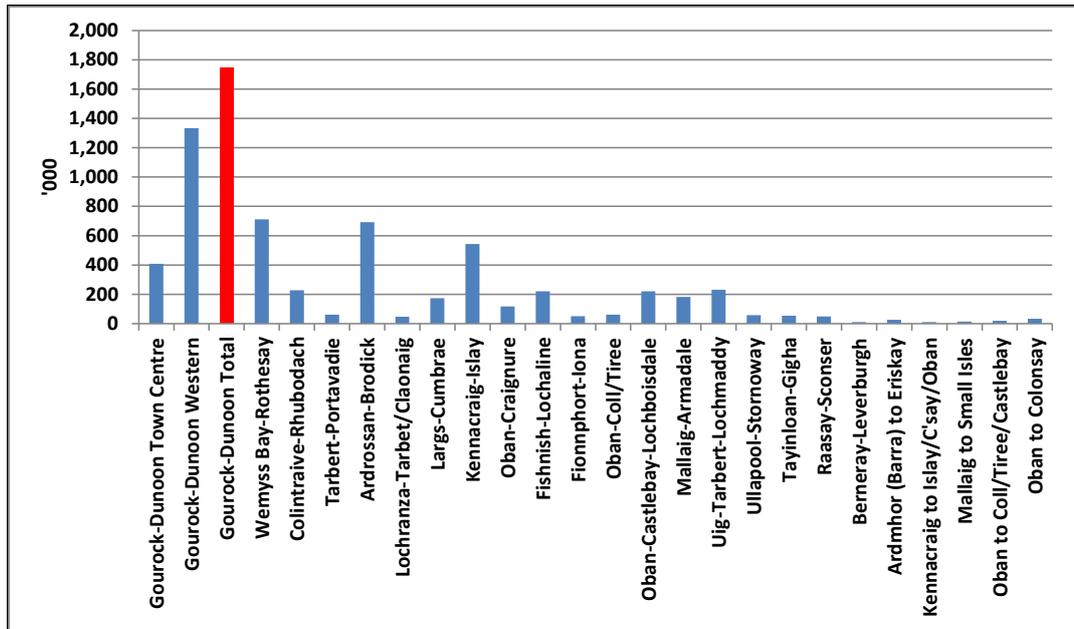


Figure 5.1 Gourock-Dunoon and Other CalMac Routes, 2011 Passengers

5.2.2 In 2011 (the last year for which full data is available from both operators) the total combined market for the town centre service and the Western Ferries services was as follows (one way journeys):

- 1,741k passengers (2007 peak was 1,936k);
- 604k cars (2007 peak was 682k); and
- 39.4k CVs & buses (2007 was 38.6k).

5.2.3 Figure 5.2 below shows the key long term trends for **passenger** carryings since 1992 in terms of absolute figures and also year on year percentage change.

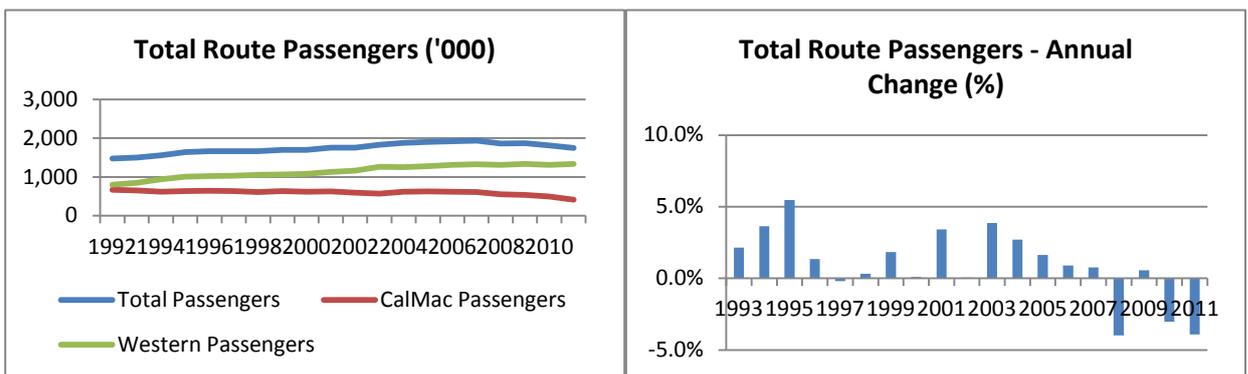


Figure 5.2 Route Volumes 1992-2011, Passengers

5.2.4 Total passenger volumes therefore grew from around 1.5m in 1992 to nearly 2m in the peak year of 2007. Note though that the figures for 2007 are affected by the closure of the Rest and Be Thankful for 17 days in late October and early November of that year (ie 4.5% of the year). If 2007 figures are discarded, 2006 was the peak year for passenger volumes. Note also that CalMac Ferries services were out of service between March and June 2003 which explains the relatively large drop in that year.

5 Route Data

- 5.2.5 Over this period (1992-2006) town centre (ie CalMac / Cowal / Argyll) passenger volumes were relatively stable, dropping by 8%, whilst Western Ferries passenger volumes increased by 63%. Across the two routes, total route volumes grew by 31% to 2006, but have since dropped by 9% from 2006 to 2011, meaning that volumes are now 18% above 1992 levels.
- 5.2.6 Between 2006 and 2011, Cowal / Argyll boardings declined sharply (-33%) whilst Western boardings were broadly flat (+2%), with volumes across the whole route declining by 9%. Figure 5.3 below shows the same long term trends for **car** carryings since 1992 in terms of absolute figures and also year on year percentage change.

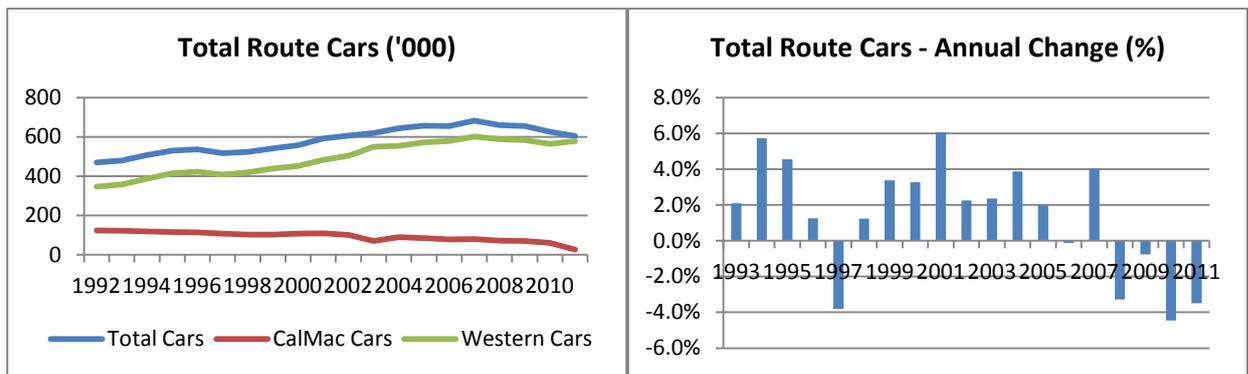


Figure 5.3 Route Volumes 1992-2011, Cars

- 5.2.7 Total car volumes grew from around 470k in 1992 to 682k in the peak year of 2007. The 2007 closure of the Rest and Be Thankful road-based alternative route from Cowal will in part also explain the spike in car carryings seen in 2007, and this should be regarded as an exceptional year, so the 2008 figures are assumed to be the true peak in this case (660k). Note again the drop in CalMac figures for 2003 associated with a service disruption in that year. Note also that Western Ferries introduced a 20 minute service throughout the day in 2005. The other main change in terms of the supply of ferry services during this period was that in 2002, the MV *Ali Cat* was brought onto the town centre route to provide peak hour foot-passenger only services. As can be seen in Figure 5.4 below, this contributed to an increase in the total number of sailings undertaken from 2003 onwards. After a drop in 2003 and 2004, from 2005 onwards there were around 10,500 Streaker sailings per annum, the same figure as in 2001.

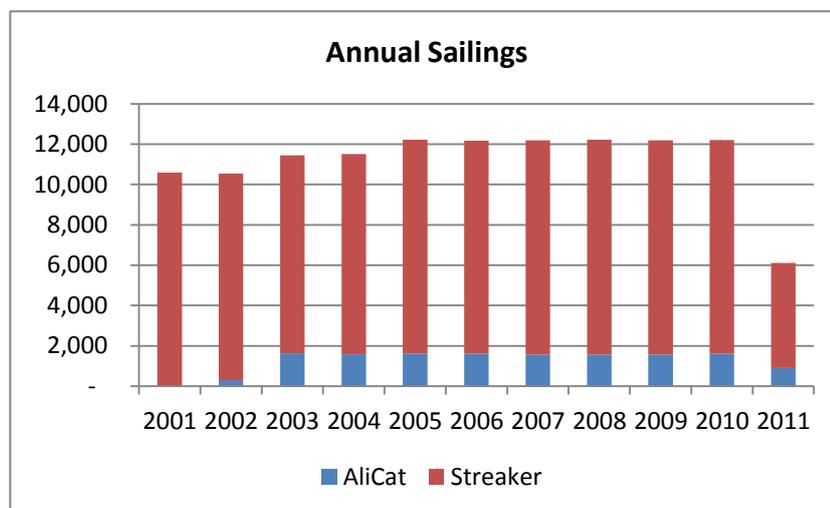


Figure 5.4 Gourock-Dunoon Town Centre Route – Total Sailings by Year

5.2.8 Over the period 1992-2008 CalMac / Cowal car volumes therefore dropped steadily by 42%, whilst Western car volumes increased by 70%. Total route volumes grew by 40% to 2008 (higher than the rate of passenger growth), but then dropped by 8% from 2008 to 2011, meaning that current volumes are still 28% above 1992 levels. Between 2008 and 2010 (the last full year of operation), Cowal / Argyll had declined by a further 14% whilst Western boardings were broadly flat between 2008-11 (down 2%) and volumes across the route declined by 8% overall.

5.2.9 Both passenger and car total route volumes therefore peaked in 2006-08 and have dropped steadily thereafter with the onset of the current economic difficulties. Car carryings between 1996-97 was the only significant negative growth in the whole period up to 2008, ie both passenger and car traffic consistently grew year on year in all these years. Since then there was a small growth in passenger volumes in 2008-09 but otherwise the picture is one of decline. Within these totals, the familiar trend of a switch from CalMac to Western Ferries is clear.

How do these trends compare to the wider CalMac Clyde network?

5.2.10 To see if the above Gourock-Dunoon trends are typical or not, Figure 5.5 below shows total Gourock-Dunoon (ie CalMac plus Western) passenger and car volumes together with the aggregated data for the wider CalMac Clyde network (ie Wemyss Bay–Rothesay, Colintrave–Rhubodach, Tarbert–Portavadie, Ardrossan-Brodick, Lochranza-Tarbert/Claonaig, and Largs-Cumbræ) for 1992-2011, indexed with 1992=100.

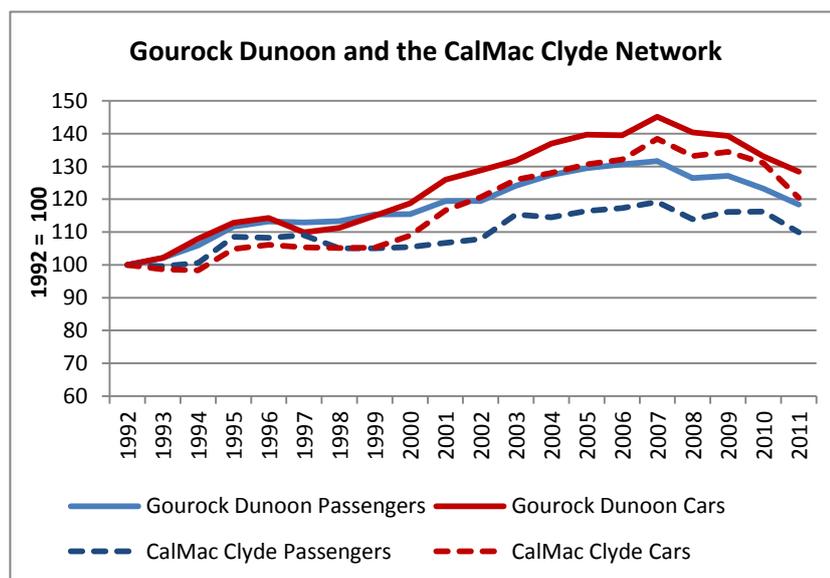


Figure 5.5 Gourock-Dunoon and the Clyde Network Volumes

5.2.11 It can therefore be seen that total volumes on the Firth of Clyde have grown at a faster rate than the rest of the Clyde CalMac network for both passengers and cars over this long time period.

5.2.12 However it should be noted that in the last decade, both passenger and car growth rates for Gourock-Dunoon (CalMac + Western) have lagged behind the wider Clyde network (-0.8% versus +3.0% for passengers and +2.0% versus +8.5% for cars). This period includes the switch to Argyll Ferries which has been problematic due to reliability issues.

5.2.13 Even within the Clyde network aggregate figures, there are large differences though. As an example, Figure 5.5 below shows the change in car boardings for all significant CalMac routes (>10k cars in 2011) between 2001 and 2011. The routes which were subject to the pilot RET fares programme are shown in red.

