

Orkney Inter-Island Transport Study

Strategic Business Case - Pre-Appraisal Report

On behalf of **Orkney Islands Council**



Project Ref: 33570 | Rev: SC | Date: April 2016



Document Control Sheet

Project Name: Orkney Inter-Island Transport Study

Project Ref: 33570

Report Title: Strategic Business Case - Pre-Appraisal Report

Date: 1st April 2016

	Name	Position	Signature	Date
Prepared by:	Stephen Canning	Associate – Transport Planner		12/02/2016
Reviewed by:	Dr Scott Leitham	Senior Associate		16/02/2016
Approved by:	Paul McCartney	Director of Transport Economics		16/02/2016
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
V2.0	22/02/2016	Second draft taking account of comments from OIC and OF.	SC	SL	PMcC
V3.0	08/03/2016	Third draft taking account of comments from OIC and OF.	SC	SL	PMcC
V4.2	01/04/2016	Fourth draft taking account of comments from OIC and OF.	SC	SL	PMcC
SBC P1 v1.0	20/09/2016	Update as part of final reporting.	SC	SL	PMcC
SBC P1 3 rd Draft	12/10/2016	Final report	SC	SL	PMcC

Peter Brett Associates LLP disclaims any responsibility to the Client and others in respect of any matters outside the scope of this report. This report has been prepared with reasonable skill, care and diligence within the terms of the Contract with the Client and generally in accordance with the appropriate ACE Agreement and taking account of the manpower, resources, investigations and testing devoted to it by agreement with the Client. This report is confidential to the Client and Peter Brett Associates LLP accepts no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

Contents

1	Introduction	6
1.1	Project Overview	6
1.2	Pre-Appraisal Report	7
1.3	Our Islands, Our Future – Joint Statement	7
1.4	Geographic Scope.....	8
2	Logic Mapping	10
2.1	Overview.....	10
2.2	A Nine-Step End-to-End Process.....	12
3	Policy & Socio-Economic Context	15
3.1	The Island Challenge - Societal Problems	15
3.2	Island-Level Socio-Economic Problems & Opportunities.....	16
3.3	Appraisal Aims.....	25
3.4	Policy Context.....	26
4	Consultation	34
4.1	Overview.....	34
4.2	Approach to Pre-Appraisal Consultation	34
4.3	Summary of Network Problems from the Consultation	35
4.4	Summary of Key Points by Island / Island Group.....	35
5	Problems, Issues, Opportunities & Constraints	46
5.1	Overview.....	46
5.2	Routes & Services Methodology	46
5.3	Network-Level.....	47
5.4	Island Specific	58
6	Objective Setting	89
6.1	Overview.....	89
7	Initial Option Development.....	92
7.1	Option Generation	92
7.2	Outer North Isles	97
7.3	Inner and South Isles	101
7.4	Network Wide Options.....	108
7.5	Next Steps – Option Development and Appraisal.....	109

Figures

Figure 2.1: Logic Framework for the Overall Process.....	14
--	----

Tables

Table 2.1: National Policies	27
Table 2.2: Regional Policies	29
Table 2.3: Local Policies.....	29
Table 5.1: Flights Used for Education Purposes	54
Table 5.2 Checklist of Potential Transport Problems	58
Table 5.3: North Ronaldsay RSM Results.....	61
Table 5.4: North Ronaldsay Transport Problems	61
Table 5.5: Papa Westray RSM Results	64
Table 5.6: Papa Westray Transport Problems	64
Table 5.7: Westray RSM Results	67
Table 5.8: Westray Transport Problems.....	67
Table 5.9: Sanday RSM Results	69
Table 5.10: Sanday Transport Problems.....	70
Table 5.11: Stronsay RSM Results	72
Table 5.12: Stronsay Transport Problems.....	73
Table 5.13: Eday RSM Results	75
Table 5.14: Eday Transport Problems.....	76
Table 5.15: Shapinsay RSM Results.....	78
Table 5.16: Shapinsay Transport Problems	78
Table 5.17: Rousay / Egilsay / Wyre RSM Results	80
Table 5.18: Rousay / Egilsay / Wyre Transport Problems	80
Table 5.19: Hoy & Graemsay RSM Results.....	83
Table 5.20: Hoy (Moaness) & Graemsay Transport Problems	83
Table 5.21: Hoy & Flotta RSM Results.....	85
Table 5.22: Hoy & Flotta Transport Problems	86
Table 6.1: Current Service and Objectives.....	91
Table 7.1: Capital & Revenue Scenarios	93

This page is intentionally blank

1 Introduction

1.1 Project Overview

- 1.1.1 The purpose of this phase of the Orkney Inter-Island Transport Study (OIITS) is to undertake a proportionate STAG-based options appraisal across the internal Orkney air and ferry network. The overall approach to this options appraisal is to analyse each island in turn considering current and future connectivity needs, in the light of the current provision of vessels, harbours, services, aircraft, airstrips and timetables.
- 1.1.2 The output of this process will ultimately be a **set of service options for each island**, which have been subjected to a Part 1 and Part 2 Appraisal process. The appraisal will be reported in full and also in the form of Appraisal Summary Tables and Options Summary Tables. Given the network coverage, the outputs of the appraisal will be proportionate to the wide geographic scope and number of routes which comprise the study.
- 1.1.3 It is important to note that the air and ferry services provide lifeline connections where there is no alternative should the service fail. This study is ultimately concerned with developing a long-term strategy to provide certainty of supply and ensure the sustainable continuity of services in line with the needs of island communities.
- 1.1.4 Transport Scotland has recently published 'Guidance on the Development of Business Cases' (January 2016) and it is useful to consider this study in the context of this guidance. There are three main stages to this:
- Stage 1 - Scoping: Strategic Business Case (SBC) – analyses a variety of options which tackle the problems, issues and objectives identified;
 - Stage 2 – Planning: Outline Business Case (OBC) – identifies the Preferred Option; and
 - Stage 3 – Procurement: Final Business Case (FBC) – undertaken during procurement phase.
- 1.1.5 Overall, the Business Case development process comprises the so-called 'five-case' model as follows:
- The Strategic Case – making the case for change;
 - The (socio) Economic Case – optimising value for money in terms of economic, social and environmental impacts;
 - The Commercial Case – commercial viability;
 - The Financial Case – financial viability; and
 - The Management Case – achievability.
- 1.1.6 The STAG process is seen as forming the substantive part of the **SBC** which itself provides the overall Strategic Case for the five-case model. In this context, STAG (and hence this study) will provide the SBC for the future development of Orkney Inter-Island transport links.
- 1.1.7 The STAG also provides key inputs to the Strategic and (socio) Economic cases of the OBC, where these will be revisited / refreshed if necessary. A parallel workstream being undertaken by OIC and Transport Scotland will ultimately inform the Commercial, Financial and Management cases and this material can be brought together to form the OBC. The OBC is therefore analogous to a Transport Connectivity Plan for the Orkney Islands.

- 1.1.8 Any individual element of this Connectivity Plan will ultimately require a Final Business Case prior to any investment being made. A high-level timeline for the requirement for FBCs will be set out in the OBC.

1.2 Pre-Appraisal Report

- 1.2.1 The STAG highlights the importance of Pre-Appraisal. This stage involves the baselining of the study area and the identification of the transport-related problems, issues, opportunities and constraints within it. Pre-appraisal is a critical stage in the process, as it provides a basis for setting objectives and testing and developing options.

- 1.2.2 The first task in this project involved a comprehensive baselining of the Orkney Islands and its inter-island transport network. The purpose of this was to provide a clear statement of the underlying factual position in relation to all aspects of the current services - this included:

- the *Council facing* elements of the service:
 - vessels and ports & harbours – assets & operations
 - aircraft & airfields – assets & operations
 - the cost of providing the service; and
 - the context in relation to fixed links.
 - The air services contract
- the *public facing* elements of the service:
 - carryings and utilisation of the air & ferry services;
 - air & ferry connectivity;
 - a review of all previous consultation; and
 - baselining of the economy and the future planning horizon.

- 1.2.3 The relevant reports from this baselining exercise are available on request. **Given the volume of research which has been undertaken, our approach in this report has been only to report the salient points in relation to the network overall and each of the islands.** This is in keeping with the proportionate reporting recommended in STAG and will ensure the document remains succinct and accessible.

The SBC - Pre-Appraisal Report was completed and signed-off in early 2016. However, it has been reviewed and updated to provide context for the final reporting in the OIITS Options Appraisal Report. Note that, as this report was completed in March 2016, the information contained within it was correct and up-to-date at that time. Where practical, the facts within the report have been updated but this will not be the case across the piece (e.g. carryings data drawn from the baselining reports for example, health care arrangements on the islands etc).

1.3 Our Islands, Our Future – Joint Statement

- 1.3.1 In December 2014, Orkney Islands Council, HITRANS, Transport Scotland, Shetland Islands Council and ZetTrans agreed a **Joint Statement** establishing Partnership commitments to jointly address ferry replacement issues in Orkney and Shetland. This Agreement was itself linked into the *Empowering Scotland's Island Communities Prospectus* which identified the

benefits of close working to establish a fair and effective solution to service requirements for the future.

- 1.3.2 It was recognised in these Statements that there was a **need for evidence gathering to support future funding and investment decisions**. It was further recognised that the evidence gathering should follow Transport Scotland's established **Routes and Services Methodology (RSM)** and **STAG** Appraisal approaches to ensure consistency and legitimacy alongside other transport projects and services in Scotland.
- 1.3.3 The OIITS study (and corresponding Shetland Inter-Island Transport Study) is intended to provide the evidence required to inform this debate.

1.4 Geographic Scope

- 1.4.1 The geographic scope of this study is limited to those islands currently served by Orkney Ferries. The analysis therefore excludes the following islands.
- The **Isle of Auskerry** is a small, low-lying island about three miles south of Stronsay. It is separated from Stronsay by Auskerry Sound and is inhabited by one family that charter a private vessel to take them to and from Kirkwall.
 - **Gairsay**, which is privately owned and used for grazing sheep.
 - The island of **Papa Stronsay** is a tiny island just off Stronsay. It is home to a monastery and working farm with approximately 25 monks (numbers fluctuate). They currently have a small private boat owned by the monastery which takes them across to Stronsay.¹
- 1.4.2 A number of islands served by Orkney Ferries also benefit from private charter services. These include:
- The MV *Flotta Lass* and MV *Herson Lass*, passenger only vessels which is used to transport workers to and from the Flotta oil terminal. Whilst a private vessel, the service can be used by Flotta residents, providing a degree of connectivity not otherwise available.
 - The Shapinsay community use a portion of the proceeds from their community wind turbine to charter additional sailings to the mainland outwith the core Orkney Ferries operating day. The vessel used is the privately owned *Charles Anne*.
 - The service between Pierowall and Papa Westray is provided using an Orkney Ferries' vessel, the MV *Golden Mariana*. A scheduled service operates in the summer timetable period, although this is contracted out. There is no scheduled service in the winter timetable period but the vessel is used on a contract basis for transporting children to the Junior High in Westray and by medical practitioners.
 - Orkney Ferries occasionally has to charter vessels for heavy loads which the MV *Graemsay* cannot lift.
 - During the winter months, the ferry service to North Ronaldsay is reduced to one sailing per week on a Friday (weather permitting). In addition, on a Tuesday, Loganair is chartered to provide a weekly freight run to carry perishable and frozen goods.
- 1.4.3 Orkney Ferries note that the availability of the private market is of benefit as it can provide flexible support where there are issues beyond the company's control.²

¹ Source: Orkney Islands Council

- 1.4.4 Whilst the private market is of benefit and indeed is referenced in this report, our main focus is on the service provided by Orkney Ferries.

² Source: Orkney Ferries

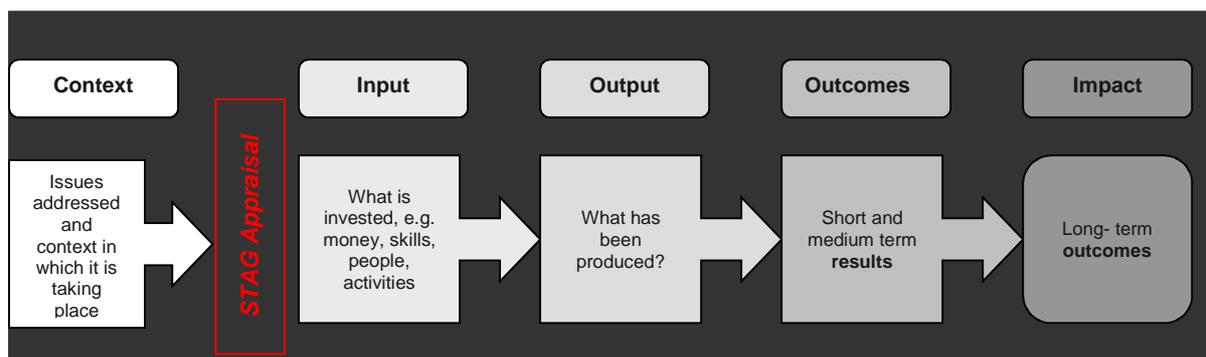
2 Logic Mapping

2.1 Overview

- 2.1.1 Whilst this current project is fundamentally an options appraisal to feed a Strategic Business Case, to provide a wider context, this Chapter sets out a 'logic mapping' based approach to the typical whole project life cycle from its origin in a set of problems to its post-implementation evaluation. The purpose of this is to explore where the STAG process fits within this logic model based approach.
- 2.1.2 It is recognised that STAG is fundamentally concerned with addressing transport problems or transport opportunities. These problems can however sit within a set of wider overarching aims to which transport can make a contribution. In the Orkney context, inter-island ferry and air services provide the **only available connections** and it is therefore important to demonstrate the extent to which transport in the island context is a fundamental enabler of a functional economy and society.
- 2.1.3 The principles underlying this line of argument are as follows:
- No transport project is undertaken for its own sake – any 'transport problem' will have a knock-on effect, creating or contributing to other 'societal problems'. It is however acknowledged that transport interventions alone are unlikely to be sufficient to fully resolve these societal problems.
 - Any transport project is therefore fundamentally undertaken to tackle firstly a **transport problem** but indirectly address a knock-on **societal problem**; with the societal problem stemming (at least in part) from a **problem relating to the current transport provision**.
 - these societal problems could be stated in the appraisal:
 - *eg unemployment in island x is too high at y%.*
 - links between societal and transport problems also need to be clearly stated and evidence-based
 - *eg there are relatively poor transport links to and from island x that are causing problems (or limiting opportunities) in terms of employment.*
 - **Transport planning objectives** are then set aimed at addressing the transport problems / opportunities, not the societal problems.
 - *eg access to employment between island x and mainland or island y should be improved by z%.*
 - Options are developed to address the Transport Planning Objectives – ie the transport problems
 - *eg introduce a larger & faster ferry service connecting island x and mainland or island y.*
 - Given the evidence-base on the links between the transport and societal problems, it is anticipated that solving the transport problems will achieve, in-full or in-part the wider societal **Aims** and address the **Transport Problems**.
 - The **Monitoring & Evaluation** should extend beyond supply and transport to the societal impacts, in which case, an estimate of these societal impacts would be required:

- eg the new ferry has to have a capacity of 50 cars and run at 15 knots (transport)
- eg unemployment in island x is reduced from a% to b% (societal)

2.1.4 As noted, it is helpful to consider this by applying Logic Mapping. The Tavistock Institute produced a guide to Logic Mapping in the context of transport evaluations for the DfT. It suggests that the main components of an 'intervention logic map' are as follows – we have added an Appraisal step between Context and Input:



'Logic Mapping: Hints and Tips', Tavistock Institute, 2010

2.1.5 Each stage of this logic map is expanded on below.

Context

- A set of problems forming the basis of the appraisal

STAG Appraisal (i.e. this study)

- The transport appraisal
 - (i) develops the transport aspects of the identified problems
 - (ii) develops Transport Planning Objectives to address these problems
 - (iii) undertakes an appraisal of options based on these objectives
- A range of options emerge from this appraisal

Inputs

- eg funding, resources etc to implement the project

Outputs

- has the project physically been achieved – ie essentially a measure of the **supply side in terms of the delivery of a project**, eg new vessel or increased ferry frequency / capacity or lower ferry fares etc.

Outcomes

- What have the **transport** outcomes been in the short and medium-term – eg people now benefit from reduced journey times / more services, more people travel, access to opportunities and services has been successfully maintained, population growth, easier access to services education and health care etc.

Impacts

- What have the **societal** impacts been on the wider economy – eg people can now take up new employment opportunities and incomes have risen, economies and communities remain strong and resilient, etc.

Evaluation

- Any later **Evaluation** should consider Outcomes (Transport) and potentially Impacts (Societal).

2.1.6 This logic chain is deployed throughout this report, with a view to identifying the societal problems in the Orkney Islands and the extent to which existing transport services are acting as a contributing factor to these problems. The objective is to provide evidence that, by addressing the identified transport problems, desired wider societal impacts will be achieved (in full or in-part), contributing to local and national government policy.

2.2 A Nine-Step End-to-End Process

2.2.1 With reference to the above, this section puts forward a proposed nine-step process which aligns the STAG-based OIITS Appraisal with the end-to-end logic mapping approach.

Step 1) Develop the set of island-based ‘societal’ problems.

- *eg an island may have an ageing and declining population*

Step 2) From these societal problems, develop high level ‘Aims’.

- *eg address declining population in islands where this is occurring*

Step 3) Develop the transport related aspects of the Step 1 Societal ‘Problems’ at the island level – ie identify any problems with current connectivity that may contribute to these ‘societal’ problems.

- *eg the costs and frequency of island to mainland connections may be leading to people moving from the island for employment on the mainland*

2.2.2 Given that this project is concerned with thirteen different islands, rather than a single island, it is beneficial to adopt a consistent and systematic approach to the process of identifying transport problems. A full list of all of the aspects of inter-island connectivity which could **conceivably be considered as a ‘Transport Problem’** has therefore been derived to provide a **checklist** for this process. This checklist is laid out in Chapter 5.

2.2.3 Each aspect of connectivity in the checklist will be reviewed for each island in the context of the **available evidence** to establish whether this is a problem or not. The identified problems will then be taken forward into the appraisal as **evidence-based problems**. The four OIITS Review Work Packages (Connectivity, Planning Horizon, Consultation, Carryings) are used to provide this evidence. This approach has the added benefit of providing an audit trail to indicate that all of these service aspects have been considered.

2.2.4 **Step 4) Develop Transport Planning Objectives – designed to tackle the transport related problems laid out in Step 3.**

2.2.5 At this stage, we will lay out how meeting these Transport Planning Objectives would meet the Aims established for the project.

2.2.6 **Step 5) Option(s) are developed and appraised that could potentially meet the Transport Planning Objectives.**

2.2.7 **This point would mark the end point of the current SBC workstream.**

2.2.8 Looking further ahead, the preferred option emerging from an SBC / OBC / FBC process would eventually go through an FBC process and be implemented via the Logic Model **Inputs**.

Step 6) The remaining option then creates a Logic Model **Output, a supply side change (eg a new ferry, a higher frequency air service etc)**

Step 7) The remaining option creates a Logic Model **Outcome - ie people travel more often / more cheaply / more reliably etc**

Step 8) Over time, these transport outcomes lead to (societal) Logic Model **Impacts**

2.2.9 If achieved, by reflecting the **aims** set, the **impacts** should address the **problems and opportunities** identified at the outset (ie in Step 1). The appraisal process will have set out the evidence base for this.

2.2.10 These **Impacts** are aligned with the Aims for which targets & indicators could be set.

Step 9) Monitoring and Evaluation

2.2.11 The monitoring & evaluation should cover how the project has performed in terms of:

- Outputs (Supply side)
- Outcomes (Transport outcomes)
- Impacts (Societal Impacts – where possible)

2.2.12 This process is summarised in the flow chart below where the blue boxes represent the current study and the green boxes would be tasks undertaken in the future.

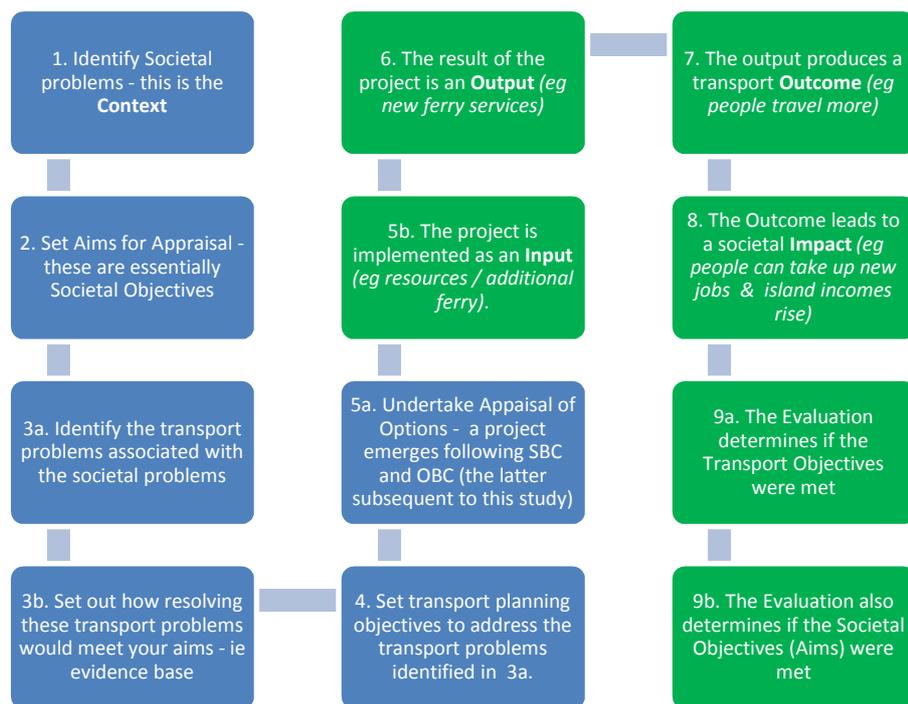


Figure 2.1: Logic Framework for the Overall Process

2.2.13 The remainder of this report follows the structure of this logic model up to and including task 5a, as follows:

- Chapter 3 sets out the societal problems (context) and sets aims for the appraisal (ie the societal objectives) (tasks 1 & 2).
- Chapters 4 and 5 identify the transport problems, issues, opportunities and constraints associated with the societal problems (task 3a and 3b).
- Chapter 6 sets the transport planning objectives (task 4).
- Chapter 7 sets out the option development process and the pre-appraisal option sifting.

3 Policy & Socio-Economic Context

3.1 The Island Challenge - Societal Problems

- 3.1.1 The larger the island, the more self-contained it tends to be – essentially as the size of the island's economy increases, the dependency on its transport connections becomes progressively more limited to the facilitation of the supply chain and import / export of goods.
- 3.1.2 In this case, the Orkney Islands aside from the mainland have a much greater reliance on their transport connections on a day-to-day basis, hence the description of 'lifeline' services. Small islands by their nature therefore face an element of competitive 'disadvantage' compared to the mainland given that they are physically detached from some services and opportunities. Without regular connections, life on these islands could not therefore be sustained. The purpose of transport connections is to assist in reducing this disparity as far as possible by 'closing the gap' associated with island living relative to the mainland. In this study, the nature of the connections to each island are analysed in this context.
- 3.1.3 The following set of bullets establish the inherent competitive 'disadvantages' faced by islands in the Orkney archipelago by virtue of their physical separation from the Orkney mainland:
- There are **reduced access to opportunities** (eg employment, health, education, leisure, social, onward strategic transport connections (air / ferry), emergency services) associated with living in an island community.
 - There are relatively **higher costs associated with living and / or doing business in an island community**.
 - There is a potential **competitive disadvantage** associated with basing a business in an island community.
 - There is **not broad equality of opportunity** for island residents (including vulnerable groups), both in a local and national context.
 - Some islands are **unable (now or in the foreseeable future) to maintain the required number and mix of residents necessary** to consider an island sustainable in terms of the provision of transport and other public services.
 - For mainland based concentrations of employment, **access to island-based labour markets is constrained (and vice versa)**.
 - Island residents have **limited access to essential public services** – whether delivered on-island or off-island.
 - There may **not be a fair and consistent level of connectivity** where no island is unduly disadvantaged relative to other islands in the group accounting for local circumstances.
 - The **benefits of tourism are not evenly spread across the island group**.
 - There is an **over-concentration of economic activity in Kirkwall and Stromness**.
 - There is **income inequality across the islands** where this is brought about by constrained access to employment opportunities.
 - **'At home' time for children educated away from their home island can be restricted** – this makes islands a less attractive place to live for those with children and their families.

- People and goods **cannot always travel at the time needed with a high certainty of supply** (reliability / capacity).
- The island group **could function more effectively as a single economic unit** – improved productivity / agglomeration.
- Some islands have an **unbalanced demographic** which impacts on the future sustainability of the community.
- Some islands may function as a community in terms of the current residents but are **compromised in terms of attracting new inhabitants**.
- There is a **high cost to service providers** of providing island communities with essential public services.
- Trips to the Scottish mainland to access key services (e.g. health appointments) can require **up to two overnight stays on the Orkney or Scottish mainlands, adding significantly to the cost of living on an island**.

3.1.4 These wider societal problems are reflected in various ways at the individual island level. The evidence in this respect is set out below, with reference to the OIITS *Socio-Economic Baseline & Future Planning Horizon* report.

3.2 Island-Level Socio-Economic Problems & Opportunities

3.2.1 This section considers the island-level socio-economic problems and opportunities developed in the OIITS Socio-Economic Baseline & Future Planning Horizon report. Consideration is given first to the Outer North Isles, working south to Flotta.

3.2.2 It is critical to note that the inter-island transport network is key to the delivery of essential on-island public services (including health and education) across the archipelago, particularly in light of the difficulties in recruiting permanent residents to a number of communities.

North Ronaldsay

- The population of North Ronaldsay has undergone a significant decline since 1981, although numbers appear to have stabilised in the most recent Census period (although our understanding is that there has been further population decline since 2011).³ In terms of age structure, the population is heavily skewed towards the older age categories, with a large proportion falling above working age. The ageing population is a key challenge for the island and one which has implications both for public service delivery and meeting the needs of the inter-island transport connections.⁴
- North Ronaldsay has a relatively low economic activity rate (although perhaps underestimated by the official figures), with larger numbers of retirees compared to the Orkney Islands and Scotland as a whole. The air service does allow for daily commuting but there is little in the way of such travel at the moment. Addressing this issue and raising overall economic activity rates is particularly critical in ensuring the future sustainability of the island.⁵

³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.30.

⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.31.

⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.32.

- The North Ronaldsay economy is dominated by agriculture with relatively few working in professional occupations.⁶
- There has been an increase in home working in North Ronaldsay, which is consistent across the majority of Scottish islands.⁷
- North Ronaldsay has some properties available and there is thus capacity to grow the island population. Indeed, two houses were built by the Orkney Housing Association in 2010 to encourage young families to come and live on the island. Despite this, it remains challenging to encourage young working age people to live on the island.⁸
- In terms of healthcare, North Ronaldsay has a nurse practitioner and a visiting GP service once a week. The GP uses the air service to travel to and from the island.⁹
- North Ronaldsay Community School provides primary school education on the island. However, school roll numbers have declined over recent years, with just one pupil currently enrolled at the school. In order to allow the child to interact with other children, she currently attends school in Kirkwall on a Monday and flies back on a Tuesday. The school has one teacher who is resident on the island, with McCrone cover (i.e. out of class preparation time for teachers) and specialist inputs provided by three teachers on rotation who also cover Papa Westray and Eday. The current flight schedule to North Ronaldsay facilitates this practice but clearly there is a strong dependence on the reliability of the air service to ensure that the school day is not disrupted.
- Children of secondary school age, of which there are currently two, attend Kirkwall Grammar School during the week and travel by plane on Monday and return home by plane on a Friday afternoon. The Monday flight leaves North Ronaldsay early enough to make the start of the school day in Kirkwall if the flight was direct. However, there is a stop to pick up Eday school children which means arrival is after the start of the school day (the flight could not be operated any earlier due to available hours of daylight). On a Friday, the school day finishes at around 1200, allowing the children to catch the early afternoon flight back to the island (this provides a full weekend at home, which islanders see as important for their economic sustainability). Children are taxed between the school and the airport, with the Council paying the full commercial cost of the taxi.¹⁰

Papa Westray

- Papa Westray has a relatively healthy and growing population. Most interestingly, in recent years, there has been a notable increase in the proportion of the population of working age and relative declines in those ages 65 and over, suggesting a relatively positive dependency ratio.¹¹ Papa Westray is generally seen to be a cohesive and growing community.
- Papa Westray has a high economic activity rate, with small numbers of retirees and a large proportion of self-employed individuals.¹² Residents are employed in a cross-section

⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.33.

⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.35.

⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.35.

⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.35.

¹⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.36.

¹¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.38.

¹² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.39.

of occupational groups with particularly high proportions employed in professional, associate and technical roles.¹³

- There has been an increase in home working on Papa Westray, which is consistent across the majority of Scottish islands.¹⁴
- The island property market is reportedly relatively healthy, with property selling within a reasonable timeframe and sales in general being to permanent in-migrants, rather than second / holiday-home owners.¹⁵
- Papa Westray has two community nurses, who are both resident on island. The GP is shared with Westray and is available on call on a 24/7 basis and has a scheduled surgery in Papa Westray one day per week.¹⁶
- Papa Westray Community School provides primary education on the island and there are 5 pupils currently enrolled at the school. The school has one teacher who is resident on the island, with McCrone cover (i.e. out of class preparation time for teachers) and specialist inputs provided by three teachers on rotation who also cover North Ronaldsay and Eday. Secondary school pupils, of which there are currently two, generally commute on a daily basis to Westray Junior High School. The children are moved on the Orkney Ferries vessel MV *Golden Mariana*, which is used under a tender arrangement. S5 and S6 pupils, of which there are currently three, fly into KGS on a Monday and back to Papa Westray on a Friday. Children are permitted to fly in on a Sunday (if agreed with the Council) but the KGS hostel does not open until 1900.¹⁷

Westray

- Following a period of decline, Westray's population grew between 2001 and 2011. Whilst the age structure of the population is relatively evenly distributed, there has been a slight growth in the older age categories in the most recent period.¹⁸
- Westray has a high economic activity rate (akin to that of Orkney as a whole) and a lower proportion of retirees in comparison to the other islands. This reflects the economic diversity of the island and paints a relatively positive economic picture.¹⁹
- Overall, there are a higher proportion of people employed in the skilled trades and process, plant and machine operative occupational categories on Westray compared with Orkney as a whole. This reflects the dominance of the agricultural and fish farming/processing industries on the island. Tourism is also a key sector for the island, with a relatively high proportion of people employed in the caring, leisure and other sales and customer service occupational categories.²⁰
- The private car is the dominant mode of travel-to-work for Westray residents. In common with the majority of the other islands, the proportion of Westray residents who work at home has grown between Census periods.²¹

¹³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.40.

¹⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.42.

¹⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.42.

¹⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.42.

¹⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.42.

¹⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.69.

¹⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.70.

²⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.70.

²¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.72.

- The lack of readily available housing on Westray suggests that housing could be a constraint to growth on the island.²²
- Westray has a full-time GP who is currently resident on the island. However, she is due to retire in May 2016 and therefore there may be a change in terms of the future model for health care on the island.²³
- Westray is also the only island in the archipelago with a care home, creating both employment in the island and retaining residents and, in some instances, families on the islands that may otherwise move to be closer to those staying in alternative accommodation.
- There is a primary and junior school on Westray, with all children educated on the island up to the end of S4. Currently, there are 42 children of primary school age enrolled at the school and 18 at the junior high. Both primary teachers are resident on the island and there are two resident junior high school teachers, with additional teachers flown in to provide itinerant services.²⁴
- S5 and S6 pupils (or where there is an S1-S4 placing request), of which there are currently four, travel to Kirkwall on the ferry on a Sunday and return on a Friday. Whilst this means that capacity on the plane is not taken up, it does mean that, as with those on Sanday, Stronsay, Westray children have a truncated weekend. Using air services for travel-to-education could allow for a three day weekend. However, the timetable and/or aircraft numbers would need to be reworked to support this and morning capacity would be an issue.²⁵
- Westray currently has ADSL Max broadband but could benefit from FTTC broadband via a subsea cable in the long-term (although our understanding is that this is very much at the conceptual stage).²⁶

Sanday

- The population of Sanday has grown since 2001. However, there has been a general shift towards the older age categories over this period.²⁷
- Economic activity rates on Sanday are below that of Orkney and Scotland as a whole, with far higher proportions of retirees on the island.²⁸
- Agriculture remains the dominant industry on Sanday, although the public and service sectors have grown in size since 2001.²⁹
- There has been an increase in home working on Sanday, which is consistent across the majority of Scottish islands.³⁰

²² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.72.

²³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.73.

²⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.73.

²⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.73.

²⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.73.

²⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.50.

²⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.52.

²⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.53.

³⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.55.

- Second home ownership is relatively high, with approximately 10% of the properties on the island second homes. These are a mix of self-catering holiday properties and genuine second homes.³¹
- Sanday has two resident nurses who work two weeks on, two weeks off. There is a resident GP which is a seventeen week post and a pool of three doctors, each of which are 12 week posts.³²
- There is a combined primary and junior high school on Sanday which provides education for pupils aged 3-16 years. Currently, there are 27 children in the primary school (supported by two resident teachers) and 22 children in the junior high school, which also has resident teachers, although itinerant teachers are flown in to the island. S5 and S6 (or where there is an S1-S4 placing request) pupils, of which there are currently seven, travel into Kirkwall by ferry on a Sunday afternoon and return to the island on Friday.³³
- The air service is critically important in ensuring itinerant teachers can travel to Sanday.
- Sanday has ADSL Max broadband, with no committed improvements planned.³⁴

Stronsay

- Stronsay's population has been in steady decline since 1981 and is ageing. This poses a significant threat to the future sustainability of the island and the extent to which improved transport connections can address this is a key question.³⁵
- Stronsay has a relatively high proportion of people within the skilled trades occupational category (35%) compared to the Orkney and Scottish averages (22% and 13% respectively). This reflects the dominance of the agricultural sector on the island.³⁶
- The proportion of Stronsay residents who work at home has grown over the Census period. The private car is the second most common travel-to-work mode.³⁷
- Stronsay has two GPs who job share the role. Both are resident on the island.³⁸
- Stronsay has a combined primary and junior high school. There are 18 primary school children supported by two resident teachers and 13 secondary school pupils who are supported by itinerant teachers who fly to the island on a daily basis. S5 and S6 pupils (or where there is an S1-S4 placing request), of which there are currently 12, travel into Kirkwall by ferry on a Sunday afternoon and return to the island on Friday. As a result the children experience a shortened weekend.³⁹
- Stronsay has ADSL Max connectivity, with no committed improvements.⁴⁰

³¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.55.

³² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.55.

³³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.55.

³⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.56.

³⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.63.

³⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.64.

³⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.67.

³⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.67.

³⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.67.

⁴⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.67.

Eday

- The population of Eday has grown since 2001. However, the proportion of the population of working age has declined over this period with those aged 65 and over increasing. This population imbalance is a key issue for the future sustainability and development of the island.⁴¹
- The economic activity rate on Eday is below that of Orkney as a whole and the island has a larger proportion of retirees and long-term sick / disabled. However, the official statistics will likely mask a significant amount of work in the informal economy. Nonetheless, addressing the above issues and raising overall economic activity rates is essential to the future sustainability of the island.⁴²
- Agriculture is the dominant industry on Eday, with smaller numbers employed in the public and service sectors.⁴³
- Car ownership on Eday is above that of Orkney and Scotland as a whole.⁴⁴
- There has been an increase in home working on Eday which is consistent with the pattern across the majority of the Scottish islands while at the same time the proportion of people driving to work has declined.⁴⁵
- Property prices on Eday are low and turnover is slow, with high vacancy rates. This does however provide a potential growth opportunity.⁴⁶
- In terms of health care provision, Eday has two nurse practitioners who work two weeks on, two weeks off. The nurses are supported by a visiting GP one day per week who travels on the ferry from Stronsay. Hospital care is provided in Kirkwall or Aberdeen as required.⁴⁷
- Eday Primary School provides primary education on-island and there are currently seven children enrolled. Secondary education is concentrated exclusively in KGS with 5 children from Eday currently enrolled at the school. S3-S6 pupils travel on the Sunday evening ferry.⁴⁸ However, it is considered that S1 and S2 children are too young to leave home on the Sunday evening and therefore they are flown into Kirkwall on the Monday morning North Ronaldsay flight. All children return to Eday on the Friday afternoon ferry.⁴⁹
- Eday has ADSL Max connectivity, with no anticipated upgrade in the near future.⁵⁰

Shapinsay

- The population of Shapinsay has grown since 2001. However, there has been a general shift towards the older age categories.⁵¹

⁴¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.13.

⁴² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.14.

⁴³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.15.

⁴⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.15.

⁴⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.16.

⁴⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.16.

⁴⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.16.

⁴⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.16.

⁴⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.16.

⁵⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.17.

- Economic activity rates on Shapinsay are below that of Orkney as a whole and the island has a relatively high proportion of retirees. Addressing this issue and raising overall economic activity rates will be key to the future sustainability of the island.⁵²
- Shapinsay has a particularly large proportion of residents employed within skilled trade occupations.⁵³
- Car ownership levels on Shapinsay are similar to that of Orkney as a whole. As the Shapinsay ferry berths in Kirkwall and the journey is relatively short, there is not always a pressing need to take the car on the ferry.⁵⁴
- Shapinsay is located in close proximity to the mainland and benefits from frequent and short ferry crossings, with the result that commuting to Kirkwall is a genuine and popular option amongst residents.⁵⁵
- There are two nurse practitioners on Shapinsay who are likely to be moving to a two week on, two week off shift pattern in the near future. The frequent and short ferry service allows GPs to come to the island for surgeries.⁵⁶
- There is a primary school on Shapinsay with 19 children, supported by two teachers (the teaching head and class teacher are both resident on the island). Around 10-15 children travel into KGS by ferry on a daily basis.⁵⁷
- Shapinsay has ADSL Max broadband, with no currently committed improvements.⁵⁸

Rousay / Egilsay / Wyre

- The population of Rousay, Egilsay and Wyre has declined significantly over the previous 20 years and there has been a shift towards the older age categories.⁵⁹
- Economic activity rates on Rousay, Egilsay and Wyre are below that of the Orkney as a whole and there are a reasonably high number of retirees living within the island group.⁶⁰
- The employment base for Rousay, Egilsay and Wyre is markedly different with the latter two dominated by agriculture and on-island working and the former having a wider industrial base which includes tourism and off-island commuting.⁶¹
- Home working is the most common option in terms of travel-to-work followed by driving. In common with the majority of the other Scottish islands, there has been an increase in home working over the Census period.⁶²

⁵¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.58.

⁵² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.59.

⁵³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.59.

⁵⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.61.

⁵⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.61.

⁵⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.61.

⁵⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.62.

⁵⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.62.

⁵⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.45.

⁶⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.46.

⁶¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.47.

⁶² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.48.

- The Rousay / Egilsay / Wyre doctor travels to the island group from the mainland a few times a week, which can create difficulties for Egilsay residents, who have a long stopover in Rousay between sailings to get appointments.⁶³
- Rousay has an on-island primary school, which has 17 children currently enrolled. The school is staffed by 3 teachers (two of whom job share). None of the teachers are resident on the island and therefore travel in on a daily basis. There are also 12 secondary school children who travel on a daily basis to KGS.
- There are no schools on Egilsay and Wyre, with Egilsay School having closed in 2010. Currently there are no primary school children on Wyre and just one on Egilsay who commutes to Rousay by ferry on a daily basis. However, the ferry timetable does not work well in this respect, with the child only arriving at school at 10am and not returning to Egilsay until 1635. Children of secondary school age travel by ferry to Kirkwall. However, from Wyre this is a relatively long journey, with the ferry departing Wyre at 0730, travelling via Rousay and arriving in Tingwall at 0815. There is then a 30 minute onward bus connection.⁶⁴
- Rousay has ADSL Max connectivity which is located on the island. Egilsay and Wyre also have ADSL Max but are served from Rousay, so connection speeds are likely to be slower. There are no committed improvements to the current broadband connectivity.⁶⁵

Hoy & Graemsay

- Following a period of decline, the population of Hoy and Graemsay (although principally Hoy) increased in the most recent period. In terms of age structure the population is skewed towards the older age categories, with a relatively large proportion falling above working age.⁶⁶
- Hoy/Graemsay has a low economic activity rate compared to the Orkney Islands as a whole, with lower proportions of employees and high rates of retirees. In contrast to the other islands, there are very few self-employed individuals. Addressing this issue and raising overall economic activity rates will be a key factor in ensuring the future sustainability of the island.⁶⁷
- The island group has a particularly high proportion of people working within the skilled trades occupational category reflecting the continued dominance of traditional industries on the island. In addition, there is a relatively high proportion of people employed in the managers, directors and senior officials and associate, professional and technical occupational categories. This may be a reflection of the proximity of the island to the mainland and the potential for commuting, particularly for Hoy residents.⁶⁸
- The property market on Hoy is relatively buoyant. However, as discussed above, the limited amount of tourist accommodation on the island, combined with the capacity of the ferry, is seen as a constraint to the development of the tourism market. In addition, consultations suggest that there are a significant number of second homes in the north end of the island. However, the latter is not believed to be significantly impacting the

⁶³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.49.

⁶⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.49.

⁶⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.49.