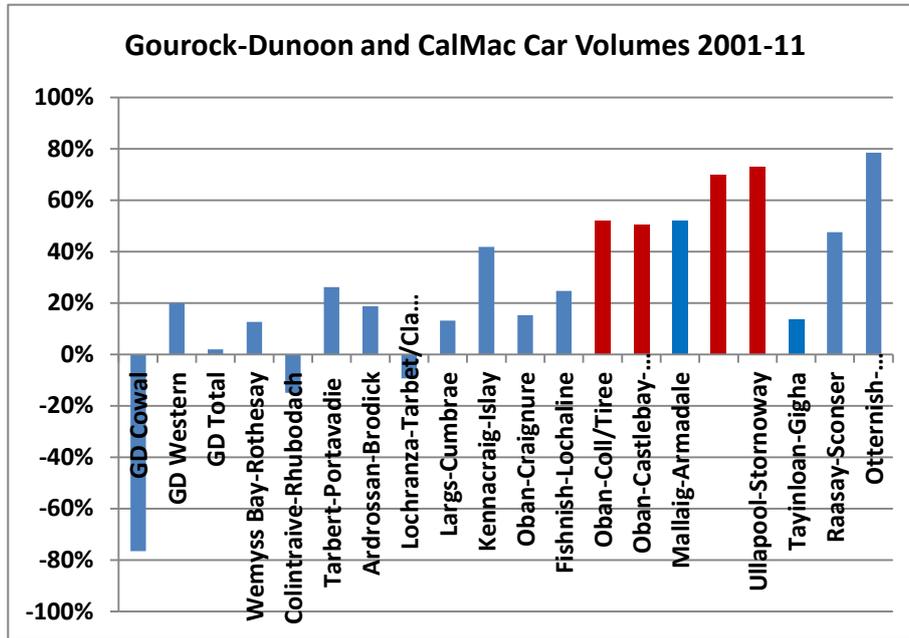


Figure 5.6 CalMac Routes – Car Growth 2001-11

5.2.14 The largest growth rates are therefore generally associated with RET routes. Across the Clyde network, there is a mix of growth and decline concealed within the aggregate figure and in general there has been higher growth across the West Coast network. This is explored further in Figure 5.7 below where, for further context, the trends for the past decade on Gourock-Dunoon and the Clyde CalMac network are contrasted with trends for the wider CalMac West Coast network (separating RET routes from non RET routes).

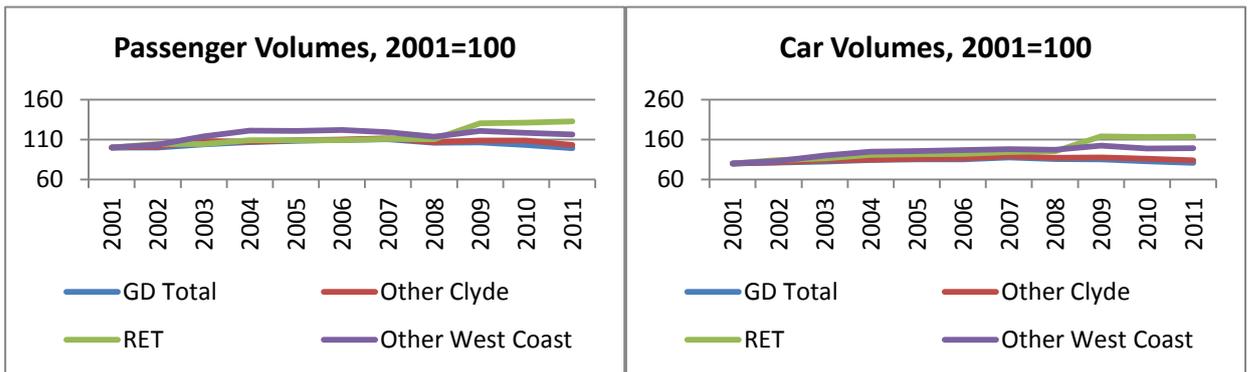


Figure 5.7 CalMac Network Trends 2001-11

5.2.15 These figures confirm that volumes on Gourock-Dunoon have lagged behind the wider Clyde network since 2009 (passengers) and 2005 (cars) to some extent. On the West Coast network (ie all other CalMac routes), a pronounced spike can be seen in 2009 on the RET routes with the first full year of these cheaper fares. Since then these routes have plateaued. In general though, all routes on the West Coast grew at a faster rate than the Clyde routes in the period since 2000.

- 5.2.16 The period between 1992 and 2006-08 covers a period of sustained growth in terms of the UK economy, albeit the rate of growth varied across this period. During this period:
- car carryings on the Gourock-Dunoon routes grew by 40% and passenger numbers by 26%;
 - this equates to around 2.3% (car) and 1.9% (passenger) per annum respectively;
 - across the whole CalMac Clyde network over this period (excluding Gourock-Dunoon) the average annual growth rate was 2.2% (cars) and 1.2% (passengers);
 - so during this period volumes on Gourock-Dunoon grew slightly faster than the wider CalMac network in the area; and
 - over the period 1995-2007 (comparable data for 1992-1994 is not available), Scottish total road traffic levels grew by around 1.6% per annum, so ferry traffic grew ahead of national trends during this time.
- 5.2.17 Note that the population of Dunoon grew somewhat during this period so this growth comes from an increase in residents as well as a propensity for people to travel more with increasing prosperity and car availability during this period.
- 5.2.18 Since the peak years (2006 for passengers and 2008 for cars (excluding 2007)) and the onset of the financial crisis:
- on Gourock-Dunoon, combined car volumes have dropped at an average of 2.9% per annum and passenger volumes have dropped by 2.4% per annum on average;
 - across the CalMac Clyde network (excluding Gourock-Dunoon), the equivalent figures are declines of 1.7% (car) and 1.6% (passenger) per annum, so Gourock-Dunoon has declined at a faster pace over this period; and
 - over the period 1907-2011, Scottish road traffic levels fell by around 0.7% per annum, so ferry traffic has declined faster than national trends.
- 5.2.19 As such the overall trends on Gourock-Dunoon are similar to the CalMac Clyde network although the quantum of change varies somewhat. Ferry volumes tend to accelerate and decline faster than general road traffic.

Foot-passengers

- 5.2.20 The available data does not allow us to fully distinguish foot-passengers from vehicle based passengers. However, for forecasting purposes, it is necessary to estimate the split between vehicle based passengers and foot-passengers, as the new passenger and vehicle ferry service will clearly attract a proportion of the vehicle based passenger market (but no additional foot-passengers). As well as for this purpose, the trends with respect to the foot-passenger market are covered here for context.
- 5.2.21 We received specific data with respect to foot-passengers relating to Cowal and Argyll Ferries from 2005 to 2012 (no specific data relating to foot-passengers is available before this date) and this is shown below in Figure 5.8. Specific foot-passenger data from Western Ferries is not available so we do not know with certainty the exact overall size of the foot-passenger market.

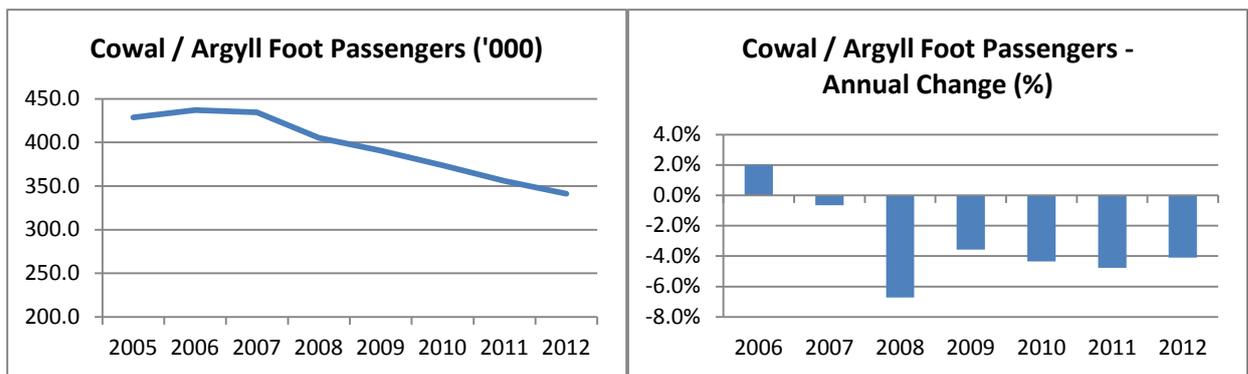


Figure 5.8 Cowal / Argyll Foot-passenger Data, 2005-12

- 5.2.22 This again suggests that the economic downturn from 2007 has had a significant impact. Importantly, the reductions in foot-passenger numbers precedes the change to the Argyll Ferries service in summer 2011, when despite increased vessel frequency and a longer operating day, passenger numbers have continued to decline into the full calendar year of 2012.
- 5.2.23 A further issue here is that McGill's buses commenced a Dunoon – Gourock – Braehead – Glasgow through service in August 2008 via Western Ferries. This was the first through bus service to operate from Dunoon – ie passengers do not generally have to disembark at either end or on the ferry and they pay an inclusive bus fare – ie they do not pay a separate passenger ferry fare. This service is also free end-to-end for holders of the National Entitlement Card and as such represents significant 'competition' to a town centre passenger service. Typical journey times are around 110 minutes from Dunoon town centre to Glasgow (although some peak hour services which omit Braehead have shorter journey times (90 minutes)). Typical Dunoon to Glasgow journey times by passenger ferry and train are 75-100 minutes so the ferry / train option does still hold a time advantage over the bus which is clearly very important for regular commuters.
- 5.2.24 This McGill's bus also provides a Dunoon to Gourock town centre service which would be free to Entitlement Card holders. We have no figures for the usage of this McGill's service, but there are currently 10 return crossings per weekday, nine on a Saturday and six on a Sunday, adding up to over 6,000 bus journeys per annum.
- 5.2.25 Holders of a Strathclyde Concessionary Travel Card do currently receive discounted passenger fares on Argyll Ferries with a fare of £1.30 return (90p single). This is an important issue as Dunoon has a higher proportion of people of pensionable age (24%) compared to the Scottish average (20%) (SNS, 2011 figures)²⁰ therefore this represents a significant market segment and source of revenue to any potential operators via the SPT reimbursement scheme. In this reimbursement scheme, adding the fare paid and the reimbursement, total operator income is around 67% of the standard fare.
- 5.2.26 In 2009 and 2010 passenger carryings on Gourock-Dunoon dropped at a faster rate than the rest of the Clyde CalMac network. This may in part be attributed to the new McGill's bus service. Had Gourock-Dunoon followed the same pattern as the rest of the Clyde network in these years, passenger boardings would have been around 30k higher than they were. This broadly corresponds to a 30k drop in foot-passengers on Cowal between 2008 and 2010.

²⁰ <http://www.sns.gov.uk/Reports/Report.aspx?ReportId=2&AreaTypeId=IG&AreaId=S02000135>

- 5.2.27 In addition figures from Cowal Ferries for SPT Concessionary Fares show a drop of 18.5k from 104,250 in 2008 to 85,800 in 2010 which suggest a switch from town centre ferry to McGill’s bus.
- 5.2.28 Figure 5.9 below shows Cowal / Argyll passenger figures split by foot-passengers and vehicle based passengers. The foot-passenger figures pre 2005 are estimated, assuming the 2005 car occupancy figure of 2.16 persons per car.

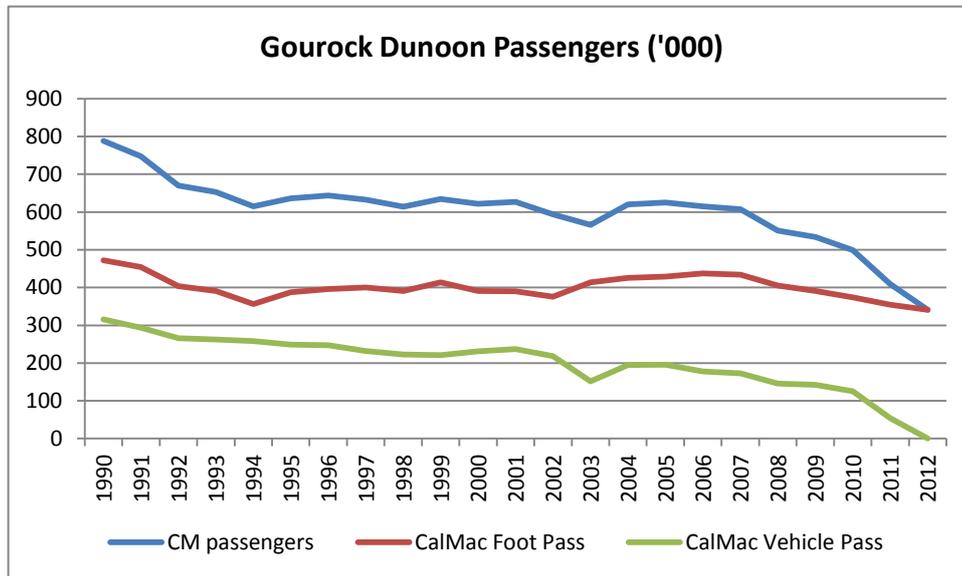


Figure 5.9 Cowal / Argyll Passenger Data, 1990-2012

- 5.2.29 It can therefore be seen that the foot-passenger market was relatively stable between 1992 and 2008 hovering around the 400k mark (although as noted above the earlier figures are estimates, worked back from assumed vehicle occupancies). By contrast, the trend for vehicle based passengers shows a steady decline.
- 5.2.30 As noted above, we do not have figures from Western in relation to foot-passenger numbers. However, it is possible to use the available data to make an estimate of Western Ferries foot-passengers for 2010, and hence total route foot-passenger / vehicle based passengers. The key issue here is that we do not know the number of foot, car and bus-based passengers carried on Western Ferries. We also do not know how many vehicle based passengers travel in a CV or a bus. The following assumptions have been made, leading to the figures provided in Table 5.1 below:
- from the McGill’s timetable we can estimate that there are 6,760 crossings per year;
 - national statistics suggest that the average bus loading is nine passengers, CVs can be assumed as single person occupancy;
 - STS road traffic statistics suggest that on rural roads there is an 85% / 15% split in terms of total CVs / buses;
 - we can therefore estimate the number of buses and CVs carried by each operator and thus the number of passengers carried by each vehicle type;
 - we can then deduce the passengers carried by car on Cowal ferries and apply this to Western Ferries car volumes to obtain estimates of Western car passengers;

- we can then estimate foot-passenger volumes on Western by deducting all vehicle based passengers from the total;
- the end result of this process is that Western held a 36% share of bus / foot-passengers and Cowal Ferries held a 64% share; and
- these foot / bus proportions are likely to have shifted further towards Western since 2010.

Table 5.1 Estimate of Foot / Vehicle based passengers

Published Data 2010	Cowal	Western
a. Total Passengers	499,228	1,313,800
b. Foot-passengers	373,690	Not Available
c. Total Cars (vehicles)	61,400	564,200
d. Total CVs / Buses (vehicles)	3,462	33,000
Estimated Data		
e. <i>McGills Buses veh</i>		6,760
f. <i>McGills Buses pass (e * 9)</i>		61,192
g. <i>Other buses veh (15% of total cv / bus (net of McGill's))</i>	534	4,044
h. <i>Other buses pass (e * 9)</i>	4,909	37,207
i. <i>CVs (85% of total cv / bus (net of McGill's))</i>	2,928	22,196
j. <i>CV passengers (i * 1)</i>	2,928	22,196
k. <i>Car Passengers (a-b-h-j)</i>	117,701	
l. <i>Passengers / car (k/c)</i>	1.92	
m. <i>Car Passengers (l * c)</i>		1,081,543
n. <i>Foot-passengers (a-f-h-j-k)</i>		110,663
Summary of estimates		
<i>Foot-passengers</i>	373,690 (77%)	110,663 (23%)
<i>Bus based passengers</i>	4,909 (5%)	99,399 (95%)
<i>Car / CV based passengers</i>	120,629 (10%)	1,103,738 (90%)
<i>Foot / Bus total</i>	378,599 (64%)	210,062 (36%)
<i>Total Vehicle Based Passengers</i>	1,328,675 (73%)	
<i>Total Foot-passengers</i>	483,353 (27%)	

5.2.31 This 73% / 27% is used to split future total route passenger projections into foot and vehicle based passengers.

5.3 Who Uses these Ferries?

5.3.1 A series of on-board surveys (on both CalMac and Western vessels) were undertaken in 2007 (August and November surveys were undertaken so the data is a good representation across the year).

5 Route Data

- 5.3.2 These 2007 on-board surveys provide a valuable data source in terms of the users of these ferry services.
- 5.3.3 When weighted by frequency of travel, the data suggest that around 75% of the sample of all journeys made across the two routes were undertaken by Cowal residents. The data also suggests that Cowal residents favoured Western Ferries (71% / 29%) compared to non Cowal residents others (62% / 38%).
- 5.3.4 As such it is useful to consider these two groups separately (ie 'Cowal residents' and 'others') in terms of their cross Firth of Clyde choices as there is evidence to support this distinction.
- 5.3.5 In terms of journey purpose, the 2007 surveys found that around 45% of journeys undertaken on the ferries were commuting to / from regular place of work underlining the importance of the ferries for this purpose. Some 18% were personal business, 16% were shopping / leisure, 9% were visiting friends and relatives, and 7% were on employer's business.
- 5.3.6 Argyll Ferries also undertook on-board surveys in 2013 and this showed that 45% of foot-passenger ferry users were travelling for leisure, 31% were commuters, 13% were travelling on business and 11% were travelling for other purposes.

5.4 Revenue

- 5.4.1 It is important to understand the revenues generated on the route to understand the context for potential revenue on the new Gourock-Dunoon town centre service.
- 5.4.2 There were / is a wide range of fare types available across the two ferry operators and we do not have a full breakdown of tickets sold by type and fare for both operators, including all the various discounts offered. In seeking to estimate the level of revenue likely to be generated by any new service, it is therefore more accurate and manageable to work back from the average 'outturn' revenue per journey made, ie the average fare paid across all the fare types which are available.
- 5.4.3 As such it would not be realistic to assume that the fares paid by users of any new ferry service would be the full published fare, given this evidence.
- 5.4.4 Table 5.2 below shows volumes, revenues and average outturn fare paid on Cowal Ferries in 2009 and 2010.

Table 5.2 Cowal Ferries Outturn Revenue per Trip

Cowal Ferries	Volumes		Revenue		Revenue per trip (£)	
	2009	2010	2009	2010	2009	2010
Passengers	533,479	499,234	£1,094,900	£1,133,600	£2.05	£2.27
Cars	70,717	61,443	£393,700	£354,200	£5.57	£5.76
CVs / Coaches	3,844	3,462	£119,900	£109,000	£31.19	£31.48
Total Revenue			£1,608,500	£1,596,800		

- 5.4.5 Retail (£170k) and Other (£50k, mainly freight and Post Office) revenue added around £220k in each of these years. It is notable that outturn fares are well below the published standard fares, due to the widespread use of multi-journey tickets bought locally which reduce published fares by up to 50%.
- 5.4.6 Western Ferries published turnover (ie its assumed ticket revenue) data for the same two years is: £6.003m (2009), and £6.024m (2010). The profits noted in Western Ferries published accounts for both years was £0.9m and £1.4m respectively equating to 15% and 23% of turnover.
- 5.4.7 For the record, total route revenue was therefore around £7.6m in both 2009 and 2010.
- 5.4.8 Western Ferries do not publish any disaggregation of their total revenue figures, ie we do not know how much is generated by passengers, cars and commercial vehicles / buses separately. However, to explore this we can take the inferred average fares paid on Cowal Ferries per passenger (£2.27 in 2010), car (£5.76 in 2010) and CV / Coach (£31.48 in 2010) and apply these fares to the Western Ferries published volumes. Using these figures the resulting revenue estimates for Western revenues are 17% higher than Western's published revenue in 2009 and 2010.
- 5.4.9 This implies that the outturn revenue per passenger / car / cv on Western Ferries is lower than was the case with Cowal Ferries. This may reflect a higher proportion of 'local' discounted traffic on the Western route. Cowal may have attracted more occasional travel, perhaps from those unfamiliar with the area – hence paying higher, undiscounted fares. If applied evenly this would suggest that average 2010 outturn revenues on Western were £1.88, £4.78 and £26.13 for passenger, car and CV / Coach respectively. The scale of these figures was confirmed by the operator. Note also that McGill's bus based passengers and holders of SPT cards do not pay a passenger fare on Western Ferries. This will have the effect of lowering the average revenue per person carried.

6 Route Demand Projections

6.1 Introduction

- 6.1.1 Chapter 5 outlined the recent trends across the Gourock-Dunoon route. This Chapter details the overall volume projections used to estimate costs and revenues associated with a new town centre passenger and vehicle ferry service.
- 6.1.2 A two-step process to demand forecasting has been undertaken:
- Step 1: Define scenarios in relation to the total volume of travel across the upper Firth of Clyde; and
 - Step 2: Estimate the market share accruing to Western and Gourock-Dunoon under a number of ferry service scenarios.

6.2 Developing Scenarios

Step 1: Define Market Volume Scenarios

- 6.2.1 Having analysed the trend data on the Firth of Clyde in Chapter 5, the key issues in any projection are:
- when will growth resume with the anticipated economic recovery?
 - at what rate will growth resume in relation to recent trends?
 - would the addition of a second car ferry between Gourock and Dunoon 'generate' significant demand? and
 - in the longer term, is there a 'saturation' point for volumes on these crossings, ie growth cannot continue indefinitely without significant population growth?
- 6.2.2 The relationship between Scottish economic growth and Gourock-Dunoon volumes is complex. Total car and passenger volumes have drifted steadily and consistently down between 2007 and 2011, despite the economy suffering a sharp fall in 2009, rebounding in 2010 and contracting again in 2011. Car ferry volumes have dropped much faster than national traffic volumes since 2007 and were growing at a faster rate than national traffic between 2000 and 2007. This suggests volumes here are more volatile than national road traffic. It is therefore not obvious that volumes on the route will immediately increase with economic growth. For example the national economy grew between 2009 and 2010, yet local passenger and car volumes dropped. As such, national economic forecasts are probably not the most reliable basis for forecasting here, and a trend based approach considering a number of scenarios is more appropriate.
- 6.2.3 In terms of population, the GROS²¹ projections for the Argyll and Bute Council area suggest a 7% drop in population between 2010 and 2035. There are no sub-local authority projections available. GROS estimates of the population of the settlement of Dunoon (which includes Sandbank) suggest that the population grew from 8,950 in 2003 to 9,410 in 2010, a growth of around 5% which will account for some of the ferry passenger and vehicle traffic growth seen in this period.

²¹ General Register Office for Scotland

6 Route Demand Projections

- 6.2.4 The prospective starting year for the analysis of a new service has been agreed as 2015 and the assessment period is 15-years, following the precedent set in the Deloitte and Touche report of the late 1990s, 'Options for the Future of Ferry Services between Gourock and Dunoon'²². Note though that the current Argyll Ferries contract is six years in duration.
- 6.2.5 As suggested above, although volumes are currently dropping, it would not seem unreasonable to assume that travel volumes across the upper Clyde will begin to increase again when the local economy recovers and in particular when real incomes start increasing. A number of different growth scenarios are therefore developed here to explore the sensitivities of the outcomes reached in response to this growth.
- 6.2.6 The total volume will of course also be determined to some extent by the nature of the ferry services in operation (ie service frequency and price) and this is accounted for, in terms of changes from the current level of service described further below. In the decade or so up until July 2011 there had been a relatively stable supply side, although there were some enhancements to Western Ferries' frequencies and operating day (and Western Ferries also brought two new vessels into service). The commencement of a half hourly foot-passenger only service, together with a much longer operating day, has not led to any increase in foot-passengers. However the issues surrounding the foot-passenger vessels currently in use makes it difficult to draw any conclusions from this.
- 6.2.7 A number of whole route scenarios have been developed. These were designed to represent a range of outcomes for a forecast period of 2015-29 inclusive, and are outlined below:
- Scenario 1 'Static' Demand – all cost and revenue estimates based on 2010 total route volumes, ie the last full year before the introduction of the Argyll Ferries service;
 - Scenario 2: 'Gradual Recovery' – volumes pick up at half recent trend rates following economic recovery. The scenario here sees volumes continue to decline at half the rate of the recent trend (2006-2010, ie up to the commencement of Argyll Ferries) until 2014, at which point growth resumes at half the pre-recession trend rate of growth (2000-06 (passenger) and 2000-2008 (car / cv)), so that's 1.0%, 1.2% and 0.6% per annum for passengers, cars and cvs respectively;
 - Scenario 3: 'Trend Growth' – volumes continue to drop to 2013 then resume full pre-recession trend growth from 2014 onwards (2.1% per annum for passengers, 2.4% per annum for cars and 1.2% per annum for CVs / coaches); and
 - Scenario 4: 'Ongoing Decline' – assumes volumes continue to drop at half of current rates to represent a 'worst case' scenario.
- 6.2.8 These four scenarios give rise to the following total route passenger and car projections, shown in Figures 6.1 and 6.2 below.

²² <http://www.scotland.gov.uk/Publications/2012/02/6773/downloads>

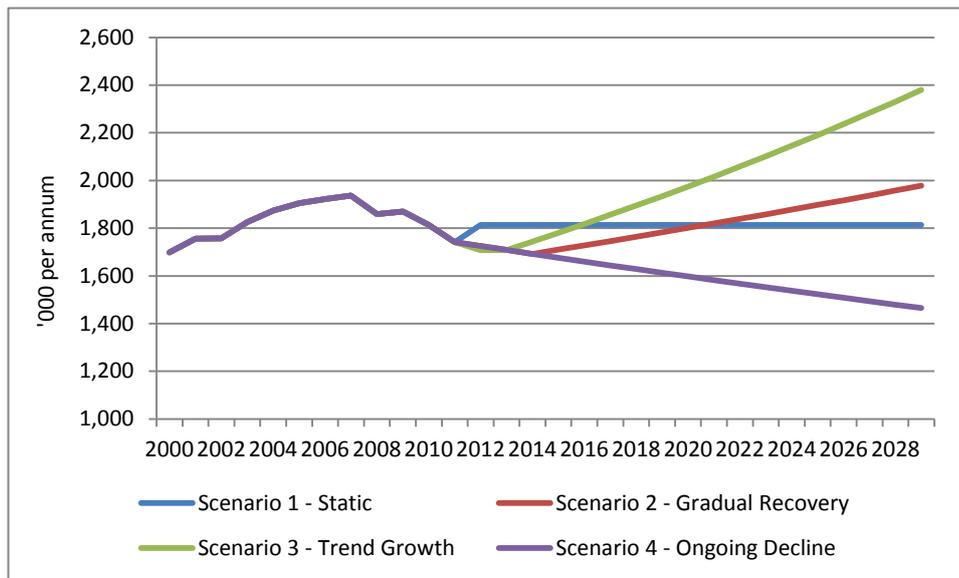


Figure 6.1 Total Route Passenger Projections, 2015-29

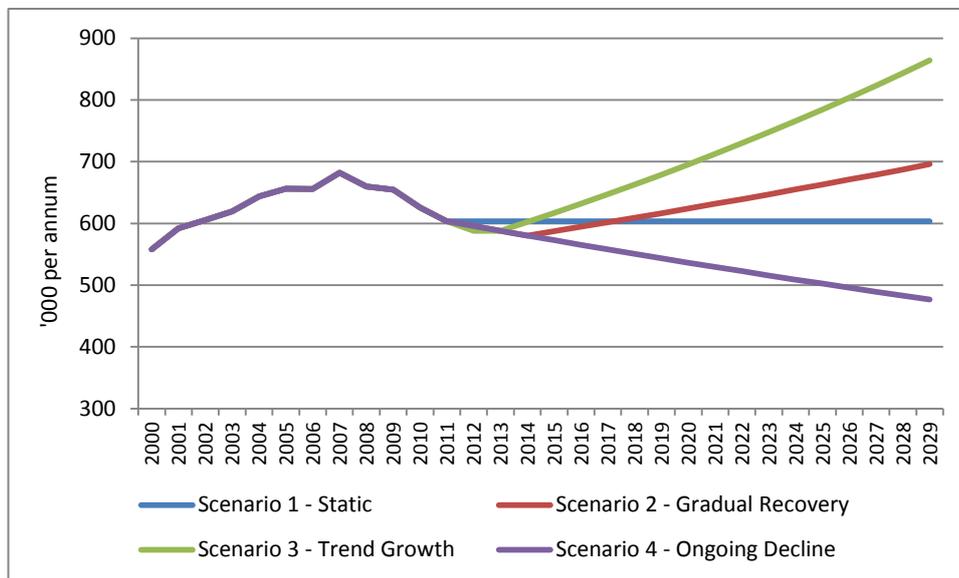


Figure 6.2 Total Route Cars Projections, 2015-29

Step 2: Estimate Route Volume 'Uplift'