⁶⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.25.

⁶⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.26.

⁶⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.27.

economic performance of the island. In contrast to Hoy, the market on Graemsay is more limited, with a number of vacant properties.⁶⁹

- Hoy has a resident full-time GP and 12 week cover for holidays. Graemsay has no resident cover or scheduled surgery, with health provision only called in as and when needed.⁷⁰
- There is one primary school on Hoy, which currently has 23 children enrolled. There is one part time teacher who is resident on the island and two off-island teachers who travel into the school. Secondary school children now travel daily to Stromness Academy or are residential at KGS, with eight children from Hoy currently enrolled at each school. The children travelling to Stromness travel via Moaness.⁷¹
- The school on Graemsay closed 19 years ago. There are five primary age children and one pupil in S1 from Graemsay, all of whom travel to Stromness. Escorts are required to accompany the primary school children during the journey. However, the recruitment of escorts is proving to be increasingly challenging as there is significant dead time in the middle of the day, with the escorts only paid for the hours that they work.⁷²
- Hoy has ADSL Max broadband served from two exchanges, one in the north of the island and the other in Longhope in South Walls. There are no committed improvements to the current broadband. Graemsay also has ADSL Max, but this is through the Stromness exchange so connection speeds are likely to be less than the advertised maximum.⁷³

Flotta

- Flotta is a relatively fragile island – the population declined steadily between 1981 and 2001, although has flat lined since.⁷⁴
- Following a period of decline, Flotta's population established between 2001 and 2011. However, there has been a decline in the younger cohorts and a growth in those aged 55 and over during this period, a pattern of change which the relatively recent closure of the school may accelerate.⁷⁵
- Flotta has a low economic activity rate compared to the Orkney Islands as a whole, with lower proportions of self-employed individuals and a proportionately high number of retirees. Addressing this issue and raising overall economic activity rates is essential to the future sustainability of the island.⁷⁶
- The public and service sectors on Flotta have grown in importance since 2001 while there has been a reduction in the numbers employed in skilled trade occupations.⁷⁷
- There has been an increase in home working on Flotta which is consistent with the pattern across the majority of the Scottish islands and at the same time the proportion driving to work has declined.⁷⁸

⁶⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁷⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁷¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁷² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁷³ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁷⁴ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.18.

⁷⁵ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.19.

⁷⁶ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.20.

⁷⁷ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.21.

- There has been relatively little in-migration to Flotta in recent years. Much of the social housing built on the island is currently unoccupied and there have been issues with selling property, with houses remaining up for sale for long periods. The majority of home owners live on the island; there is just one holiday home.⁷⁹
- Flotta has two nurse practitioners who work two weeks on, two weeks off and a visiting GP who is based in Stromness and travels to the island by ferry twice a week.⁸⁰
- There was a primary school on Flotta but this was mothballed in 2010 as a result of declining numbers. A Committee decision was taken that the school would only be reopened if two families with two or more children moved to the island. There are two primary age children and two nursery age children who travel to and from Houton by ferry to Orphir on a daily basis.⁸¹
- Flotta's public broadband is ADSL Max, although the exchange is in Longhope in South Walls, so the connection speeds are likely to be less than the advertised maximum. However, Flotta benefits from a radio link via the oil terminal which provides fast and consistent broadband on the island, although this can be unreliable.⁸²

3.3 Appraisal Aims

3.3.1 These Aims, which were developed at the SIITS and OIITS Objective Setting Workshop, are also reflective of national policy.

- 1) The inter-island transport network should **support and promote inclusive economic growth**.
 - It will help to mitigate the **reduced access opportunities** associated with living on an island community.
 - It will help to mitigate the **increased cost** associated with living and / or doing business on an island community.
 - It will help to mitigate the potential **competitive disadvantage** associated with basing a business in an island community.
 - It will help to provide broad **equality of opportunity** for island residents (including vulnerable groups), both in a local and national context.
 - It will help to **reduce income inequality** across the islands where this is brought about by constrained access to employment opportunities and essential services.
 - It will provide access to a **wide labour market and source of raw materials**.
- 2) The inter-island transport network should support **improved access to opportunities and services** on mainland Orkney, including employment, health, education and personal services.

⁷⁸ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.23.

⁷⁹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁸⁰ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁸¹ OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

⁸² OIITS Economic Baseline & Future Planning Horizon (Peter Brett Associates, 2016), p.29.

- It will help to provide access to a **wide labour market** for mainland based concentrations of employment (and vice versa).
- It will help to enable island residents to **access essential public services**, whether delivered on-island or off-island.
- It will work towards providing island residents with a **fair and consistent level of connectivity** where no island is unduly disadvantaged relative to other islands in the group.
- It will maximise **'at home'** time for children educated off-island, making the island a more viable place to live.
- To enable people and goods to broadly **travel at the time they wish** with a high **certainty of supply**.
- To reduce the time and money **costs to service providers** of providing island communities with essential services, both public and private (e.g. schools, health, tradespeople etc).
- 3) The inter-island transport network should **promote population retention**, a balanced island demographic and capacity within the local community
 - It will help to achieve / maintain **critical mass** in terms of population.
 - It will help to support higher levels of **economic concentration** (i.e. a critical mass of employment opportunities) on the islands.
 - It will help to make the islands a practical proposition for those **potentially minded to island life (i.e. in-migration)**.
- 4) The inter-island transport network should support **enhanced productivity and economic connectivity** within the Orkney Islands
 - It will help to increase the proportion of total **tourists** visiting the islands.
 - It will help the island group to function more effectively as a **single economic unit** through **increasing productivity / agglomeration**.

3.4 Policy Context

- 3.4.1 This section briefly considers the strategic context in which this study is set and the principal policy documents to which options should contribute. The following sections therefore provide a basis for the appraisal of options in terms of their 'policy integration' (a subset of the integration criterion) and the 'fit with established policy directives' criterion.
- 3.4.2 Island and inter-island transport connections in Scotland have evolved over many years in different ways. A combination of different policies, organisational structures, funding approaches and investment decisions have led to a situation where there can be consistency within networks (e.g. Clyde & Hebrides) but rarely between different networks (e.g. Orkney and Clyde & Hebrides). These historic differences have led to wide variations in capital investment, service levels and fares.
- 3.4.3 One of the main challenges in undertaking this appraisal is that, whilst there are a series of high level policy statements in relation to what island / inter-island transport should seek to achieve, there is little in the way of definitive and specific policy statements on the level of service which should be provided to an island.

3.4.4 For example, there is no national, regional or local policy which:

- consistently defines the level of service an island should receive in terms of the number of operating days, frequency, length of operating day etc;
- sets a threshold or requirement for RoRo rather than LoLo operation;
- identifies the criteria for an island receiving an air service; and
- sets out a common basis for setting fares etc.

3.4.5 The historic inconsistency between geographies combined with something of a policy vacuum (a few examples of which are highlighted in the bullets above) in relation to consistent levels of service presents a challenge when carrying out an appraisal of this nature in terms of the scale and scope of options presented. All of the options which have been developed have been assessed in terms of their policy integration and fit with established policy directives, but there are a series of wider policy questions (locally and nationally) which require to be answered if long-term consistency of island / inter-island transport provision is to be achieved across Scotland.

3.4.6 It is recognised that the development of the Routes and Services Methodology (referenced below) is a step in the direction of achieving consistency, but this in itself does not cover all the aspects of island connectivity which comprise the full picture.

National Policy

3.4.7 The table below sets out the principal national policies to which the options developed in this study should contribute:

Table 3.1: National Policies

Policy, Plan or Strategy	Purpose	Objectives / Key Points
National Transport Strategy (Transport Scotland, 2016)	To act as an enabler of economic growth – to support businesses in achieving its local, national and international objectives and to improve the lives of individuals and communities by connecting them with their economic future.	<ul style="list-style-type: none"> • Improved journey times and connections, to tackle congestion and lack of integration and connections in transport; • Reduced emissions, to tackle climate change, air quality, health improvement; • Improved quality, accessibility and affordability, to give choice of public transport, better quality services and value for money, or alternative to car; • Promote economic growth by building, enhancing managing and maintaining transport services, infrastructure and networks to maximise their efficiency; • Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network; • Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy; • Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff; and • Improve integration by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.
National Planning Framework 3 (Scottish Government, 2014)	The NPF3 sets out the long-term vision for the spatial development of Scotland and is the spatial expression of the Government Economic Strategy.	The NPF3 notes that, in July 2013, the Lerwick Declaration affirmed the Scottish Government’s commitment to subsidiarity and local decision-making. As part of this commitment, Scottish Ministers recognised the case for further empowering our island communities, and have worked with the island councils of Shetland, Orkney and Eilean Siar, as well as the mainland Councils with islands, to explore how to give this practical effect. In line with this, the spatial strategy reflects the special planning challenges and opportunities for the Northern and Western Isles, including their potential to lead deployment of new offshore renewable technologies, scope for other sectors including tourism and food and drink, and the importance of digital and transport links to the rest of Scotland.

Policy, Plan or Strategy	Purpose	Objectives / Key Points
		<p>Whilst the NPF is focussed on providing a degree of local autonomy, there are a number of points of specific relevance for the Orkney Islands:</p> <ul style="list-style-type: none"> • There is a commitment to viable rural areas – the NPF notes that by making higher education, jobs, housing and public transport available in more remote rural areas, the Scottish Government is working to address the continued out-migration of young people from rural areas (p.21). • Kirkwall is recognised as a hub for the wider coordination of opportunities in the Pentland Firth and in relation to Orkney Waters (Scotland’s first marine energy park). It is also acknowledged as the transport hub for the islands (p.28). • The Orkney Islands have enviable opportunities for tourism development, building on the unique and internationally recognised heritage of the islands and the quality of the natural environment (p. 28). • Wave energy is identified as an area of high potential, with both wave and tidal energy in the Pentland Firth and Orkney Waters Marine Energy Park. It is estimated that this industry could generate 4,500 additional FTEs for Orkney by 2030 (p. 37). • Lyness on Hoy is part of the Low Carbon Energy Area Enterprise Zone (p. 37). • Existing assets – like the Flotta oil terminal – will continue to play an important economic role (p.25). • Orkney is identified as a key tourism destination (both for cruise tourism and on-island stays) (p.50).
Scottish Ferries Plan 2013-22	The Ferries Plan sets out strategic guidance for the provision of ferry services in Scotland between 2013-22	The Ferries Plan notes that the services within the Orkney and Shetland Islands are currently the responsibility of the respective local authorities. The Ferries Plan indicated Transport Scotland’s intention to discuss services with the responsible authority if they wished, and through these discussions determine the future responsibility for the services.
Routes & Services Methodology	The RSM is a needs based identification of the required level of ferry service by island.	<p>The RSM reports for Orkney and Shetland set out:</p> <ul style="list-style-type: none"> • The current level of ferry service provision by island in terms of the number of days where there is a connection; the number of connections per day; and the length of the operating day. • The model level of service for each of the above listed characteristics. • Differences between the current and model levels of service.

3.4.8 The national policy framework underpins the aims and subsequent transport planning objectives of OIITS. The commitment to reduced journey times, reduce emissions and enhanced accessibility underpin a number of the objectives subsequently developed in this report.

3.4.9 In addition, the options developed and progressed through OIITS will contribute to the delivery of the Routes & Services Methodology (RSM), although it should be noted that the levels of service set out in the RSM are for guidance rather than a ‘hard’ commitment to scale up to a given level of service. The sustainability and enhancement of inter-island transport provision will also be key in delivering in the National Transport Planning Framework aims of supporting ‘viable rural areas’ and maintaining connections to Kirkwall, defined as the ‘cultural centre of the Orkney Islands.

Regional Policy

Table 3.2: Regional Policies

Policy, Plan or Strategy	Purpose	Objectives / Key Points
HITRANS Regional Transport Strategy	The HITRANS RTS has as its vision enhancing the area's viability - enhancing its place competitiveness and thereby attracting and retaining people in the area and making it a more attractive place in which to live, to work, to conduct business and to visit.	<p>The RTS vision will be achieved through improving the interconnectivity of the whole area to strategic services and destinations. This will require development of a fit for purpose, multi-modal transport system.</p> <p>The Strategy's principal benefit to the communities and businesses of the HITRANS area will be to increase sustainable economic growth, in line with the Scottish Government's Economic Strategy, by enabling the area to compete and support growth. The other benefits of the strategy include:</p> <ul style="list-style-type: none"> • Enable people to participate in everyday life. • Improve the safety and security of travel. • Manage the impacts of travel on the area's environmental assets. • Improve people's health <p>Prioritised objectives were developed for three area types within the region:</p> <ul style="list-style-type: none"> • Movements within the region relating to remote rural and island areas (of particular relevance in Orkney). • Movements within the region relating to service centres and hinterlands. • Movements to and from the region. <p>These area types were used for the following reasons:</p> <ul style="list-style-type: none"> • The need to recognise the particular issues encountered by remote rural and island areas as distinct from the less remote parts of the region; • The need to recognise the importance of links to and from the region, particularly with regard to economic development, and access to markets for freight and for tourism; and • The need to provide a framework within which to develop strategies and project types for each of these areas. <p>A summary of the objectives for transport in the region over the twenty year strategy horizon are as follows:</p> <ul style="list-style-type: none"> • To reduce costs to users of the transport system (public and private transport); • To reduce costs of the movement of goods; • To improve co-ordination and integration within the transport system; • To improve frequency of services; • To improve journey times; and • To increase choice of destination.

Local Policy

3.4.10 The table below sets out the principal local policies to which the options developed in this study should contribute:

Table 3.3: Local Policies

Policy, Plan or Strategy	Purpose	Objectives / Key Points
Orkney Islands Council 2013-18, Our Plan	The OIC 2013-18, Our Plan, lays out the Council's ambition and aspirations for Orkney,	<p>Priority 6 (of 7) is Orkney's transport networks. The plan commits to ensuring a robust, affordable and reliable ferry service based in the isles (wherever possible) with a strategy for ferry replacement, and fairer provision of ferry costs with the Scottish Government, whilst preserving the internal air service.</p> <p>This document included a commitment to refresh all previous STAG work and</p>

Policy, Plan or Strategy	Purpose	Objectives / Key Points
	supporting opportunity and tackling improvement priorities.	<p>led to the commissioning of this study.</p> <p>Other key commitments included:</p> <ul style="list-style-type: none"> • Working with the Scottish Government Ferries Plan process (effectively the Routes & Services Methodology, accompanying wider discussions on fair funding). • Carrying out a detailed appraisal of air services, allowing for the evaluation of whether enhanced services could offer a value for money benefit to integrated transport. • Undertaking a study to determine the opportunities and constraints for providing island-based ferry services.
Orkney Local Development Plan	The Orkney LDP sets out a Vision and Spatial Strategy for the development of land in the Orkney Islands over the next 10-20 years	<p>The Vision for the LDP is focussed on consolidating the strong position of the island archipelago. The LDP states that “by 2030, Orkney will be a first choice location for people to live and work. Orkney will have nationally significant training and investment opportunities. Orkney will attract visitors from around the world to learn and admire its heritage, cutting edge business and industrial facilities. Above all, Orkney will be a place to enjoy an exceptional quality of life, a fulfilling career and a sustainable lifestyle”.</p> <p>The Plan does not have any significant land allocations included for the isles (with the exception commercial allocations at Lyness on Hoy). Where developments do come forward, it is anticipated that these will be focussed in existing settlements within the Isles. However, it is also acknowledged that small applications for e.g. individual houses outwith the main settlements will be supported, subject to their conforming with other areas of the LDP. Overall however, it is not anticipated that there will be a step change in development in the isles over LDP period, which suggests that new development will not be a major driver of future air / ferry patronage in any given island.</p>
Orkney Community Plan 2015-18	The Orkney Community Plan brings together the public, private and third sectors with a view to developing a plan which will support the delivery of the local authority’s Single Outcome Agreement (SOA).	<p>Working under the vision statement of ‘working together for a better Orkney’, the Orkney Partnership has set three strategic priorities:</p> <ul style="list-style-type: none"> • positive ageing; • a vibrant economic environment; and • healthy and sustainable communities. <p>The strategic priorities are evidence-based and founded on six key values, namely:</p> <ul style="list-style-type: none"> • promoting survival; • promoting sustainability; • promoting equality; • working together; • working with communities; and • working to provide better services. <p>The Community Plan is very much pan-Orkney. However, with the archipelago having a number of island communities, the inter-island transport network will be of critical importance in facilitating the delivery of the strategic priorities. For example, “positive ageing” in an island context will require effective transport connectivity allowing residents to easily travel for healthcare / appointments and / or allowing medical practitioners and specialists to visit the islands. Similarly creation and sustenance of a vibrant economic environment in the isles is itinerant on having transport connections which facilitate economic interactions between businesses, employees and the job market and consumers and businesses.</p> <p>The Community Plan specifically references the need for essential investment in Orkney’s internal ferry fleet, and possibly a new management model. This acknowledges the critical role that the inter-island transport network plays in supporting these communities.</p>
Eday Partnership	To create an economically	In terms of economic development, the plan explains that agriculture is critical to the island and, whilst not a particularly big employer, will continue to form

Policy, Plan or Strategy	Purpose	Objectives / Key Points
Development Plan 2014-17	prosperous self-reliant community that is connected with the wider world that remains a safe clean environment, where we are proud to live, able to work, to bring up and educate our children and to fulfil our own hopes and ambitions	<p>the backbone of the island economy, providing the basis for many key services.</p> <p>In terms of specific new opportunities:</p> <ul style="list-style-type: none"> • The potential production of hydrogen from surplus electricity generated by the Eday community turbine is a key opportunity for Eday, allowing the island to raise revenue otherwise lost as a result of grid constraints. This may over time be extended to converting wave power into hydrogen using an electrolyser. • Scottish Sea Farms recent new venture off the coast of Eday has brought employment to the island, employing five members of the community. • There remains a desire to increase community capacity, with continued support / investment in the Eday Community Enterprise. • There is also a desire for a workshop / unit facility for small businesses and a fitness suite / swimming pool. • There are opportunities in developing on-island tourism, which the island is keen to pursue. Examples include new paths and promotion of historical assets. • Whilst there are good opportunities for Eday, the Development Plan identifies a series of threats / risks which could impact negatively on the community. A number of these are in relation to the inter-island transport network, namely: <ul style="list-style-type: none"> ○ The high cost of moving freight (from what is a relatively freight intensive island) and travel more generally (including lack of concessionary travel opportunities); ○ The limited number of connections in comparison with the other Outer North Isles; ○ Access to health services not provided on Eday (a key issue); ○ Vulnerability of the island fire services, which could inhibit the air services.
Hoy Development Plan 2007	Development plan setting out future objectives for the Hoy & neighbouring Graemsay.	<p>Key principles for 'Hoy 2025' include:</p> <ul style="list-style-type: none"> • Having a population of 500 people, with a good demographic mix and housing & work to sustain that population. Ideally, permanent residents rather than second home owners are sought, with a belief in the need for affordable housing. • Environmentally sensitive development and realisation of the significant benefits offered by renewables. • A range of on-island services which would support local development and population retention. <p>Renewables present an opportunity of critical importance for the future of Hoy. In particular, Lyness has been declared a Low Carbon / Renewables North Enterprise Area. This designation provides incentives in terms of reduced business rates and / or enhanced capital allowances for firms in this sector moving into the area. The marine infrastructure is currently under development and is being developed to support the assembly, storage and servicing on marine energy devices. This 5 hectare site offers agglomeration benefits when considered along with Hatston and Scrabster. The site is a deep harbour facility located within Scapa Flow, which is a perfect location for the wet storage of marine devices and can be used to assemble, test, fix and repair marine energy devices.</p> <p>Hoy also has a community turbine, which generates revenue. However, grid capacity constraints again limit the revenue which can be generated from this asset.</p> <p>Tourism is also integral to the economy of Hoy and will fulfil a key role in terms of economic development in the future. Hoy offers outdoor activities, nature related tourism and maritime heritage amongst others.</p> <p>Graemsay is a very fragile island with a small population. The key to future development will be ongoing agricultural production, retaining the families which currently live on the island.</p>

Policy, Plan or Strategy	Purpose	Objectives / Key Points
Papa Westray Island Development Plan 2011-21	Island Development Plan 2011-21, which sets out the community's ambitions for the future.	<p>The principal focus of the Development Plan is on ensuring the future sustainability of the island through improving connectivity to the mainland and neighbouring Westray, whilst at the same time promoting on-island development. From a transport perspective, the key identified actions are:</p> <ul style="list-style-type: none"> • Maintaining a regular lifeline air service between Papay and Kirkwall. • Securing a scheduled year-round passenger service between Papay and Westray (including additional <i>ad hoc</i> sailings, which are identified as a priority). • Construction of a new harbour on Papay which would accommodate both the Kirkwall and Westray ferries. <p>The majority of development opportunities identified in the plan are relatively small scale, so the implications for the inter-island transport network are limited. However, the measured ambitions in the plan will, if realised, ensure that Papay remains a resilient community over the plan period.</p>
Rousay / Egilsay / Wyre Development Plan 2011-25	The Development Plan provides a long-term framework for the development of Rousay, Egilsay & Wyre	<p>Rousay / Egilsay / Wyre have a range of proportionate initiatives designed to ensure population retention and development in the medium-term. The main income generator is the community owned turbine on Rousay, although again there are curtailment issues in relation to grid capacity. The potential of a fixed link between Rousay and Egilsay with incorporation of tidal power devices has also been cited by the community as an opportunity.</p> <p>In terms of future opportunities, renewable energy is seen to be key to the islands, whilst small-scale tourism also offers important opportunities (e.g. an island marina, improved accommodation, walking trails, genealogy / heritage etc).</p> <p>From a transport perspective the island group has highlighted the need for longer ferry sailing days and year round Sunday sailings. There are aspirations to explore fixed links, an airstrip and community water taxi.</p> <p>Egilsay and Wyre are both fragile islands with very small populations (largely focussed on agriculture) and will thus need to be considered carefully in this study.</p>
Sanday Development Plan 2016	Island Development Plan published in 2016 which sets out the community's ambitions for the future.	<p>The Sanday Development Plan explains that Sanday has a thriving and active community, although it is explained that the island is becoming increasingly fragile, with relatively small changes having a profound effect.</p> <p>The Plan comprises six key themes reflecting the priorities identified by Sanday residents. Of these six themes, Transport & Infrastructure is the first addressed. The identified challenges include but are not limited to:</p> <ul style="list-style-type: none"> • ferry and air timetables make it very difficult to commute to work; • books of 50 ferry tickets, which would dramatically reduce the cost of travel have a high upfront cost, disadvantaging low income households; • transport costs for anyone moving goods on and off the island are high, adding to the costs of living and running a business; and • limited capacity of ferries and planes is restrictive to the expansion of the tourism industry. <p>There are no major economic development plans for the island which would fundamentally change the demand for travel. The proposed development is proportionate and intended to encourage in-migration and population retention.</p> <p>Agriculture forms the backbone of the island economy, although Sanday has a strong reputation for crafts / creative industries.</p> <p>Sanday does not currently have a community turbine, although there are aspirations for increased energy from renewable sources within the community.</p>

Policy, Plan or Strategy	Purpose	Objectives / Key Points
Shapinsay Development Plan (currently being refreshed)	Island Development Plan which sets out the community's ambitions for the future.	<p>The Shapinsay Community Development Plan is currently being refreshed but our understanding is that the island is well placed to meet the challenges of the future, building on its current staple industries.</p> <p>The main new development potential is in relation to the potential use of surplus electricity from the community turbine to generate hydrogen (a scheme similar in nature to that proposed for Eday).</p> <p>Current transport connectivity (particularly the length of the sailing day) is seen to be a challenge for the island, although the community uses the proceeds from its turbine to charter extra sailings.</p>

4 Consultation

4.1 Overview

4.1.1 Effective and proportionate consultation is an important part of the STAG process and provides a valuable input to the process. At the Pre-Appraisal stage, the aim is to identify current and future transport problems, issues, constraints and opportunities. These may be real or perceived and may have been raised by one or more stakeholders or members of the community.

4.2 Approach to Pre-Appraisal Consultation

4.2.1 The approach to the Pre-Appraisal consultation combined face-to-face, telephone and desk-based / secondary research. The findings of the consultation are set out in detail in the OIITS Consultation Report and summarised in this chapter.

4.2.2 The following consultations were undertaken:

- Telephone interviews with the 10⁸³ island transport representatives. A topic guide was sent to the representative prior to the interview and, in many cases, this was discussed with the Community Council in advance of the discussion. A note of the meeting was sent back to each representative for review and approval.
- Telephone interviews were also conducted with a series of island haulage firms identified by Orkney Ferries, although the response rate was relatively limited (a not uncommon issue in business consultations).
- Face-to-face consultations were held with Orkney Islands Council Education, Orkney Islands Council Marine Services and Orkney Ferries. Further follow-up consultations were conducted with Highlands & Islands Enterprise (HIE) and NHS Orkney.
- Desk-based reviews of the consultation material from the Orkney Tariff Review and the Concessionary Travel Customer Survey were also undertaken with a view to supplementing the primary research.

4.2.3 We are confident that the primary and secondary consultation undertaken has provided the study team with a well-developed understanding of the transport, social and economic issues facing the islands. Whilst it is acknowledged that views alone do not constitute evidence of a problem, many of the issues raised by consultees are further evidenced through the wider research undertaken as part of the baselining exercise.

4.2.4 One issue that also became prominent during the consultation review was the frequent difference between perception and reality in terms of aspects of the transport service. This is an important point as STAG gives equal weight to perceived and actual problems, as the perception may impact on behaviour. For example, if an island is believed to be hard to get to, even if it is not, the perception may be enough to deter certain activities such as tourism and inward investment. It is acknowledged that perceptions can be addressed through e.g. information dissemination and awareness raising.

4.2.5 It is the intention to produce an information paper for each island providing an outline of the project and describing the problems, issues, opportunities and constraints and draft options in each case. These papers will be circulated to community representatives by OIC with the intention of confirming (or otherwise) that our understanding of these key factors is correct.

⁸³ The Transport Representatives for Hoy & Graemsay and Rousay, Egilsay and Wyre are shared

This process will provide a final set of problems and objectives in particular to take into the appraisal.

4.3 Summary of Network Problems from the Consultation

4.3.1 Whilst this study will consider each individual island and air / ferry route within Orkney, it is ultimately a network review. With this in mind, the first step in each section is to take a network-wide perspective before focussing on specific islands and routes.

4.3.2 A summary of the key consultation findings in relation to the inter-island transport network as a whole is provided below:

- There was significant concern expressed through the consultation about the age of the ferries and the implications in terms of reliability, capacity and physical access.
- Capacity was cited as a key problem by islanders. Constraints in terms of available car deck lane metres, deadweight restrictions, reduced winter passenger certification and a shortage of seats on the air services are significantly constraining the ability to travel. The use of the air service by the education department is seen to present a significant challenge in this regard.
- The refit timetable is seen as a significant problem by residents of the Outer North Isles in particular. The reduction of the service to two vessels for 9-10 weeks leads to a major reduction of overall connectivity and capacity, as well as extended journey times caused by more indirect sailings.
- The relatively short operating day and low levels of weekend service provision are seen to significantly constrain the economies of the islands. These issues limit the ability to: commute; undertake personal business / social activities on the mainland; access the islands as a tourist; and connect with onward transport services. The relatively short operating day stems directly from Orkney Ferries' services operating with a single crew on any given day. This constrains the total hours of work by day, week and year and has caused issues on various services, particularly on the Rousay, Egilsay and Wyre routes.