6.2.9 The introduction of a new passenger and vehicle ferry service operating between the town centres would lead to an increase in the overall demand for vehicle based travel across the Firth of Clyde, and this has been accounted for in terms of an elasticity, based on the increase in the number of vehicle carrying sailings. The elasticities have been taken from a survey undertaken for the Scottish Government as part of the Scottish Ferries Review. This survey was undertaken across the network and used a series of 'Stated Preference' questionnaires to estimate Scottish ferry travellers' behavioural responses to changes in ferry supply. The total sailings elasticities derived for those travelling on short ferry crossings (less than 30 minutes) are shown below:

- 0.10 and 0.15 for residents and visitors respectively - vehicle based; and
- 0.07 and 0.10 for residents and visitors respectively - foot-passengers.

6 Route Demand Projections

- 6.2.10 These figures suggest for example that a 100% increase in the number of daily sailings would lead to a 10% increase in vehicle-based travel by local residents and a 15% increase by visitors. Using these elasticities, a new two vessel service for example would increase total route volumes by 7% in each year.
- 6.2.11 The four demand scenarios outlined above are therefore subject to an uplift based on the elasticities noted here, depending on the timetable / vessels on the new service in each case.

Step 3: Estimate Market Share

- 6.2.12 2010 was the last full calendar year when both passenger and vehicle ferries were operating. The market share between Cowal and Western is shown below in Figure 6.3.

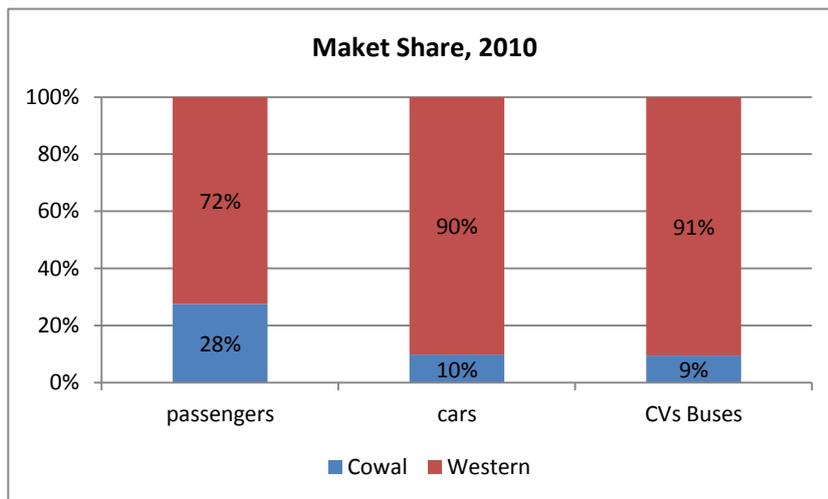


Figure 6.3 Market Share, 2010

- 6.2.13 The forecast market shares, and the resulting costs and revenues are now reported in Chapter 7.

7 Incremental Cost and Revenue Scenarios

7.1 Overview of Approach

7.1.1 The approach taken here, in overview is as follows:

Incremental Costs

- calculate vessel acquisition costs;
- calculate fuel and other costs based on service frequency in each scenario and vessel specification;
- calculate pier dues associated with volumes from projected demand (see below);
- calculate berthing dues based on service frequency and vessel specification; and
- estimate the total incremental **costs** for all Growth and Vessel scenarios.

Incremental Volumes and Revenue

- estimate total route volumes based on the four whole route demand projections (see Chapter 6);
- estimate uplift in total route volumes as a result of additional services on the route (elasticity based);
- estimate market share for the proposed new foot-passenger and passenger and vehicle services – based on the number of vessels operating the route (and hence the timetable achieved);
- estimate the resulting incremental revenue from outturn average revenues per person / car / cv; and
- estimate the total incremental **revenue** for all Growth and Vessel scenarios.

7.1.2 Incremental costs and revenues are then compared to assess the feasibility of each growth / vessel scenario.

7.2 Choice Modelling

7.2.1 If a new town centre vehicle carrying ferry service is introduced, vehicle-based Cowal residents and visitors would then have a choice between the two routes. There are only a relatively limited number of parameters which could determine this choice:

- crossing time;
 - crossing times between Cowal and Western Ferries were the same at 20 minutes, despite the town centre route being longer;
- length of the operating day;
- crossing frequency;
 - will depend on the number of vessels in service
- average fares paid;

7 Incremental Cost and Revenue Scenarios

- access journeys times to terminals, relative to the journey being made;
 - clearly differs by broad origin / destination
 - convenience of journey (ticketing arrangements etc); and
 - vessel comfort and facilities.
- 7.2.2 A spreadsheet-based choice model has been developed to represent how users behave in the face of these choices, based on a Discrete Choice modelling framework. The model represents the journeys between census datazones in Dunoon and beyond and key locations to the south of the Clyde for Dunoon residents, and vice versa for visitors to Cowal. It includes a representation of access times by datazone, fares, crossing times and service patterns across the day.
- 7.2.3 This choice modelling clearly requires the current Western Ferries service to be represented as well as the new town centre service. No change to current Western Ferries timetabled services has been assumed as part of this exercise, although this issue is explored further in Chapter 8.
- 7.2.4 As has been noted, the key element of this exercise is the impact of moving from a foot-passenger only service to passenger and vehicle service. For example a two-vessel *foot-passenger* service must be compared with a two-vessel *passenger and vehicle* service to establish an incremental difference (assuming all other things remain the same, ie the same timetable is being run). By definition, the number of foot-passengers would be the same between these two scenarios (as the service is identical from the perspective of a foot-passenger) and further consideration of foot-passenger impacts can be discounted here beyond the initial foot-passenger only subsidy calculation.
- 7.2.5 Proximity to each ferry terminal is clearly a key issue for Dunoon residents in choosing which ferry service to use. Accessibility analysis undertaken as part of this study has shown that Hunter's Quay is the closest ferry terminal for 29% of local residents and Dunoon town centre is the closest terminal for 71% of local residents.

Fares

- 7.2.6 Fares is also a key issue here. Cowal Ferries data from 2010 has been used to estimate the outturn revenues per passenger, car and CV, as was shown in Chapter 5. These figures are very much lower than the published fares due to the level of local discounting available (typically up to 50%). This means that published fares clearly cannot be used as a basis of estimating potential future revenue streams.
- 7.2.7 However when these implied fares were applied to Western Ferries volumes, the revenue figure derived was higher than Western's reported revenues. This suggests that the average fares paid on Western Ferries in 2010 were lower than for Cowal Ferries, despite the apparent similarity in the published 'standard' fares. The implied fares were 17% lower than Cowal average fares. This is most probably a reflection of the mix of users on each route at that time.
- 7.2.8 Cowal Ferries would be the first ferry service most visitors would come across when travelling from the east into Gourock. Indeed, the 2007 survey data suggested that a greater proportion of Cowal Ferries users (33%) were 'visitors' (as opposed to Cowal residents), the equivalent figure for Western Ferries being 26%. Visitors are clearly much more likely pay a full fare on the ferry, perhaps being unaware of the opportunities to buy

7 Incremental Cost and Revenue Scenarios

cheaper tickets at local retail outlets, and clearly being far less likely to buy discounted multi-journey tickets. Local Dunoon residents are clearly much more likely to purchase discounted fares.

7.2.9 The choice of fares is key here as they determine: (i) the mode share likely to be achieved on the town centre service; and (ii) the incremental revenue increase in moving from foot-passenger to passenger and vehicle. The question which this poses for the choice modelling is which set of fares to use? The choices are:

- 2010 outturn Cowal Fares: £2.27, £5.76, £31.48 (passenger / car / cv); or
- 2010 *estimated* Western Fares: £1.88, £4.78, £26.13 (passenger / car / cv).

7.2.10 Given that (i) any new town centre service would have to attract market share from Western Ferries (and thus be price competitive); and (ii) the profile of these users will reflect the current Western Ferries user profile, it would seem more appropriate to assume Western Ferries outturn fares for the purposes of this exercise. However both sets of fares are included initially for added clarity.

7.2.11 The (estimated Western) fares used in calculating revenues have been adjusted to 2013 values to be consistent with Pier and Berthing Dues using RPI (January 2013), an increase of 12.8% on January 2010 (giving values of £2.12, £5.40, £29.33 for passengers, cars and commercial vehicles respectively).²³

7.2.12 Note that under the current formulations, any application of Road Equivalent Tariff (RET) on the town centre route would result in higher fares than those noted above. We have therefore not considered RET any further as part of this exercise.

Vessel Scenarios

7.2.13 Three different vessel scenarios are considered here, based on the acquisition of two, three or four new vessels.

7.2.14 A two-vessel operation on the route would be able to provide a 30 minute service with two sailings per hour in each direction, providing the vessels had sufficient maneuverability etc to achieve this. Single vessel operation later in the evening would provide opportunities for vessel maintenance.

7.2.15 Three vessels would allow a 20 minute service with three sailings per hour across much of the day with the service dropping to two vessels at quieter periods.

7.2.16 Although Western Ferries operate four vessels, a 20 minute frequency is generally operated across the day, with half hourly services in the early morning and evening. Only at certain times of the day or to accommodate flexible peaks in demand is the fourth vessel deployed. At present, only Saturday mornings and Friday afternoons see a timetabled 15 minute service. At no point are four vessels per hour timetabled on Monday to Thursday. Four vessels would therefore be required to provide absolute parity with Western Ferries, and this scenario is also considered. Note that a four vessel scenario where all four vessels operate a 15 minute services has not been considered at this stage, as this would seem excessive.

²³ <http://www.ons.gov.uk/ons/datasets-and-tables/index.html?pageSize=50&sortBy=none&sortDirection=none&newquery=rpi&content-type=Reference+table&content-type=Dataset>

- 7.2.17 These three different vessel scenarios (involving two, three or four new town centre vessels) give rise to three different timetable scenarios as noted above and these in turn would lead to differing market shares as described below.

Market Shares

- 7.2.18 A key issue with respect to market share is that, for those travelling between Dunoon and Glasgow or the east (the majority movement by far across the Firth), the town centre route provides shorter drive times on the south of the Clyde and somewhat shorter drive times for many on the north of the Clyde. As such, if all things were equal with respect to both ferry services, it would be reasonable to assume that a majority of car-based users would use the town centre service.
- 7.2.19 The 2007 surveys referred to in Chapter 5 suggested that 54% of car-based journeys made (across the two combined services) were between Cowal / Helensburgh / Lomond and the east (ie Renfrewshire, Glasgow and areas further east). A further 32% were between Cowal / Helensburgh / Lomond and Inverclyde itself.
- 7.2.20 The scale of these figures was confirmed by a set of indicative traffic count surveys which were undertaken on 18/12/12 between 1000 and 1200 at McInroy's Point and between 1400 and 1530 at Hunter's Quay.
- 7.2.21 At McInroy's Point, a total of 187 vehicles were counted disembarking from the ferry. Of these:
- 90% turned left ie towards the east – Gourock / Glasgow; and
 - 10% turned right ie towards the west A78 / Ayrshire.
- 7.2.22 At Hunter's Quay, a total of 109 vehicles were counted disembarking from the ferry. Of these:
- 74% turned left ie towards Dunoon town centre; and
 - 26% turned right ie onto the A815 northbound to Sandbank and beyond.
- 7.2.23 Overall, these figures suggest that the majority of vehicular traffic (at least in December) is travelling between Dunoon and the east towards Gourock and beyond.
- 7.2.24 Note that Hunter's Quay is around two miles from Dunoon Ferry Terminal and the distance between McInroy's Point and Gourock Ferry Terminal is around 2.5 miles. The route east from McInroy's Point is currently through Gourock town centre which is subject to traffic congestion at peak times.
- 7.2.25 As an illustration, a two-vessel service running in addition to Western Ferries would account for 40% of the total crossings on the route (assuming no change in current Western Ferries timetable). As such, if fares were identical it could reasonably be expected to achieve around a 40% market share. However, the large proportion of eastbound car-based travel noted above (towards Glasgow) would mean that a greater market share would be expected (as the 2.5 mile trip through Gourock town centre is avoided if using the town centre route). Similarly a three vessel service would account for 47% of all sailings and a Western Ferries parity scenario would clearly provide 50% of all sailings.