4.4 Summary of Key Points by Island / Island Group

4.4.1 This section presents a summary of the key points by island or, where appropriate, island group. The consultation was relatively wide-ranging in nature, covering economic and societal issues in relation to each island as well as the specific problems and opportunities in relation to the inter-island transport system. The detail is summarised in the OIITS Consultation Report but, as this is a transport appraisal, the identified transport problems (whether perception or reality) are summarised for each island below. As with the previous chapter, the analysis works north to south, starting with North Ronaldsay and finishing with Hoy & Flotta (in terms of the Lyness – Flotta – Houton route).

4.4.2 For each island, we explored with the consultees the elements of transport connectivity which could be identified as a problem or otherwise. **If an element of transport connectivity was not identified as a problem by the consultee, it is not listed below.**

North Ronaldsay

- **Overall journey time to mainland:** North Ronaldsay's lifeline connection to the Orkney mainland is the inter-island air service. Flight times are relatively short, even when there is a call at Eday. With good bus connectivity from Kirkwall Airport, the overall journey time is not generally a problem for the island. The journey time by ferry is the longest on the network (around 2.5 hours) but the sea connection is rarely used by passengers.

- **First Departure/Last Departure:** The air service timetable offers North Ronaldsay residents a significant amount of time on the mainland, with a morning outbound flight and early evening return flight (North Ronaldsay being the final rotation of the day). However, the reliability issues in the mid-winter months (associated with the runway lighting on the island) mean that the last departure is frequently brought forward to the early afternoon (to avoid a knock on effect on other islands' services), therefore curtailing time on the mainland.
- **Timetable:** The air timetable offers a high degree of connectivity throughout the year. North Ronaldsay does however have very limited ferry connections and loses one of its weekly services during the winter, with reliability issues (caused by the difficulty in berthing in North Ronaldsay) exacerbating this issue.
- **Time on mainland/in Kirkwall:** It was noted that the high quality air service provides sufficient time in Kirkwall, so much so that it is possible to commute from the island to Orkney mainland Monday to Friday (runway lighting issue aside). However, on Tuesdays and Wednesdays during the winter months, there is no middle of the day flight, meaning any North Ronaldsay residents travelling in for an appointment or personal business will have over nine hours on the mainland until the return flight. This has implications in terms of cost and 'dead time'.
- **Frequency/Timetable Gaps:** The consultee explained that North Ronaldsay previously had a direct flight on a Monday morning. However, Eday campaigned for a service to transfer children to school. As a result the service now stops at Eday and because Eday does not have night landing, the service had to be delayed so that it is operated during daylight hours. This has had a negative impact on North Ronaldsay, although it is acknowledged that there are positive benefits for Eday.
- **Capacity:** There are seen to be capacity issues on the planes, particularly in the summer when demand is greatest, with residents believed to book their slots as soon as the timetables come out. This issue is exacerbated by the use of the service for school children and itinerant teachers (as explained above).
- **Cost to the User:** The representative explained that residents on other islands can purchase books of tickets for use on the ferry. However, because there are very few ferry services to North Ronaldsay, purchasing such books does not make financial sense for those living on the island. That said, the price of flights for residents of North Ronaldsay is set lower than for Stronsay, Sanday, Westray and Eday and is comparable with a discounted ferry ticket from these islands.
- **Reliability:** The problems encountered with night landing in North Ronaldsay are seen to be key issue amongst the community. Whilst North Ronaldsay is scheduled as the last rotation of the day, flights often have to be brought forward to an early/mid-afternoon slot. The tidal and exposed nature of North Ronaldsay pier (coupled with sea conditions on transit) mean that the ferry service is very unreliable, so much so that the timetable has inbuilt flexibility to account for this. This is a particular problem during the mid-winter (when darkness falls before 1700), when the island can go a number of weeks without a ferry service. It should be noted that perishable / frozen goods etc are transported by an Orkney Ferries chartered weekly freight plane in the winter months – this ensures that the island supply chain is protected.
- **Physical Access:** The ferry is operated as a Lo-Lo service. It was explained that, in an ideal world, the island would be Ro-Ro. However, the island has been asking for this for over 50 years and no progress has been made. The representative explained that Lo-Lo vessels need cranes and this makes it difficult in terms of maintenance and crewing responsibilities, particularly given the increasing amounts of legislation. It was noted that

disabled access to the ferry is very poor, whilst the aircraft are not particularly suitable for those with mobility issues.⁸⁴

Papa Westray

- **Overall journey time to mainland:** It was explained that the air service provides a quick and reliable service, even on indirect services via Westray. However, journey times to Kirkwall using the ferry are seen to be too long. The direct route is infrequent and the service is almost exclusively used as a freighter. The route through Westray involves the use of two ferries (and is summer only) and does not allow Papa Westray residents to take the car.
- **First Sailing / Last Sailing / Time on Mainland:** It was noted that the air timetable is as good as can be given current assets – it allows a reasonable level of time on both the mainland and the island all year round. The ferry service is much more limited in terms of the connections it offers, but it was explained that the plane is the lifeline service and of greater significance.
- **Capacity:** Capacity on the air service is a key issue for the community. The use of the plane by schoolchildren, itinerant teachers and, in the summer, tourists, means that the seats available for booking are often very limited. This is a particularly key problem in the summer when tourists come to the island purely to undertake the world's shortest scheduled flight between Papa Westray and Westray. The foot passenger ferry to Westray (and connection back to Kirkwall from Westray) helps to manage summer capacity issues to some extent. Nonetheless, capacity constraints do restrict travel and booking is generally required some way in advance for peak flights.
- **Cost to the User:** It was noted that fares are seen to be acceptable for both locals and tourists - £14.50 for a resident return on the plane to Kirkwall is seen to be fair. As with North Ronaldsay, the price of flights is set lower than for Stronsay, Sanday, Westray and Eday and is comparable with a discounted ferry ticket from these islands. The one problem Papa Westray residents have is that their use of the ferry is so infrequent (both directly from the island and via Westray) that they cannot realistically buy a multi-journey book of tickets, so they typically have to pay the full return fare.
- **Physical Access:** It was explained that physical access to existing transport assets does present something of a challenge but this is worked around. However, access to the LoLo ferry is very poor, with only a narrow gangway provided, whilst the *Earls* themselves have very dated passenger accommodation and facilities (the stairs being cited as a particular issue).
- **Strategic Transport Integration:** It is not possible for islanders to catch the first ferry from Stromness unless they stay on mainland the night before. With the middle sailing on the Pentland Firth route now removed, islanders will often use the Pentland Ferries service. This is seen to present a challenge in terms of carrying out a short-duration trip to the Scottish mainland. Integration with air services is relatively good, although there is a long wait on the mainland of Orkney for the evening ferry connection from Kirkwall to Aberdeen.
- **Weekend Timetable:** It was explained that there is not seen to be a particular issue with the weekend timetable, although a Sunday morning flight would be welcomed by some in the community.⁸⁵

⁸⁴ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 15-17.

⁸⁵ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 18-19.

Westray

4.4.3 Of the Outer North Isles, the Westray service is the closest to a point-to-point service using a dedicated vessel. The consultation did not identify any particular problems in relation to e.g. journey times, the number of connections etc. As a relatively vibrant island, the transport problems identified were more in relation to capacity, reliability and booking arrangements.

- **Timetable Gaps/Issues:** The key in relation to the Westray timetable is where the service starts from in the morning. It was noted that the first sailing inbound from Kirkwall is of benefit in terms of bringing tradespeople and tourists to the island (although the 0720 departure is seen to be relatively early) but it means the first service into Kirkwall does not arrive until mid-morning, limiting time on the mainland. It is acknowledged that infrastructure improvements would be required if the vessel is to lie overnight in the island more frequently.
- **Capacity:** Vehicle capacity on the ferry is felt to be a major issue for Westray. It was explained that passengers with vehicles are frequently placed on standby even outside of the peak times of year, giving rise to significant uncertainty, particularly for businesses. During the summer, the middle of the day services assist with the capacity issues but demand is of course also greater. The capacity issues on the ferry and are seen to be a major inhibitor to the Westray economy. Capacity is also an issue on the shared air service, with itinerant teachers travelling to Westray and Papa Westray taking up a significant proportion of the available capacity / seats on the aircraft.
- **Cost to the User:** It was noted that fares are generally felt to be quite expensive although multi-journey tickets are available and those over 65 qualify for 12 concessionary (free) return passenger tickets. It was however noted that the upfront cost of multi-journey tickets can be prohibitive, particularly for island residents on lower wages. It was felt that the number of people choosing to commute may increase if fares were cheaper.
- **Local Public Transport Integration:** It was noted that there have been complaints from island residents about the timing of the bus service at Kirkwall airport, although it is recognised that it is difficult to provide a service which meets all of the flights.
- **Strategic Transport Integration:** It was noted that the ferry timetable allows for relatively easy connection with the Pentland Ferries' service between St Margaret Hope and Gills Bay. However, concern was expressed about the ability to meet the NorthLink service from Stromness (except at peak times when the 'middle' sailing is in operation). Similarly, it is noted that the timetable does not always connect well with onward flights, with the result that it is sometimes necessary to stay in Kirkwall overnight before making an onward connection to the mainland. This adds to the overall cost of travel and the length of time away from home when travelling to / from the Scottish mainland.
- **Physical Access:** Physical access on the ferry service is poor, with steep steps and narrow doorways. This is a key problem with an ageing island population.
- **Reliability:** The ferry and air service are seem to be generally reliable. However, it was explained that, as a result of the age of the vessels, mechanical issues are becoming more frequent for the ferry service, the delays from which can be accentuated by the time taken to get spare parts.⁸⁶

Sanday

- **Overall journey time to mainland:** The representative explained that the ferry generally takes 1 hour and 25 minutes and the plane takes 11 minutes. The overall journey time to

⁸⁶ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 31-33.

Kirkwall is seen to be quite long, particularly given that a number of connections are via Eday (and Stronsay on a Saturday). This is a particularly key issue when the Outer North Isles service is reduced to two vessels during the refit timetable. The air journey time is seen to be acceptable.

- **First departure/ Last departure / Time on Mainland:** The consultation suggested that the ferry timetable is generally seen to be appropriate, although there is again a local debate as to whether the ferry should start in the island or on the mainland. In terms of the air service, it was noted that it is not possible to commute to the mainland for work, with the plane arriving in Kirkwall at 9:30/10:00 and then leaving again in the early afternoon which is too short a day for employment. During the winter, the day is seen to be very short, although it was acknowledged that this is due to limited daylight hours. Finally, it was noted that it is not worth travelling on a Saturday in winter as the travelling time is longer than the time available in Kirkwall.
- **Capacity:** Capacity on both the ferry and air service is seen as a problem in Sanday. The key issue on the ferry is a lack of capacity on the vehicle deck - it is noted that a significant number of vehicles are placed on standby, a particular issue during the refit period when only a two vessel service is in operation. Passenger capacity is not generally a problem except when there is an event on. The air service is highly capacity constrained due to the use of the service by itinerant teachers. There can be up to 6 teachers on a flight, with 3 travelling to Stronsay and 3 to Sanday. In general, there are teachers on the flights 2-3 days a week.
- **Booking Arrangements:** During the refit period, the consultee explained that it is necessary to book the ferry a week in advance or more. The summer is generally less of an issue, although it can be busy in peak times. The ferry service operates a standby list so that if people decide not to go you can sometimes be offered a place. This system works well for the ferry service but is not available for the air service (where a passenger has to keep calling back to check whether a space has become available).
- **Cost to the User:** The cost to the user was identified as an important problem in Sanday. It was explained that the ferry service is the same price whether leaving from Kirkwall or leaving from Sanday. It is possible to purchase books of 10, 20 and 50 tickets at a discount, with the latter offering the biggest discount of 50%. However, some people cannot afford to buy the ticket books and therefore they have to pay the full fare.
- In relation to the air service, it is noted that it is possible to book open returns. However, it can be difficult to get a seat without booking a specific flight. It is not possible to use tickets across the two modes and therefore the majority of people travel by the same mode for both parts of their journey although it is possible to achieve relatively long days by combining modes.
- **Physical Access:** It was noted that the boats are not suitable for disabled people/the elderly as a result of steep steps, with some people forced to stay in the car for the length of the journey. It was explained that access into the back seats of the plane can also be problematic although it is difficult to see how this could be resolved.
- **Local Public Transport Integration:** It was noted that, at the airport, the bus sometimes leaves five minutes before the plane arrives resulting in a 30 minute wait. However, it is recognised that there are difficulties associated with timetabling a service to meet all the flights.
- **Strategic Transport Integration:** In terms of strategic transport connections, it was noted that the summer timetable usually works well with the other ferries crossing the Pentland Firth and some flights but the winter timetable is more difficult. There is a problem with returning flights as the ferries and planes to Sanday have already left by the time the last flight arrives in Kirkwall, which necessitates an overnight stay in the town. In addition,

depending on timings, it is sometimes necessary to stay in Kirkwall for two nights (before and after) when travelling to Aberdeen for hospital appointments. This imposes a significant cost on islanders.