Forecast Market Shares

- 7.2.26 The choice model has been calibrated to reproduce the 10% car market share achieved by Cowal Ferries in 2010, based on the outturn fares and timetables of that time. A 'constant' has been included as part of this calibration process to represent the restricted nature of the previous Cowal operation, including the inconvenience of the previous ticketing arrangements which was a prominent theme in the consultation and reportedly a deterrent to the use of that service. It is assumed that this constant is removed in future scenarios, ie a more flexible ticketing arrangement would be in place, which is not tied in to ticketing practices across the CalMac network. The restricted operating day is also assumed to be lifted.
- 7.2.27 The 2010 Cowal vehicle ferry timetable accounted for around 25% of total sailings between Gourock and Dunoon. As such, a market share of around 25% could have reasonably been expected based on this frequency, if all other things were equal. Removing the constant modelled in the 2010 base scenario gives a projected market share of 20% on the town centre route, ie had the various restrictions not been in place, a 20% market share could have been achieved in 2010 with the single vessel, hourly operation. Indeed there is a precedent as CalMac did achieve this level of market share around 2000. This level of market share gradually reduced over the years with the greater overall convenience offered by Western Ferries.
- 7.2.28 Table 7.1 below shows the projected market share achieved with the removal of this constant and the introduction of a two-vessel, three-vessel and Western Ferries timetable parity scenario (assuming current Western Ferries timetabled services), based on the choice modelling process.

Table 7.1 Estimated vehicle-based market shares for potential town centre service

Year Ending	2 vessel	3 vessel	WF Parity
Cowal 2010 average fares paid	33%	38%	41%
Western Ferries 2010 average fares	56%	62%	64%

- 7.2.29 As noted above, the balance here is mainly between service frequencies and the drive times on either side of the Clyde, ie for most, the town centre route would offer shorter drive times. The choice modelling exercise suggests that, with identical fares, even with only two vessels, the inconvenience of a less frequent service is outweighed by the shorter access times for many journeys and a market share of around 56% is predicted. This rises to 64% if a Western Ferries timetable were to be adopted.
- 7.2.30 Like any forecast, these figures should be treated with some caution. The forecasts were derived from the best data available at the time, but forecasts of this nature can always be improved with better data etc. In the analysis which follows, in addition to using these projected market shares, we have also estimated the market share required to realise incremental revenues greater than incremental costs, ie the 'tipping point' for feasibility.
- 7.2.31 The Table also clearly illustrates how sensitive the choice between operators would be to fares. The forecast market shares are far lower if 2010 Cowal outturn fares are used. If the

two competing ferry services were to become very similar in other respects (ie frequency, crossing times etc), then fares would become the key determining factor for most users. The high market shares estimated above are based on fares parity with Western Ferries. These (lower) fares will of course provide lower revenues per trip made and this is explored further below.

- 7.2.32 As such, if the two services were to converge in terms of their offering, the prospective market share would be very sensitive to small changes on the supply side, most notably fares.

7.3 Financial Modelling

- 7.3.1 This section brings together the cost data and the projected market shares into a 15-year financial appraisal. No discounting has been applied and all values are expressed in today's prices.

Revenue

- 7.3.2 Any new transport service which is introduced typically takes time to build up patronage to its full forecast level ('ramp-up'). This was seen on the Gourock-Dunoon route itself when Western Ferries commenced operation in the 1970s. Table B12.1 in the rail-based Passenger Demand Forecasting Handbook (PDFH) provides recommended values for these time lag effects in the context of new rail services. In the absence of an equivalent data set for the ferries sector, PDFH values have been applied here as follows:

- Mid year 1: 60% of forecast;
- Mid-year 2: 78% of forecast;
- Mid year 3: 90% of forecast; and
- Year 4 onwards: 100% of forecast.

- 7.3.3 The combination of estimated market shares and average fares paid per passenger / car / CV produces revenue estimates for the prospective new service. As noted previously, the fares used to estimate the revenues are based on Western Ferries 2010 estimated fares factored up by RPI to 2013, and these are: £2.12, £5.40 and £29.35 for passengers, cars and commercial vehicles respectively. These fares therefore include the impact of Western Ferries not charging SPT Card holding passengers a passenger fare (whether foot-passengers or vehicle based passengers). The analysis which follows implies that any new operator would adopt the same fares structure and therefore not charge vehicle based SPT Card holding passengers. No real terms change in fares has been assumed for forecast years.

- 7.3.4 As an example, for Scenario 1 (Static Demand) in 2015, a forecast 56% share of the total vehicle based market would eventually generate around £4.3m per annum in incremental revenue (799k vehicle based passengers * £2.12 + 363k cars * £5.40 + £22k commercial vehicles * £29.35). Figure 7.1 shows the forecast annual incremental revenue for vehicle based travel on the town centre service, based on a two-vessel service. Note that in 2009 and 2010, total route revenue was around £7.5m. The 'lagged' build up in revenue is evident here.

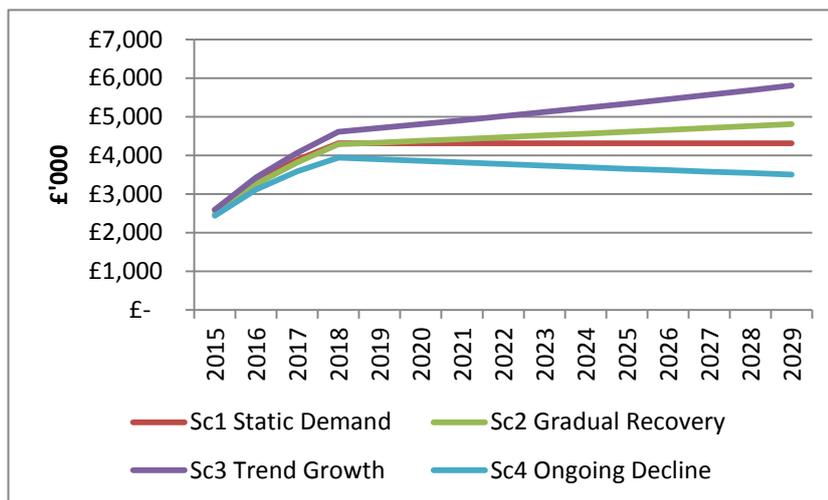


Figure 7.1 Two vessel annual incremental revenue estimates, by demand scenario

7.3.5 The total 15-year incremental revenue for each Scenario and vessel combinations is shown in Table 7.2 below. The annual average figure is also shown for reference.

Table 7.2 15-year incremental revenue by vessel / growth scenario

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
£'000	Static Demand	Gradual Recovery	Trend Growth	Ongoing Decline
2 vessel				
15-year	£61,524	£64,074	£72,334	£53,733
<i>Annual Average</i>	<i>£4,102</i>	<i>£4,272</i>	<i>£4,822</i>	<i>£3,582</i>
3 vessel				
15-year	£69,182	£72,070	£81,381	£60,413
<i>Annual Average</i>	<i>£4,612</i>	<i>£4,805</i>	<i>£5,425</i>	<i>£4,028</i>
WF Timetable				
15-year	£71,505	£74,492	£84,118	£62,441
<i>Annual Average</i>	<i>£4,767</i>	<i>£4,966</i>	<i>£5,608</i>	<i>£4,163</i>

7.3.6 These figures confirm that revenues rise moving from Scenario 1 to 2 and 3 then fall with the declining scenario (4). Within each scenario, revenues rise as the service moves broadly from two sailings per hour to three then to more than three in the case of the Western Ferries parity scenario.

7.3.7 The large majority of revenue would come from a transfer from Western Ferries.

Incremental Costs

7.3.8 The key issue here is the incremental cost change in moving from a foot-passenger service to a passenger and vehicle service operated by the same number of vessels running the same timetable.

7 Incremental Cost and Revenue Scenarios

7.3.9 The analysis presented in Chapter 4 noted that the significant cost increases are associated with:

- Vessel acquisition costs (Foot-passenger vessel circa £3,000,000, and passenger and vehicle vessel £6,000,000): for the purposes of this analysis it has been assumed that these vessels are financed @ 4.5% per annum, and the value is written off at the end of the 15-year period²⁴;
- Fuel: the passenger and vehicle ferry will have a higher fuel consumption by virtue of being a larger vessel;
- Ship maintenance and repairs: again a vehicle carrying ferry would be more expensive to maintain and repair;
- Spares and stores;
- Dry docking costs for refit;
- Berthing dues (see below);
- Pier dues – all additional vehicles and passengers carried will be liable for Pier Dues when embarking and disembarking at both harbours (see below); and
- Insurance.

7.3.10 Note that the analysis has suggested that no additional crew would be required to operate the passenger and vehicle service, relative to a foot-passenger only service, although the case is borderline as discussed in Chapter 4.

7.3.11 The incremental cost estimates for fuel, ship maintenance and repairs, spares and stores, dry docking and insurance are shown in Table 7.3 below.

Table 7.3 Annual incremental fuel and other vessel costs

Cost Element (£'000)	Annual Incremental Cost		
	Two Vessels	Three Vessels	Four Vessels / WF timetable
Fuel	238	353	362
Other Costs (maintenance and repairs, spares & stores, dry docking, insurance)	216	324	432

Berthing Dues

7.3.12 Berthing Dues are payable on Gross Tonnage berthing at each harbour and the frequency of these calls, ie the fees are independent of the number of passengers or cars carried. Current Berthing Dues are as follows:

- Gourock: £0.33 per GT and
- Dunoon: £0.078 per GT.

²⁴ Note that any residual value after 15-years would effectively increase the net revenue over the period – for the purposes of this analysis, due to the inherent uncertainties around this, we have assumed no residual value.

7.3.13 Discounts are applied on berthing dues at Gourock as laid out in Table 7.4²⁵.

²⁵ http://www.cmassets.co.uk/assets/files/harbourdues/CMAL_Schedule-of-Dues_2012-2013.pdf

Table 7.4 Berthing Dues discounts at Gourock

Calls per port	Berthing Dues Discount, Year Ending					
	Mar 13	Mar 14	Mar 15	Mar 16	Mar 17	Mar 18
First 100	0%	0%	0%	0%	0%	0%
Next 2,000	80%	70%	60%	50%	40%	40%
Next 3,000	90%	90%	90%	90%	90%	90%
Additional	95%	95%	95%	95%	95%	95%

7.3.14 No discounts are currently published for Dunoon.

7.3.15 The number of calls at each port is clearly dependent on the number of vessels being operated to provide the service and the resulting running timetable. The number of calls per annum at each harbour has been estimated as:

- Two vessels: 10,731 calls;
- Three vessels: 14,600 calls; and
- Western Ferries parity: 16,164 calls.

7.3.16 Median GTs of **355** and **800** for the foot-passenger and passenger and vehicle vessels respectively have been assumed (see Chapter 4). The following berthing dues would apply in 2017, and all years thereafter (based on today's rates). Table 7.5 shows the berthing dues for the two vessel service.

Table 7.5 Annual berthing dues, 2017 onwards, two-vessels, FP and V&P services

Foot Passenger Vessel								
Dunoon	10,731	calls per annum @	355	GT @	£0.078	per GT	£297,141	
Gourock	100	calls per annum @	355	GT @	£0.330	per GT	£11,715	
	2,000	calls per annum @	355	GT @	£0.198	per GT	£140,580	
	3,000	calls per annum @	355	GT @	£0.033	per GT	£35,145	
	5,631	calls per annum @	355	GT @	£0.017	per GT	£32,984	
TOTAL	21,462						£517,565	
Vehicle and Passenger Vessel								
Dunoon	10,731	calls per annum @	800	GT @	£0.078	per GT	£669,614	
Gourock	100	calls per annum @	800	GT @	£0.330	per GT	£26,400	
	2,000	calls per annum @	800	GT @	£0.198	per GT	£316,800	
	3,000	calls per annum @	800	GT @	£0.033	per GT	£79,200	
	5,631	calls per annum @	800	GT @	£0.017	per GT	£74,329	
TOTAL	21,462						£1,166,344	
							Incremental Impact of Vehicle Ferry	£648,779

7.3.17 The incremental cost of providing a like-for-like passenger and vehicle service is therefore around **£649k** per annum, based on the 2017 pricing schedule. This value is slightly lower at £590k and £619k in 2015 and 2016 respectively.

7.3.18 Table 7.6 shows the same data for a three-vessel scenario.

Table 7.6 Annual berthing dues, 2017 onwards, three-vessels, FP and V&P services

Foot Passenger Vessel							
Dunoon	14,600	calls per annum @	355	GRT @	£0.078	per GRT	£ 404,274
Gourock	100	calls per annum @	355	GRT @	£0.330	per GRT	£ 11,715
	2,000	calls per annum @	355	GRT @	£0.198	per GRT	£ 140,580
	3,000	calls per annum @	355	GRT @	£0.033	per GRT	£ 35,145
	9,500	calls per annum @	355	GRT @	£0.017	per GRT	£ 55,646
TOTAL	29,200						£ 647,360
Vehicle and Passenger Vessel							
Dunoon	14,600	calls per annum @	800	GRT @	£0.078	per GRT	£ 911,040
Gourock	100	calls per annum @	800	GRT @	£0.330	per GRT	£ 26,400
	2,000	calls per annum @	800	GRT @	£0.198	per GRT	£ 316,800
	3,000	calls per annum @	800	GRT @	£0.033	per GRT	£ 79,200
	9,500	calls per annum @	800	GRT @	£0.017	per GRT	£ 125,400
TOTAL	29,200						£ 1,458,840
incremental impact of vehicle ferry:							£ 811,480

7.3.19 The incremental increase in Berthing Dues is around **£811k** per annum under this scenario in 2017. The equivalent values for 2015 and 2016 are £753k and £782k respectively.

7.3.20 Finally Table 7.7 shows the incremental berthing dues associated with a service providing parity with the current Western Ferries published timetable.

Table 7.7 Annual berthing dues, 2017 onwards, WF parity, FP and V&P services

Foot Passenger Vessel							
Dunoon	16,164	calls per annum @	355	GRT @	£0.078	per GRT	£ 447,589
Gourock	100	calls per annum @	355	GRT @	£0.330	per GRT	£ 11,715
	2,000	calls per annum @	355	GRT @	£0.198	per GRT	£ 140,580
	3,000	calls per annum @	355	GRT @	£0.033	per GRT	£ 35,145
	11,064	calls per annum @	355	GRT @	£0.017	per GRT	£ 64,809
TOTAL	32,329						£ 699,838
Vehicle and Passenger Vessel							
Dunoon	16,164	calls per annum @	800	GRT @	£0.078	per GRT	£ 1,008,651
Gourock	100	calls per annum @	800	GRT @	£0.330	per GRT	£ 26,400
	2,000	calls per annum @	800	GRT @	£0.198	per GRT	£ 316,800
	3,000	calls per annum @	800	GRT @	£0.033	per GRT	£ 79,200
	11,064	calls per annum @	800	GRT @	£0.017	per GRT	£ 146,049
TOTAL	32,329						£ 1,577,100
incremental impact of vehicle ferry:							£ 877,262

7.3.21 In this case, the incremental increase in berthing dues is **£877k** per annum. The equivalent figures for 2015 and 2016 are £819k and £848k. These figures are based on Western Ferries published timetable – the actual number of sailings operated by Western is higher in practice due to additional *ad hoc* sailings at times of high demand, so higher berthing dues would be incurred to match this total.

7.3.22 Note that the incremental costs therefore do not rise in direct proportion to the number of sailings due to the discounting at Gourock.

7.3.23 The total 15-year incremental berthing dues figures are therefore as follows:

- Two-vessel scenario: £9.6m;
- Three-vessel: £12.1m scenario; and
- Western Ferries scenario: £13.1m.

7 Incremental Cost and Revenue Scenarios

- 7.3.24 Note that these figures depend crucially on the Gross Tonnages of the vessel, and this aspect of vessel design is subject to considerable uncertainty. A lower differential in gross tonnage would reduce these figures but a higher differential would increase incremental berthing dues. This is explored further in Chapter 8.

Pier Dues

- 7.3.25 The current published Pier Dues tariffs are shown in Table 7.8 below.

Table 7.8 Pier Dues (paid on embarking and disembarking) 2012/13

	Gourock	Dunoon
Drivers / Passengers	£0.40	-
Adult	-	£0.29
Child	-	£0.17
Cars / Trailers	£1.76	£0.90
Caravan / Trailers	-	£1.55
Motorcycles	£0.88	£0.62
Motorhomes	£2.64	-
CVs & Coaches	£1.04/m (£14.14@14m)	£0.60/m (£8.40@14m)
Bicycles	-	£0.27
Buses	-	£5.46

- 7.3.26 Until 31 March 2013, the Berthing Dues discounts noted above also applied to Pier Dues at Gourock. These discounts therefore ceased as of 01 April 2013 and full payment will be due. These Pier Dues clearly represent a significant proportion of revenues received from paying passengers.
- 7.3.27 An estimate of the 15-year incremental Pier Dues payable based on the above market shares and volumes is shown in Table 7.9 below, based on the current published rates.

Table 7.9 15-year Pier Dues estimates by scenario

£'000	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Static Demand	Gradual Recovery	Trend Growth	Ongoing Decline
2 vessel				
15-year	-£28,755	-£30,011	-£33,736	-£25,307
<i>Annual Average</i>	<i>-£1,917</i>	<i>-£2,001</i>	<i>-£2,249</i>	<i>-£1,687</i>
3 vessel				
15-year	-£32,355	-£33,777	-£37,983	-£28,468
Annual Average	-£2,157	-£2,252	-£2,532	-£1,898
WF Timetable				
15-year	-£33,443	-£34,914	-£39,263	-£29,424
Annual Average	-£2,230	-£2,328	-£2,618	-£1,962

7.3.28 Pier Dues therefore account for around 45% of fares revenue. Of this Gourock accounts for around 63% of total fees with Dunoon accounting for the other 37%.

Summary of Incremental Costs and Revenues

7.3.29 A summary of the estimated incremental costs and revenues is shown in Table 7.10 below. The table shows the forecast incremental costs and revenues associated with each vessel scenario combined with each overall route growth scenario. The net incremental revenue is then shown for each vessel / scenario combination. Positive numbers (ie incremental revenues outweigh incremental costs) are highlighted in green and negative numbers (incremental revenues are less than incremental costs) are highlighted in pink. The projected market share is also shown for each vessel scenario for convenience (based on fares parity with Western Ferries).

7.3.30 Also shown is the 'tipping point' in each case. When the net revenue is positive, this tipping point indicates the market share where revenue ceases to be positive. When the net revenue is negative, this tipping point indicates the market share where revenue becomes positive. For example in the Scenario 1 / Two-vessel case, a forecast 56% market share results in a net impact of +£7.8m over the 15-years (ie the incremental revenue outweighs the incremental costs). However if the market share was to fall below 42%, the incremental costs would outweigh the incremental revenues, ie the service configuration would have to achieve 42% to break even.

Table 7.10 Overall 15-year incremental costs and revenue summary

PASSENGER & VEHICLE - Incremental Values compared to a Foot Passenger only service				
£'000	Static	Gradual Recovery	Trend Growth	Decline
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
2 vessel - 56% market share				
Incremental Revenue	£61,524	£64,074	£72,334	£53,733
Pier dues	-£28,755	-£30,011	-£33,736	-£25,307
Berthing dues	-£9,644	-£9,644	-£9,644	-£9,644
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£53,770	-£55,026	-£58,751	-£50,323
Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Market Share Tipping Point</i>	41%	39%	35%	47%
3 vessel - 62% market share				
Incremental Revenue	£69,182	£72,070	£81,381	£60,413
Pier dues	-£32,355	-£33,777	-£37,983	-£28,468
Berthing dues	-£12,084	-£12,084	-£12,084	-£12,084
Fuel	-£5,293	-£5,293	-£5,293	-£5,293
Vessels	-£12,393	-£12,393	-£12,393	-£12,393
Other costs	-£4,860	-£4,860	-£4,860	-£4,860
Crew	-£450	-£450	-£450	-£450
Total Incremental Cost	-£67,435	-£68,858	-£73,063	-£63,548
Net Revenue	£1,747	£3,212	£8,318	-£3,135
<i>Market Share Tipping Point</i>	57%	54%	48%	66%
WF Timetable - 64% market share				
Incremental Revenue	£71,505	£74,492	£84,118	£62,441
Pier dues	-£33,443	-£34,914	-£39,263	-£29,424
Berthing dues	-£13,071	-£13,071	-£13,071	-£13,071
Fuel	-£5,437	-£5,437	-£5,437	-£5,437
Vessels	-£16,524	-£16,524	-£16,524	-£16,524
Other costs	-£6,480	-£6,480	-£6,480	-£6,480
Crew	-£600	-£600	-£600	-£600
Total Incremental Cost	-£75,554	-£77,026	-£81,374	-£71,536
Net Revenue	-£4,049	-£2,534	£2,744	-£9,095
<i>Market Share Tipping Point</i>	69%	66%	57%	79%

7.3.31 It can be seen that a large majority of the incremental costs associated with moving from a foot-passenger service to a passenger and vehicle service are attributed to increased Pier Dues (higher traffic levels) and Berthing Dues (vessel with a higher GT). These two elements account for around 70% of the total incremental cost in a two-vessel scenario.

7.3.32 Table 7.10 therefore shows that a two-vessel scenario is a feasible option in all four of the forecast growth scenarios, based on the assumptions made here and the definition of feasibility used, ie the net revenue impact is positive. Note that this net revenue would be liable to corporation tax²⁶. Under the two vessel scenario, this equates to a return of £7.7m (Scenario 1 –Static), £9.0m (Scenario 2 – Gradual Recovery), £13.6m (Scenario 3- Trend growth), or £3.4m (Decline), over the 15-year period.

²⁶ The current rate of Corporation Tax in 2013 is 20% (Small Profits Rate (<£300k)) and 23% (Main rate of Corporation Tax). This would of course be subject to change.

7 Incremental Cost and Revenue Scenarios

- 7.3.33 A three-vessel scenario is also feasible for all growth scenarios except Decline (Scenario 4). However the Western Ferries timetable parity scenario would only be feasible under Scenario 3 (Trend Growth), the scenario with the highest growth of the forecast scenarios considered here.
- 7.3.34 It can reasonably be assumed that Scenarios 2 and 3 are the most likely outcomes in terms of total route volumes, assuming economic recovery becomes established. Also, under these growth scenarios, there is a reasonable 'cushion' in terms of the forecast market share and the market share required to 'break even' on the two-vessel and three-vessel options.
- 7.3.35 This analysis has been undertaken using the best available data and assumptions based on best professional judgement where required. Inevitably, the outcomes will be sensitive to these underlying assumptions and a total of 12 scenarios have been considered here. The 'tipping point' whereby the service ceases to be, or becomes viable has also been reported to provide as full a picture as possible. .
- 7.3.36 The key uncertainty in this analysis is the potential for competitive response from Western Ferries. Given this uncertainty we have assumed no competitive response here, but as the level of service on the two competing ferries converges, small changes to fares, running times etc would be expected to have a significant impact on market share, and therefore the feasibility of running a passenger and vehicle service with no increase in subsidy.
- 7.3.37 In the above, it is assumed that the current infrastructure could be used in the short term for any new ferry service, although future infrastructure investment would be required in the medium term.

7.4 Subsidy

- 7.4.1 The focus of this report is on the impact of moving from a foot-passenger service to a passenger and vehicle ferry service, and whether this requires additional subsidy or not. This has been explored fully above.
- 7.4.2 However, the absolute subsidy implied by the foot-passenger service is also clearly important. As has been noted, the foot-passenger vessel specification undertaken here has been focussed on matching the weather related reliability performance of the previous Streaker vessels, and thus the vessels specified would be anticipated to have higher costs than the existing passenger vessels on the route.
- 7.4.3 Table 7.11 below provides an initial estimate of the subsidy requirement based on the absolute costs and revenues associated with the foot-passenger service as specified here, for each vessel and growth scenario. An allowance of 5% has been included for an operator margin, although clearly this figure would be subject to the outcome of any tendering process.
- 7.4.4 Note that a single passenger vessel scenario has not been considered as there are currently two vessels on the route.

Table 7.11 Foot-passenger Service Subsidy Estimates

FOOT PASSENGERS ONLY - Absolute Vales				
£'000	Static	Gradual Recovery	Trend Growth	Decline
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
2 vessel - 77% market share				
Revenue	£12,651	£12,848	£14,422	£10,945
Pier dues	-£4,109	-£4,173	-£4,684	-£3,555
Berthing dues	-£7,693	-£7,693	-£7,693	-£7,693
Fuel	-£9,960	-£9,960	-£9,960	-£9,960
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£12,810	-£12,810	-£12,810	-£12,810
Crew	-£12,000	-£12,000	-£12,000	-£12,000
Total cost	-£54,834	-£54,898	-£55,409	-£54,280
<i>operator margin (assumed 5%)</i>	<i>-£2,742</i>	<i>-£2,745</i>	<i>-£2,770</i>	<i>-£2,714</i>
Subsidy required	£44,925	£44,795	£43,758	£46,049
<i>annual subsidy</i>	<i>£2,995</i>	<i>£2,986</i>	<i>£2,917</i>	<i>£3,070</i>
3 vessel - 81% market share				
Revenue	£13,445	£13,654	£15,327	£11,632
Pier dues	-£4,367	-£4,435	-£4,978	-£3,778
Berthing dues	-£9,640	-£9,640	-£9,640	-£9,640
Fuel	-£14,768	-£14,768	-£14,768	-£14,768
Vessels	-£12,393	-£12,393	-£12,393	-£12,393
Other costs	-£19,215	-£19,215	-£19,215	-£19,215
Crew	-£18,000	-£18,000	-£18,000	-£18,000
Total cost	-£78,383	-£78,451	-£78,994	-£77,794
<i>operator margin (assumed 5%)</i>	<i>-£3,919</i>	<i>-£3,923</i>	<i>-£3,950</i>	<i>-£3,890</i>
Subsidy required	£68,857	£68,720	£67,617	£70,052
<i>annual subsidy</i>	<i>£4,590</i>	<i>£4,581</i>	<i>£4,508</i>	<i>£4,670</i>
WF Timetable - 82% market share				
Revenue	£13,445	£13,654	£15,327	£11,632
Pier dues	-£4,429	-£4,498	-£5,049	-£3,832
Berthing dues	-£10,427	-£10,427	-£10,427	-£10,427
Fuel	-£15,168	-£15,168	-£15,168	-£15,168
Vessels	-£16,524	-£16,524	-£16,524	-£16,524
Other costs	-£25,620	-£25,620	-£25,620	-£25,620
Crew	-£24,600	-£24,600	-£24,600	-£24,600
Total cost	-£96,769	-£96,837	-£97,388	-£96,171
<i>operator margin (assumed 5%)</i>	<i>-£4,838</i>	<i>-£4,842</i>	<i>-£4,869</i>	<i>-£4,809</i>
Subsidy required	£88,162	£88,025	£86,931	£89,348
<i>annual subsidy</i>	<i>£5,877</i>	<i>£5,868</i>	<i>£5,795</i>	<i>£5,957</i>

7.4.5 It can therefore be seen that a two-vessel foot-passenger service would require an annual subsidy of around £2.9m to £3.1m. The current Argyll Ferries contract, at the time of award amounted to around £1.7m per annum – based on much smaller vessels. In contrast, the previous Cowal Ferries service received an annual subsidy of more than £3m (however it was operating vessels certified for 500 passengers and higher crewing levels).