- **Weekday / Weekend Service Variation:** During the winter timetable, there is no plane on a Saturday afternoon and during the refit there is only one ferry on a Saturday. Improving the weekend service for both modes would facilitate inbound tourism and leisure trips off-island at the weekend.
- **Reliability:** It was explained that mechanical failures have increased in recent years as a result of the age of the ferries. Whenever there is a problem with one vessel, the timetable drops to the refit timetable with resultant capacity and frequency losses. The planes are seen to be very reliable.
- **On-board facilities:** There are basic facilities available on the ferry (i.e. tea and coffee/bacon roll). Requests have been made that these be improved, especially during the winter timetable when there is not sufficient time in the timetable to allow people to get food on the mainland and therefore people eat on the boat.⁸⁷

Stronsay

- **Overall journey time to mainland:** The direct ferry journey time is not perceived to be a particular issue, but a number of the services travel via Eday, which adds to overall journey times. The location of the harbour on Stronsay is also seen to add to journey times. There has been discussion regarding moving the harbour to an alternative location but islanders voted against this because it was felt that it would adversely impact the village. Air journey times are seen to be acceptable.
- **First departure / Last departure / Time on Mainland:** For the ferry, the usual departure time from the island is 08:50, with the arrival in Kirkwall at 11:00. The return sailing from Kirkwall is at 15:00. The representative explained that this is generally acceptable for the average islander going to the mainland for shopping etc. However, for the haulier this is a very quick turnaround, particularly in winter when the turnaround time can be shorter.
- **Timetable during vessel refit:** During the winter when the ferry goes on refit, the timetable goes from three vessels for the Northern Isles to two vessels and the service is linked to both Eday and Sanday. This significantly reduces frequency and is a challenge for islanders.
- **Capacity:** The representative noted that there is not generally a problem with capacity for foot passengers on the ferry. There have only ever been issues with capacity for passengers where there has been a special occasion such as a wedding or school event. There are issues with capacity for taking a vehicle on the ferry, particularly during the refit period. During the nine weeks in winter when the service is linked with both Eday and Sanday, it is noted that the vehicle deck is usually full every day and this can cause problems for islanders, particularly the haulier. Capacity is seen to be a significant issue in relation to the air service, particularly in terms of the itinerant teachers issue.
- **Cost to the User:** The cost to the user is a key issue on Stronsay, with the same points being raised as in Sanday.
- **Physical Access:** It was noted that people with mobility problems sometimes experience difficulties getting on and off the planes but there is very little which can be done to improve this. The ferries themselves are seen to have relatively poor physical accessibility for those with mobility issues..

⁸⁷ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 23-25.

- **Strategic Transport Integration:** It was noted that integration with other strategic transport could be improved e.g. if travelling from Kirkwall to Inverness, the plane times from Stronsay to the mainland are sometimes too tight to make the Inverness flight. In addition, a couple of days a week the ferry berths in Stronsay overnight. In these cases, if you are booked to go away and your flight is at 4pm you would have to leave Stronsay early in the morning and then wait on the mainland. However, it is acknowledged that the early morning departure can be beneficial for some people.
- **Weekday / Weekend Service Variation:** During the weekends, there is only one flight on a Saturday so if families want to go on a day trip, they would have to return by ferry. In the winter months, flying hours are reduced so the Saturday morning flight leaves later and therefore the day is shorter. As a result, people have a much shorter time in Kirkwall. It was also explained that the island successfully campaigned for a flight on a Sunday a few years ago and the flight was timetabled in. However, there remains an issue with staff manning the airfield whereby Orkney Islands Council have been unable to recruit suitable fire cover and therefore there has never been a Sunday flight.
- **Reliability:** The planes are extremely reliable. The ferries do not generally experience problems as a result of weather, with the harbour being very well sheltered, although the buoyed channel makes access difficult. However, there has been an issue in terms of mechanical reliability more recently and this is a concern given the age of the vessels. It was noted that last year there was a problem with the bow door on one of the vessels not opening, meaning that you had to reverse on or off and that this was not resolved for some time because of a delay in getting the required parts.⁸⁸

Eday

- 4.4.4 The key point to emerge from the Eday consultation is that the island has the lowest number of connections of Outer North Isles. The island has the lowest number of flights and is seen to be the hardest to get to for visiting businesses, service providers and tourists.
- 4.4.5 It was explained during the consultation that a key issue for Eday is the negative impact of poor transport connectivity on the long-term future of the island, the lack of daily transport either to Sanday or Stronsay Junior High or Kirkwall Grammar School being seen as key problems. It was noted that this has been a key factor in deterring in-migration and could, in the longer-term, lead to a skills shortage on the island.
- **Overall Journey Time to Mainland:** It was explained during the consultation that the journey time between Eday and Kirkwall is generally seen to be acceptable on direct sailings. However, it was noted that there are various occasions when the journey time is not seen to be acceptable, particularly during the refit period when the service is shared with Sanday and Stronsay. Saturdays in the winter are also seen to be an issue, where a six hour round-trip is required for only four hours on the mainland. The inbound journey time is seen to be less acceptable as it often involves a call at Stronsay or Sanday, which adds to the cost of bringing services to the island.
 - **Frequency/Timetable Gaps:** The consultation found that there is mixed views on frequency amongst the community. Some Eday residents would like the ability to commute daily to the mainland, whilst others believe that by enabling people to commute would detract from the sustainability of the island, and others again believe that enhanced frequency would make the island more attractive to potential new residents. Overall, it would likely be seen as beneficial if children could travel to high school on a daily basis and if a 'middle' boat could be provided to permit a half day on the mainland.

⁸⁸ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 28-30.

- **Capacity:** Ferry capacity is seen to be a key problem for Eday residents. A significant number of sailings from Eday to Kirkwall previously call at either Stronsay or Sanday, meaning the car deck can be near to full when the vessel arrives in Eday. The refit timetable is seen to be a particular issue in this respect, with the lower frequency and more widely shared services putting significant pressure on capacity. The number of seats available on the air service also presents something of a capacity constraint, although given the limited connections overall, the air service is not currently a particularly viable travel option for Eday residents.
- **First departure / Last departure / Time on Mainland:** The timing of the first Monday morning departure is regarded by some members of the community to be too late. There are a variety of reasons why this seen to be the case, including access to education and employment, late arrival for Eday stock at the Monday morning mart and the long layover in Kirkwall on a Friday afternoon for school children (school finishes at 1200 and the ferry leaves at 1600).
- **Cost to the User:** The key problem identified in this respect is the cost of buying multi-journey books of tickets. It was noted that only the most affluent on the island can afford to buy these books, particularly the 50 ticket book.
- **Reliability:** The Outer North Isles network is highly exposed to the weather and can be subject to delay or cancellation. It was noted that this can occur more often with some vessels than others, with the age of the vessels generally seen to be a problem in this respect.
- **Physical Access:** The ferries are seen to have relatively poor physical accessibility for those with mobility issues.
- **Comfort:** The relatively poor level of comfort on the existing vessels is seen to be a barrier to travel amongst island residents.
- **Strategic Transport Integration:** It was explained during the consultation that arrival times in Kirkwall do not coordinate well with onward connections, particularly Pentland Firth crossings or certain key flights. This can lead to long and expensive on the Orkney and / or Scottish mainland for Eday residents.⁸⁹

Shapinsay

- **Capacity:** It was noted that there are capacity issues with the passenger element of the service during the peak summer months, with a strong seasonal influx of tourists between March and September. It was explained that there is generally less of an issue with the vehicle capacity element of the service, although where farmers are taking animals to market or there is a large number of lorries, there can be capacity issues.
- **Cost to the User:** The cost to take a car on the ferry is seen to be high. While it is possible to buy books of tickets, it was noted that some people are unable to afford the significant upfront cost associated with this. There are not seen to be any issues associated with the cost of passenger tickets.
- **Physical Access:** The service is Ro-Ro based on a hard ramp arrangement. Disabled people can stay in their car and drive on. There is a place for disabled people but the space is limited with only two seats. It is not possible for disabled people to walk around the vessel as a result of the constrained space on the vessel.

⁸⁹ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 3-8.

- **Strategic Transport Integration:** When travelling further afield, the representative noted that it is necessary to book a private charter or stay in Kirkwall the night before in order to meet the first flight. Likewise, on the return trip, it is necessary to stay in Kirkwall overnight as it is not possible to make the last ferry back (although again the option of using the charter vessel is available at a cost).
- **Reliability:** It was noted that there are issues with reliability as a result of the age of the vessel, although the problems are not as severe as on other islands. If the boat breaks down the MV *Thorsvoe* can be used as a relief. However, it takes time for the boat to reach the island from its berthing location (it is currently in hot lay-up in Flotta). In addition, whilst the MV *Thorsvoe* has greater capacity, the passenger seating area is below the waterline and there are no windows.
- **Weekday / Weekend:** The reduced Sunday service in the winter is seen to be problematic for islanders, limiting the ability to access mainland services at the weekend.⁹⁰ Orkney Ferries has however noted that no change to this service has ever been requested by the community.

Rousay / Egilsay / Wyre

- **Overall journey time to mainland:** The representative explained that the overall journey time to the mainland from Rousay is acceptable, although the indirect services from Wyre and Egilsay do have longer journey times to and from Tingwall.
- **Weekday / Weekend Service Variation:** The key transport problem for this group of islands is the lack of a Sunday service in the winter months, which is caused by a shortage of available crewing hours. The lack of a Sunday service means that people must travel on Saturday/Monday and this can be costly where it requires an overnight stay on the mainland. It is also seen to constrain the weekend tourism market and flexibility in the service.
- **Refit Timetable:** During the refit timetable the islands are served by the MV *Shapinsay*. The MV *Shapinsay* is seen to be less suited to the route and has greater difficulty coming into the Egilsay pier. There are consequently more cancellations during the refit period.
- **Capacity:** It was noted that the current vessel, the MV *Eynhallow*, has significant vehicular and deadweight capacity constraints. It is noted that this can lead to difficulties securing a vehicle space on the vessel and constrain travel to and from the island group.
- **Cost to the User:** It is possible to buy books of tickets which provide a discount, with a book of 50 tickets providing a discount of around 50%. However, the system is felt to be inequitable as a result of the large upfront cost. Many of those who are in most need of discounted travel are unable to afford the booklets and therefore are forced to pay full ticket prices. It was noted that the cost of travel is significant especially considering the lower average salaries on the island. Travelling for hospital appointments can be a significant expense, especially where it is necessary to stay overnight on the mainland. While NHS Orkney provide refunds for expenses, these can take a month to be paid.
- **Local Public Transport Integration:** Connections to the local bus service on the mainland are generally felt to be good and have improved in recent years. 2015 was the first year that the additional summer Sunday sailings were met by public transport, although this was introduced as a trial and continuation will be subject to demand. The representative commented that she feels there are further opportunities to promote this, particularly amongst tourists.

⁹⁰ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 26-27.

- **Strategic Transport Integration:** As a result of the lack of Sunday service in the winter it is not possible to leave from or return to the island on Sunday. Similarly, if you have a hospital appointment in Aberdeen at 10:30am on a Monday morning you would need to leave Rousay, Egilsay & Wyre on the Saturday before.
- **Reliability:** Reliability can be an issue on Egilsay as a result of poor weather. While the boat tends to also go to Rousay, the route to Egilsay is often cancelled in poor weather as a result of the access around the pier. As discussed, this is particularly the case during the refit timetable. Mechanical failures are also a problem, with the frequency of disruptions likely to increase as the boats continue to age.⁹¹

Hoy & Graemsay

4.4.6 This section considers the Hoy (Moaness) – Graemsay – Stromness route only. The Hoy (Lyness) – Flotta – Houton route is considered in the next section.

- **Capacity:** The MV *Graemsay* is a Lo-Lo vessel and is very limited in terms of the number of vehicles it can carry (a maximum of 2 small cars). Heavy plant cannot be carried on the vessel, which presents a challenge for a largely agricultural community.
- **Cost to the User:** The costs to the user are seen to be high for both Hoy and Graemsay residents. OAPs and young people/students get a discount but it was noted that those in the middle do not receive any discounts and are the often hardest hit. For example, the representative explained that it costs around £50 for him and his family to travel to the mainland with their vehicle and he spends around £1200 per year on travel. Whilst it is possible to buy books of tickets, these carry a significant upfront cost and often people are unable to afford this.
- **Physical Access:** Physical access to the MV *Graemsay* is relatively poor and is seen by the community as a major health and safety concern. It was noted that disabled passengers have to be carried onto the vessel and that there had been instances of people on stretchers being craned across. The MV *Graemsay* is also seen to be poorly set up for disabled people, with narrow doors and large steps.
- **Local Public Transport Integration:** It was noted that there is a bus service to Kirkwall laid on to meet almost every ferry arrival. However, it was explained that the bus often does not wait when the ferry is late and the issues with the reliability of the ferry contribute to this problem. It is important to note the bus service is timed to connect with NorthLink and Pentland Ferries departures, hence the reason it cannot wait for an extended period.
- **Strategic Transport Integration:** It was noted that it is difficult to make the first flights out of Orkney using the MV *Graemsay* service, limiting the ability to undertake a day visit to the Scottish mainland. As a result of the later Friday service people often travel back from their trips down south on a Friday which works well. The Friday evening service is particularly important in that respect.
- **Reliability:** There are seen to be reliability issues with the MV *Graemsay* as well as the harbour infrastructure which serves her. There are issues with the pier at Graemsay, whereby it is not possible to berth during low tide. This has resulted in issues whereby pupils have missed exams. As a result, parents have opted to pay for their children to stay on the mainland overnight. It was noted that, while the Graemsay ferry is generally cancelled all day during poor weather, the Hoy (Moaness) service will restart if the weather improves.⁹²

⁹¹ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 20-22.

⁹² OIITS Consultation Report (Peter Brett Associates, 2016), pp. 12-14.

Hoy (Lyness) & Flotta

- **Overall journey time to mainland:** The overall journey time for the service to and from Hoy (Lyness) is seen to be reasonable, although the indirect sailings via Flotta do add to the journey time. Nonetheless, the service as it is designed now is perceived to work well amongst both the Hoy and Flotta communities,
- **First Sailing / Last Sailing / Time on Mainland:** The timing of the last sailing is seen to be a significant problem, particularly for Hoy (Lyness) which does not have access to the Talisman launch. The last sailing to the mainland departs Lyness at 1640 (1530 on a Saturday) and Flotta at 1600 (1500 on a Saturday). The last departure from Houton is at 1730 (1615 on a Saturday). The early departure time of the last ferry significantly limits commuting opportunities, constrains the daytripper market and often necessitates overnight stays on Orkney mainland for islanders travelling north from the Scottish mainland on the afternoon and evening flights. The lack of a Sunday sailing in the winter was also cited as key issue on this route.
- **Capacity:** The MV *Hoy Head* was very limited in terms of capacity for vehicles. However, the vessel was lengthened around 3 years ago and can now accommodate 14 additional vehicles. In the summer, before the ferry was lengthened, it was necessary to book two weeks in advance to get space but it is now possible to leave it until 2-3 days before and there is still a chance of getting on the ferry. If there is no space left on the ferry you are placed on first or second standby and there is still a good chance of getting on. Capacity issues are generally only a major problem where there is an issue with one of the boats, when the MV *Hoy Head* hit the pier and went to dry dock for example. There are not seen to be any issues in terms of capacity with the passenger element. The only problem would be when there is a big event such as the Hoy half marathon.
- **Weekday / Weekend Service Variation:** As with Rousay / Egilsay / Wyre, the absence of a Sunday sailing in the winter and much reduced service in the summer is seen to be a key problem. This is again a result of limitations in crewing hours but it significantly restricts weekend trips, a particular issue in Hoy which has a strong tourist trade,
- **Fares:** Similar comments in relation to fares were made for this service as for the Moaness – Graemsay – Stromness service.
- **Physical Access:** The ferry is Ro-Ro and physical access is generally good. There is a disabled cabin on the ferry although it was noted that the stairs on-board are difficult to manage for disabled users.
- **Strategic Transport Integration:** The availability of the Talisman launch means that strategic transport integration is not seen as a particular issue for Flotta. However, the timetable on the Lyness service presents the same connectivity issue as experienced on the Moaness – Graemsay – Stromness service.⁹³

⁹³ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 12-14 and pp. 9-11.