7.4.6 Any vessel scenario involving more than two vessels would require a substantially greater subsidy.

8 Sensitivity Tests

8.1 Introduction

- 8.1.1 Chapter 7 laid out the incremental costs and revenues associated with moving from a foot-passenger ferry service to a passenger and vehicle service operating the same timetable, based on the 'core' set of assumptions detailed in that Chapter – referred to hereafter as the 'Core Findings'. It concluded that a passenger and vehicle service is feasible (ie the incremental revenue was greater than the incremental costs) for a two vessel scenario under route growth scenarios 1, 2 and 3. Only under a declining scenario would the service not be feasible.
- 8.1.2 It is clear from the analysis that there are some uncertainties with regard to the precise specification of a vessel which any future operator would introduce to operate a service between the two town centres. Changing the assumptions around these uncertainties could have a significant impact on the core findings. Given that the precise specification of the vessel will not be known until the tendering exercise, sensitivity tests have been carried out on a number of the key assumptions and other important drivers of the core net revenue figures to understand how these would impact on the results. These tests are set out in the remainder of this chapter.
- 8.1.3 The sensitivity tests are carried out separately for each change ie they are not cumulative, and are focussed on four key issues:
- crewing levels;
 - gross tonnage (GT) of the passenger and vehicle ferry, and more specifically the differential between the foot-passenger vessel and the passenger and vehicles ferry;
 - harbour dues pier / berthing dues payable at Gourock and Dunoon; and
 - competitor response – what would Western Ferries do?
- 8.1.4 Figures are provided for a two-vessel scenario only as we believe this is the most likely vessel scenario under consideration, and this also restricts the number of tables to present for brevity.

8.2 Crewing Sensitivity Test

- 8.2.1 It was noted in Section 4.7 that the requirement for an additional crew member to man the passenger and vehicle service (compared to the foot-passenger service) is borderline. This sensitivity test details the impact of an additional crew member on the feasibility of the service.
- 8.2.2 A crew of four was estimated to cost £400k per annum for each passenger and vehicle vessel, with the figure for a crew of five being £500k per annum. For a two vessel scenario, this implies a 15-year incremental cost increase over the £390k passenger service of **£3,300k** if an additional crew member is required. Table 8.1 below shows the results of this sensitivity test. The revised costs and revenues are shown together with the headline results (ie the net revenue) from the Core Findings detailed in Chapter 7 – the key change is

highlighted in orange.

Table 8.1 Sensitivity Test 1: Additional Crew

£'000	Static	Gradual Recovery	Trend Growth	Decline
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
2 vessel - 56% market share				
Incremental Revenue	£61,524	£64,074	£72,334	£53,733
Pier dues	-£28,755	-£30,011	-£33,736	-£25,307
Berthing dues	-£9,644	-£9,644	-£9,644	-£9,644
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£3,300	-£3,300	-£3,300	-£3,300
Total Incremental Cost	-£56,770	-£58,026	-£61,751	-£53,323
Net Revenue	£4,753	£6,048	£10,583	£410
<i>Market Share Tipping Point</i>	47%	46%	40%	55%
Core Findings - Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Core Market Share Tipping Point</i>	41%	39%	35%	47%

8.2.3 The additional crew cost does therefore have an impact on the net revenue – reducing it by £3m in each case relative to the Core Findings. Whilst net revenue continues to outweigh net costs for all scenarios, the net revenue figure declines for example from £9.0m to £6.0m over the 15-year period in Scenario 2. . It can also be seen that the ‘safety margin’ between the forecast market share and the ‘tipping point’ narrows. For example in Scenario 3 – Growth Trend, the service ceases to be feasible at 40% market share, whereas the Core Findings has an equivalent figure of 35%.

8.3 Gross Tonnage Sensitivity Test

8.3.1 Table 4.1 outlined the range of gross tonnages into which any new vessels would be most likely to fall. The median of these ranges was used in the calculation of berthing dues for the Core Findings. To recap, these gross tonnage ranges are:

- foot-passenger vessel: 190-520GT (median of 355GT); and
- passenger and vehicle vessel: 500-1,100GT (median of 800GT).

8.3.2 Sensitivity tests have been undertaken using the low and high ends of the passenger and vehicle service against the median passenger vessel as follows:

- Test 2a: Foot-passenger GT = 355GT, Passenger and Vehicle GT = 500GT; and
- Test 2b: Foot-passenger GT = 355GT, Passenger and Vehicle GT = 1,100GT; and

Sensitivity Test 2a

8.3.3 The effect of using a GT figure of 500 is to reduce incremental berthing dues over the 15-year period from **£9.6m** to **£3.1m**. The results are shown in Table 8.2 below.

Table 8.2 Sensitivity Test 2a: Low Passenger & Vehicle Vessel GT

£'000	Static Scenario 1	Gradual Recovery Scenario 2	Trend Growth Scenario 3	Decline Scenario 4
2 vessel - 56% market share				
Incremental Revenue	£61,524	£64,074	£72,334	£53,733
Pier dues	-£28,755	-£30,011	-£33,736	-£25,307
Berthing dues	-£3,142	-£3,142	-£3,142	-£3,142
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£47,269	-£48,525	-£52,250	-£43,822
Net Revenue	£14,254	£15,549	£20,084	£9,912
<i>Market Share Tipping Point</i>	31%	30%	26%	36%
Core Findings - Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Core Market Share Tipping Point</i>	41%	39%	35%	47%

8.3.4 This test therefore increases the net revenue from £9.0m to £15.5m over the 15-year period in Scenario 2. It can also be seen that the tipping point percentages reduce, and a two-vessel service would be feasible with 27%-37% of the market depending on the whole route volume scenario.

Sensitivity Test 2b

8.3.5 The effect of using a GT figure of 1,100 is to increase incremental berthing dues over the 15-year period from **£9.6m** to **£16.1m**. The results are shown in Table 8.3 below.

Table 8.3 Sensitivity Test 2b: High Passenger & Vehicle Vessel GT

£'000	Static Scenario 1	Gradual Recovery Scenario 2	Trend Growth Scenario 3	Decline Scenario 4
2 vessel - 56% market share				
Incremental Revenue	£61,524	£64,074	£72,334	£53,733
Pier dues	-£28,755	-£30,011	-£33,736	-£25,307
Berthing dues	-£16,145	-£16,145	-£16,145	-£16,145
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£60,272	-£61,528	-£65,252	-£56,824
Net Revenue	£1,252	£2,546	£7,081	-£3,091
<i>Market Share Tipping Point</i>	53%	51%	45%	63%
Core Findings - Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Core Market Share Tipping Point</i>	41%	39%	35%	47%

8.3.6 This test therefore results in reduced net revenues in the first three scenarios and a negative net revenue in Scenario 4. Under this higher GT assumption, higher market shares (46%-64%) are required to generate the revenue to cover the incremental costs compared to the Core Findings (36% to 48%).

8.3.7 Note that the berthing dues associated with any incremental GT can be calculated on a *pro-rata* basis using the above figures. Figure 8.1 below shows the relationship implied by the above analysis.

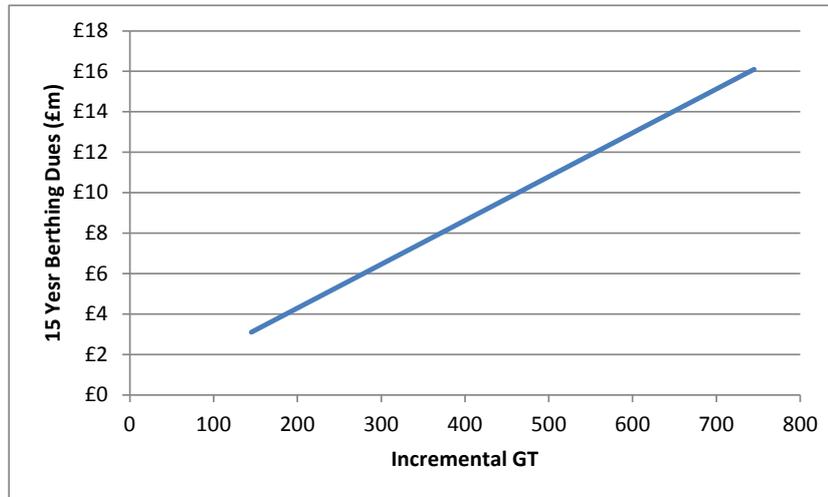


Figure 8.1 Relationship between GT and Berthing Dues

8.4 Harbour Dues Sensitivity Test

8.4.1 The results in the Core Findings demonstrate that the level of Harbour Dues (Berthing and Pier Dues) set at Gourock and Dunoon harbours is a key issue in determining the financial viability of the passenger and vehicle service.

8.4.2 The dues calculated in the Core Findings are based on the current published tariffs at both harbours. However it is recognised that in principle tariffs could be subject to a commercial negotiation at Dunoon given the high volume of calls implied by any new service. It has also been noted that a discount scheme was in operation at Gourock prior to 01/04/2013, although harbour dues at Gourock are not currently subject to negotiation.

8.4.3 To provide an illustration of the impact of reduced Pier / Traffic Dues on the financial feasibility of the service, a sensitivity test has been run where the previous framework of charging at Gourock was still in place. This means that the discount on berthing dues for the number of vessel calls between 101 and 2,100 calls per annum would remain at 80%, rather than progressively reducing each year by 10% down to 40% under the current framework, and the discount on Pier Dues would be the highest applicable discount on berthing dues (being 95% in this case, given that there would be more than 5,100 vessel calls per annum Gourock), rather than no discount applying to Pier Dues under the current framework.

8.4.4 Transport Scotland provided the following revised figures for Gourock (with the current figures shown in brackets for comparison) (in 1 April 2013 prices). These revised figures have been derived by assuming they would generate broadly the same level of Harbour Dues revenue:

- Berthing Dues (per vessel visit per Gross Tonnage): £1.31 (£0.34);
- Drivers / Passengers: £1.58 (£0.41);
- Cars: £6.97 (£1.81); and

- CVs / Coaches (per metre): £4.12 (£1.07).

8.4.5 No discounts have been included in the sensitivity tests for Dunoon at this time. Argyll and Bute Council has noted that harbour dues are a significant part of the cost of the vehicle ferry service and consequently they would seek to minimise such charges and would be willing to review the basis upon which harbour dues at Dunoon are set in the context of the introduction of any new service. Such a review would be informed by: the facility's operating and staff costs; inspection, maintenance and whole life asset management costs; and any prudential borrowing costs required to fund future shoreside infrastructure associated with the new ferry service.

8.4.6 The results of the Sensitivity Test are shown in Table 8.4 below.

Table 8.4 Sensitivity Test 3: Pier / Harbour Dues

£'000	Static Scenario 1	Gradual Recovery Scenario 2	Trend Growth Scenario 3	Decline Scenario 4
2 vessel - 56% market share				
Incremental Revenue	£61,524	£64,074	£72,334	£53,733
Pier dues	-£14,233	-£14,839	-£16,669	-£12,529
Berthing dues	-£15,044	-£15,044	-£15,044	-£15,044
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£44,650	-£45,256	-£47,086	-£42,946
Net Revenue	£16,874	£18,818	£25,248	£10,787
<i>Market Share Tipping Point</i>	36%	34%	30%	41%
Core Findings - Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Core Market Share Tipping Point</i>	41%	39%	35%	47%

8.4.7 The discounted dues in this test reduces the incremental cost of moving from a foot-passenger to a passenger and vehicle ferry service thus, for example, increasing Net Revenue from £9.0m to £18.8m under Scenario 2. Total dues are reduced from around £39.6m to £29.9m in Scenario 2. Reverting to the previous framework for Harbour Dues also means that there is a shift in the balance between Berthing Dues and Pier Dues, reflecting the fact that the proposed passenger and vehicle service would be entitled to a 95% discount on pier dues.

8.4.8 The market share required to cover the incremental costs reduces to 31-42% depending on the scenario.

Summary

8.4.9 In summary, taking Scenario 2 (Gradual Recovery) as an example, the impact of the Sensitivity Tests on Net Revenue is (15-year totals):

- T1 Additional Crew: -£3.0m;
- T2a Low GT: +£6.5m;
- T2b High GT: -£6.5m; and
- T3 Pier / Traffic Dues: +£9.7m.

8.5 Competitive Response – What If? Tests

- 8.5.1 The core findings and sensitivity tests described above assume that if a new service is introduced on the town centre to town centre crossing there would be no change in the service currently provided by Western Ferries, ie no response from them to new competition.
- 8.5.2 Clearly, any competitive response to a new town centre ferry service is solely a commercial matter for Western Ferries, but this would be a key risk which any potential operator would have to assess when considering bidding to operate a new town centre service. It is beyond the scope of this study to undertake a detailed commercial analysis of Western Ferries' operations, and as such it is not possible to quantify the *capability* or *likelihood* of a competitive response, other than to say that in discussions with representatives of Western Ferries it was made clear that the company would react to the new competition in a way which seeks to protect their market share and commercial operation.
- 8.5.3 At the request of the Scottish Government and to help understand how a competitive response could impact on the various scenarios, this section therefore considers the sensitivity of the projected Core Findings market share (and hence net revenues) to an illustrative competitive response from Western Ferries. This is based on (i) fares, and (ii) frequency.

What If Test 1 - Fares Reductions

- 8.5.4 This test considers the potential impact of an illustrative 10% reduction in fares charged by Western Ferries. The modelled impact of this fares change is to reduce the projected market share on the new town centre route from 56% in the Core Findings to 45%.
- 8.5.5 Table 8.5 below shows the impact of this reduction in market share.

Table 8.5 What If Test 1a: Western Ferries Fares Reduction

£'000	Static Scenario 1	Gradual Recovery Scenario 2	Trend Growth Scenario 3	Decline Scenario 4
2 vessel - 45% market share				
Incremental Revenue	£49,439	£51,488	£58,125	£43,178
Pier dues	-£23,107	-£24,116	-£27,109	-£20,336
Berthing dues	-£9,644	-£9,644	-£9,644	-£9,644
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£48,122	-£49,131	-£52,124	-£45,352
Net Revenue	£1,317	£2,357	£6,001	-£2,173
<i>Market Share Tipping Point</i>	42%	41%	36%	50%
Core Findings - Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Core Market Share Tipping Point</i>	41%	39%	35%	47%

- 8.5.6 Incremental revenues are therefore reduced in this scenario as are pier dues costs (due to lower volumes), and it can be seen that the service generates reduced but positive net revenues in Scenarios 1 (Static), 2 (Gradual Recovery) and Scenario 3 (Trend Growth). Net revenue is lower than net costs under Scenario 4 (Decline). Net revenues drop by around £5.6m to £7.6m compared to the Core Findings depending on the scenario.

8 Sensitivity Tests

- 8.5.7 The new operator could of course reduce vehicle-based fares to maintain parity with Western Ferries. In this case, less revenue per passenger / car / CV would be generated – it has been assumed that lower fares across the two services does not lead to a marked increase in total demand, although there may be a small increase in practice. A 56% market share is therefore retained in this case.
- 8.5.8 The results of this scenario are shown in Table 8.6 below.

Table 8.6 What If Test 1b: Western Ferries Fares Reduction / Operator Parity

£'000	Static Scenario 1	Gradual Recovery Scenario 2	Trend Growth Scenario 3	Decline Scenario 4
2 vessel - 56% market share				
Incremental Revenue	£55,371	£57,667	£65,100	£48,360
Pier dues	-£28,755	-£30,011	-£33,736	-£25,307
Berthing dues	-£9,644	-£9,644	-£9,644	-£9,644
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£53,770	-£55,026	-£58,751	-£50,323
Net Revenue	£1,601	£2,640	£6,349	-£1,963
<i>Market Share Tipping Point</i>	52%	50%	44%	61%
Core Findings - Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Core Market Share Tipping Point</i>	41%	39%	35%	47%

- 8.5.9 In this case revenues are reduced in line with the lower fares but pier dues remain the same as volumes remain unchanged. The overall impact of an operator reducing fares in response to the fare decrease introduced by Western Ferries is therefore to reduce revenues for the same volume of vehicles and passengers carried. This again means that the service generates lower, but positive net revenues under Scenarios 1 (Static), 2 (Gradual Recovery) and Scenario 3 (Trend Growth) and net costs would exceed net revenue in Scenario 4 (Decline). Net revenues are reduced by between £5.4m and £7.2m depending on the scenario compared to the core findings.

What If Test 2 – Western Ferries Vessel Frequency

- 8.5.10 This test considers the impact of Western Ferries increasing sailing frequency to four sailings per hour in each direction across the day. The modelling suggests that this measure would reduce the projected market share for the town centre service to 48% from the core findings figure of 56%. The results of this test are shown in Table 8.7 below.

Table 8.7 What If Test 2: Western Ferries Frequency Increase

£'000	Static Scenario 1	Gradual Recovery Scenario 2	Trend Growth Scenario 3	Decline Scenario 4
2 vessel - 48% market share				
Incremental Revenue	£52,734	£54,921	£62,000	£46,057
Pier dues	-£24,647	-£25,724	-£28,916	-£21,692
Berthing dues	-£9,644	-£9,644	-£9,644	-£9,644
Fuel	-£3,570	-£3,570	-£3,570	-£3,570
Vessels	-£8,262	-£8,262	-£8,262	-£8,262
Other costs	-£3,240	-£3,240	-£3,240	-£3,240
Crew	-£300	-£300	-£300	-£300
Total Incremental Cost	-£49,663	-£50,739	-£53,932	-£46,707
Net Revenue	£3,072	£4,181	£8,069	-£651
<i>Market Share Tipping Point</i>	42%	41%	36%	50%
Core Findings - Net Revenue	£7,753	£9,048	£13,583	£3,410
<i>Core Market Share Tipping Point</i>	41%	39%	35%	47%

- 8.5.11 This test has the impact of reducing revenue and pier dues payable on the town centre service. The service would however still generate revenue in excess of costs under Scenarios 1, 2 and 3 with negative revenues under Scenario 4 (Decline). Net revenues are reduced relative to the Core Findings by between £4.1m and £5.5m depending on the scenario.
- 8.5.12 If operating a two vessel service, there would be no potential for an operator to match this level of service frequency on the town centre service – a two vessel scenario is assumed here because under the Core scenario the incremental revenue generated by moving from a two-vessel to three-vessel service is significantly reduced.
- 8.5.13 A further potential response is that Western Ferries could reduce fares and increase frequency. The impact of this would be to essentially compound the impacts of the 'What If?' tests described above and lead to negative net revenues.
- 8.5.14 Note that no tests have been included here to quantify the impact of a potential Western Ferries retrenchment. This is because this would not change the fundamental conclusion of feasibility shown in the two-vessel Core Findings. It is self-evident that any diminution of Western Ferries service offering would increase the net revenue associated with the new town centre service. It would of course be for any potential operator to examine the available data sources to determine the likely response of Western Ferries to any new operator on the route.

8.6 Summary

- 8.6.1 This chapter has considered a range of sensitivities around the Core Findings assumptions documented in Chapter 7. The key results are summarised in Figure 8.2 below, where the 15-year net revenue figures are shown for the Core Findings and each sensitivity and what if test under Scenarios 2 (Gradual Recovery) and 3 (Trend Growth), both of these trends assuming a varying degree of economic recovery by 2015.

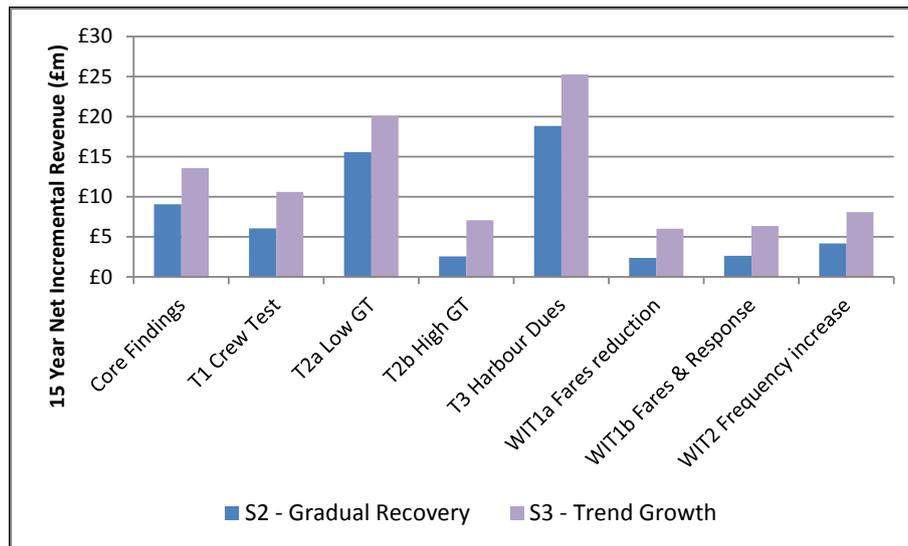


Figure 8.2 Summary of 15-year, Scenarios 2 and 3 Net Revenues

- 8.6.2 The impact of these changes can be viewed in isolation or cumulatively and there are a wide range of potential permutations in terms of combined sensitivity tests. The two illustrative competitive responses from Western Ferries which have been assessed do show that the choice between the two ferry operators would be finely balanced for many ferry users if the nature of the two services were to converge.
- 8.6.3 Note that these tests assume that Western Ferries *could* mount a competitive response. It is also possible that Western Ferries may *retrench* their operation in the face of a new town centre competitor, leading to a larger market share for the new operator and hence higher net revenues. This study cannot comment on the likelihood of either of these outcomes, other than it was made clear in discussions that Western Ferries would react to the introduction of competition to protect their commercial interests. Any prospective town centre service operator would have to come to their own judgement as to the capability and likelihood of Western Ferries to mount such a competitive response.

9 Summary and Conclusions

- 9.1.1 This study has set out to test the feasibility of operating a passenger and vehicle ferry service between Gourock and Dunoon town centres, without the need for additional subsidy to that required to run a like-for-like weather resilient foot-passenger only service. The wider feasibility, in terms of the market's response to any potential tender will ultimately depend on operators' own criteria, but this study is concerned with the feasibility in terms of the balance of projected revenues and costs associated with the prospective new service.
- 9.1.2 Four different forecast scenarios were developed for total volumes across the Clyde between Gourock and Dunoon (Static, Gradual Recovery, Trend Growth, and Decline) to test the findings under different wider economic conditions over the coming years. Three different vessel scenarios were also developed, based on running two, three or four ferries on the town centres route, so 12 'core' scenarios have been tested in total.
- 9.1.3 The first step was to estimate the costs and revenues associated with running a weather resilient and reliable foot-passenger only service and, having estimated these a level of 'defensible subsidy' under each scenario was determined. This value is in the range of £2.9m to £3.1m per annum for a two vessel scenario depending on the outturn economic conditions.
- 9.1.4 The incremental costs and revenues of moving from this foot-passenger service to a passenger and vehicle service (running an identical timetable) were then estimated to provide a forecast net revenue (positive or negative) under each scenario. A positive net revenue means that the service is feasible (although not necessarily commercially attractive), based on the definition of feasibility used in this study.
- 9.1.5 Costs have been estimated based on suitable vessels for the route, benchmarked against similar vessels operating in comparable waters elsewhere, as it is beyond the scope of this study to undertake detailed vessel design. Pier and Harbour dues have been estimated based on current published tariffs. The analysis suggests that a large proportion of the incremental costs of moving to a passenger and vehicle service are associated with Pier Dues (higher volumes of passengers and vehicles) and Harbour Dues (higher gross tonnage). Revenues have been estimated based on the characteristics of the prospective new service and that of the existing Western Ferries service determining a market share for the new service.
- 9.1.6 This analysis suggests that net revenues would be positive in a two-vessel scenario in all four of the economic scenarios considered. This 15-year net revenue value ranges from £7.8m in a Static growth scenario, £9.0m in a Gradual Recovery, £13.6m in a scenario where mid 2000s growth rates are resumed, and £3.4m in a market where decline continues. A three vessel scenario would also be feasible under three of the four growth scenarios, and a four-vessel scenario is only feasible under the highest growth scenario considered here, as the incremental costs of operating the additional vessels outweighs the incremental revenue in the other cases.
- 9.1.7 These 'core findings' were then subjected to a range of sensitivity tests focussing on: crewing levels, gross tonnage of the passenger and vehicle vessel, and harbour dues. These tests underline the importance of pier dues in particular to the overall feasibility and there is scope for both harbour authorities / owners to explore the basis upon which harbour dues

are set in the future, provided they receive an adequate income to cover the costs of operation, maintenance and future investment.

- 9.1.8 The core findings assumed no competitive response from Western Ferries due again to the level of uncertainty associated with this. However, a number of 'what if?' tests were undertaken to assess the sensitivity of the core findings to a competitive response from Western Ferries. These tests indicate reduced, although still positive net revenues under the Static, Gradual Recovery and Trend Growth economic scenarios, with revenues becoming negative under the Decline scenario. A combination of reduced fares and higher frequency would erode net revenues further. There is however an alternative view that Western Ferries may not be capable of mounting or sustaining a competitive response and therefore the company may have to retrench if it lost significant market share. The current stated position of Western Ferries is that they would mount a competitive response to protect their commercial interests. It would clearly be a matter for potential operators to come to their own judgement with respect to the potential response from Western Ferries.
- 9.1.9 In summary there are a range of key potential 'upside' aspects (eg lower vessel GT, pier & berthing dues reduced through negotiation, Western Ferries retrenchment) and 'downside' aspects (eg higher GT, higher crewing levels and competitive response from Western Ferries) which could affect the service and the balance of these would be crucial in determining the ultimate feasibility of the town centre passenger and vehicle service. Some of the inherent uncertainties associated with these aspects of the prospective service could be resolved as part of a market testing exercise whilst other aspects (in particular the response of Western Ferries) would only become apparent on commencement of the service.
- 9.1.10 This study has therefore demonstrated that, given the assumptions made and analysis undertaken here, a passenger and vehicle ferry service is feasible. It could attract the level of market share, and therefore generate sufficient incremental revenue, to cover the various incremental costs of delivering the service. This core finding is subject to the uncertainties explored during the sensitivity testing, but the study does provide an evidence base which could be used to inform discussions with potential operators. Ultimately, it is their judgement and level of interest in this proposition that will determine the feasibility of a passenger and vehicle service between Gourock and Dunoon town centres.

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