5 Problems, Issues, Opportunities & Constraints

5.1 Overview

5.1.1 The purpose of this stage of a STAG study is to identify the problems, issues, opportunities and constraints within the **current and future** transport system. Addressing the identified problems and realising the opportunities (whilst acknowledging issues and constraints) is the ultimate aim of the STAG process, as reflected in the Transport Planning Objectives, STAG criteria and option scoring. To summarise:

- **Problems** relate to current or future actual or perceived problems in the transport system
- **Issues** are uncertainties that the study may not be in a position to resolve but must work within the context of.
- **Opportunities** relate to the potential for improvements to the transport system and the way it is used.
- **Constraints** represent the physical, legal and institutional boundaries in which the study is being undertaken. STAG appraisals must take cognisance of all relevant constraints and ensure that the options developed are in keeping with them.

5.1.2 The problems, issues, opportunities and constraints are summarised initially at the network level. Following on from this, we consider problems and constraints at the island level (issues and opportunities are more at the network than island level). As with previous chapters, data are summarised only, with references to the baselining material provided.

5.2 Routes & Services Methodology

5.2.1 Prior to the commencement of OIITS, the RSM was applied (in part) for the Orkney Islands. To recap, the RSM comprises six steps as follows:

- Step 1: Identify the dependencies of the community;
- Step 2: Define the ferry service profile that fits the community's dependencies;
- Step 3: Define the current ferry service profile;
- Step 4: Compare the current and proposed service profiles to identify gaps in service provision;
- Step 5: Propose and appraise options for addressing gaps in service provision; and
- Step 6: Prioritise options to be taken forward in the short, medium and long-term.

5.2.2 Steps 1-4 were completed and this STAG study will incorporate Steps 5 and 6. The RSM Steps 1-4 therefore forms one part of the evidence base informing this study. **The STAG approach will confirm or otherwise the level of service implied by the RSM**, ie the eventual service specification implied by RSM may be greater than or less than that implied by the STAG process.

5.2.3 The STAG process therefore builds on the RSM since the RSM does not fully prescribe all aspects of an island's services / connectivity – for example:

- It is based on a snapshot reflecting the **current island population** – in this sense it could be seen that the outcomes could perpetuate the current situation on the island:

- For example an indicator for 'commuting and business' is the percentage of households who use the ferry for commuting – if this is low then the prescribed service will not be favourable for commuting – however the level of commuting may have been low because of the low level of ferry service.
- The level of service prescribed is therefore based on current ferry usage (and island demographics / commerce) – however as the level of ferry usage will be heavily influenced by the nature of the current service – there is a circular element to this.
- The **length of the operating day** measure does not account for split shifts / breaks in the day.
- As is it based on analysis of the present day, it will therefore not identify where **a change in connectivity may be required** to eg reverse population decline or an ageing demographic and it takes no account of how 'dependencies' may evolve over time.
- It takes no account of the **interaction between air and ferry services**.
- It does not prescribe **under what circumstances an air service is justified**.
- It does not prescribe **when a RoRo rather than a LoLo facility is justified**.
- Fares – it does not **take account of the cost of travel** – i.e. there may be a connection but is it affordable (a particular issue with air services)?
- For less frequent services, it does not **explicitly quantify 'minimum time on island' or 'time on mainland'** – this is important in terms of 'operating day'. Operating day can be seen from two perspectives, mainland and island and will be dependent on where the vessel overnights.
- **Capacity**, and the potential impact of this on usable or reliable connectivity (particularly in relation to low capacity aircraft), is not considered.
- **Vessel characteristics** in any way or implied reliability levels are not prescribed.
- On some routes there are **marked differences in provision between weekdays as well as between weekends and weekdays** – this is not accounted for in the RSM.
- **Crossing times** – crossing times are a key input factor in determining the level of service – but crossing times are vessel dependent – if a slightly faster vessel were used, this would reduce the crossing time and imply an improved level of service in terms of 'sailings per day' and 'length of operating day' (providing the faster crossing allowed more services to be worked into the timetable).

5.2.4 These issues will all be picked up in the more detailed STAG appraisal.

5.3 Network-Level

Problems

Ferries and Ports & Harbours

5.3.1 The OIC ferry fleet and port infrastructure is well maintained and crewed by skilled and experienced local seafarers and shoreside staff. However, the increasing age of the vessels and shoreside assets combined with the lack of a committed replacement programme is a critical and worsening problem. At its most extreme, an ageing asset base (vessels and harbour infrastructure) creates a problem in that a failure of a vessel or key piece of harbour

infrastructure could lead to an immediate loss of connectivity for an island. This is a particularly key issue in Orkney, where the lack of contingency within the fleet, particularly in terms of the Outer North Isles, means that a catastrophic failure of an asset cannot be quickly or easily recovered from.

- 5.3.2 Orkney Ferries and the Council have managed this risk as far as possible (purchasing a spare engine block for the *Earls* for example) but there remain fundamental risks associated with ageing vessels. In terms of lifespan, OIC / Orkney Ferries typically work on the basis of a 30 year replacement programme, which is consistent with that used by Caledonian Maritime Assets Limited (CMAL) for the Clyde & Hebridean fleet.
- 5.3.3 At present, only one vessel, the passenger only MV *Golden Mariana*, is over 30 years old – indeed the vessel is 43 years old but there is a committed budget line for her replacement. All of the other vessels within the fleet are under 30 years old, although at the same time over 20 years old. The average age of the fleet (excluding the MV *Golden Mariana*) is almost 26 years old, with the larger Outer North Isles vessels in particular reaching the end of their operating life.
- 5.3.4 The ageing fleet and the need for a committed replacement programme is perhaps the most critical issue of transport provision facing the Orkney Islands as a whole. Whilst the fleet remains fully certified for operations, there are a number of challenges with older vessels, namely:
- The design and components are in many cases less efficient than would be found in a newer vessel. Anecdotally, Orkney Ferries suggested that the vessels in their fleet contained relatively old technology even when they were first built.
 - There was a strong perception from the consultation (particularly in relation to the Outer North Isles) that the vessels are becoming more prone to breakdown. Orkney Ferries indicated that they have had a series of specific and unanticipated problems over the last few years – for example, the MV *Graemsay* urgently needed new engines and gearboxes (an issue resolved in July 2015); the *Earls* have had problems with the hydraulics in their bow visors; the MV *Varagen* had a bow thruster failure in 2015; and both the MV *Shapinsay* and MV *Hoy Head* have had vibration issues.⁹⁴
 - From a strict accounting perspective, the vessels can cost more to maintain than their book value, meaning that they are effectively written off.
 - Physical access is problematic, particularly for the elderly and disabled, the former being a growing proportion of total island residents. For example, on several vessels, there is not step-free access to the passenger areas, whilst narrow car deck lanes may leave limited space for those in wheelchairs.
 - Cargo carrying capacity (measured in terms of deadweight) is becoming increasingly restricted on the older vessels, which is leading to significant capacity constraints on various routes.
 - The carriage of dangerous goods (e.g. hay, fertilisers, fuel, gas cylinders etc) can negatively affect the operation of the service from the public's perspective.
 - Refits are becoming more expensive, which in increases the cost uncertainties surrounding the operation.

⁹⁴ Source – Orkney Ferries.

- The passenger accommodation on the MV *Earl Sigurd*, MV *Earl Thorfinn*, MV *Hoy Head* and MV *Thorsvoe* is below the waterline. This would be against regulations with new build vessels but the vessels are legally operated under a system of 'grandfather rights'.⁹⁵

5.3.5 There are nominal replacement dates for the port & harbour infrastructure (see OIITS Piers & Harbours Review) although in reality any non-routine investment is likely to be driven by vessel replacement.

5.3.6 Overall, whilst the fleet continues to operate efficiently, there is an increasingly pressing need to commit to a timed asset replacement programme if the network is to remain fit-for-purpose over the strategy period.

Airfields & Infrastructure

5.3.7 As with the ferry service, the airfields, aircraft and accompanying infrastructure are skilfully operated in what is a challenging environment. The air infrastructure is better developed in Orkney than it is in Shetland, with fewer regulatory risks identified which could lead to the service being suspended or terminated.

5.3.8 The airfields open one hour around flights. **Fire cover** is minimal with a derogation specially negotiated with the Civil Aviation Authority (CAA). However, the airfields are compliant with CAT1 fire service provision as there are less than 700 movements at these airfields within the busiest three months of the yearly cycle. OIC has negotiated a remission from the CAA recommended three firefighters to actually rostering two firefighters and a third office staff member as being in attendance for every flight. The logic is that this third person would act as communications point at the office, during any incident. The Council has a well-developed line of communication in terms of safety and risk management.⁹⁶

5.3.9 Part-time staff are used and the Council explained that they are very flexible and amenable. However, there are naturally limits to this flexibility and amenability and any significant uplift in usage might start to run into airfield manning issues, particularly given the ageing population of the islands. It seems that pay rates, and the ability to have free time (Sunday working was mentioned as resisted by some staff) are issues.

5.3.10 Of the Outer North Isles airstrips, only North Ronaldsay has **runway lighting** (precision path approach lights) which permits night landing. In theory, this helps the whole system as in winter the rest of the programme can be completed in daylight, leaving the Kirkwall – North Ronaldsay – Kirkwall shuttle to finish off the day. However, flying into North Ronaldsay at night is under stricter weather limitations than daylight flying and hence more cancellations are likely. Also at night frost and snow are more persistent, whilst in daylight hours these may well have thawed to allow operations. The standard procedure is that if the weather looks like it will be above limits (which are lowered during night-time as opposed to daytime VFR flying) then the service is brought forward (to 1400 for 10 weeks in 'mid-winter' and 1600 for other winter weeks. Unfortunately, in winter this is a very frequent occurrence, with 42% of these flights being brought forward in 2014-15 (the figure is believed to be over 60% in 2015-16).⁹⁷ The high level of disruption to this flight has reduced the overall benefit which it offers to the North Ronaldsay community, as there is much reduced certainty of being able to use these flights.

Air Service

5.3.11 Loganair explained that the two aircraft are well used and any significant increase in usage would trigger additional crew and might reduce the current fat in the system, which would

⁹⁵ OIITS Vessels & Ports Review (TMG International, 2016), pp. 3-12.

⁹⁶ OIITS Aviation Baseline Report (Northpoint Aviation, 2016), pp. 21-24.

⁹⁷ OIITS Aviation Baseline Report (Northpoint Aviation, 2016), pp. 43-44.

result in reducing the current ability to recover from weather delays and such like. The system is very flexible in terms of weather related delays, with timetables being changed to work around inclement weather where necessary (note however that regular timetable changes are not permitted once the timetables have been presented to Committee and full Council for approval). Local knowledge networks are used to inform passengers of changes. An increase in flying of say more than 5% would start to cause reliability and recovery problems elsewhere.

- 5.3.12 The aircraft are flown visually and thus can only operate during the daylight hours (North Ronaldsay being the exception) and are susceptible to fog and low cloud cover.
- 5.3.13 There are currently three crews based on the Orkney mainland. However, the 1,200 annual flying hours actually require 3.5+ crews to be delivered. This 0.5+ is fulfilled by using some management pilots from elsewhere in Loganair to cover by combining their flying with recurrent training, to cover sickness, holidays and any flight time pinch points. It should be noted that these pilots are not resident and are more highly paid, so **changing the flying requirement will cause a review of how best to cover**. In other words, if say 3.8 pilots were required to cover the programme it might make more sense to recruit another fully dedicated and resident pilot to avoid the costs of using management pilots. That said, Loganair has indicated that even with an increase in locally based flight crew, it is impossible to avoid the cost of management pilots as they also perform essential checks.
- 5.3.14 The engineering system involves each of the two aircraft having two major checks of one month each throughout the year (essentially four months of deep engineering). In essence one aircraft covers the summer timetable and two aircraft cover the compressed day of the winter timetable. The checks are planned to permit this. Loganair explained that if there was an increase in aircraft, this would not be constrained by engineers or by available hangarage. However an additional aircraft might well necessitate a significant addition of crew. Such an aircraft could only reasonably be justified if it was worked hard, so it is likely that between 2 – 4 additional crew would be required to ensure it was well used. A six month lead time is required for new crew.
- 5.3.15 The service has seen a recent decline in usage from a peak before the economic downturn. However more recent years have seen a steady annual patronage of 20,000 pax per annum. This is against a background of improved ferry frequencies from the early noughties.⁹⁸

Outer North Isles Refit Timetable & Resilience

- 5.3.16 As previously explained, the six Outer North Isles are served by three vessels throughout much of the year. This level of asset provision is below that of other Scottish islands, the majority of which have a dedicated vessel (or at least one vessel shared between two near-neighbour islands), although it is seen to be broadly acceptable in the Outer North Isles communities. However, during the refit timetable, which typically runs for 9-10 weeks from the start of each calendar year, the service is reduced to a two-vessel operation. This significantly reduces the number of sailings and leads to a marked increase in journey times as the majority of sailings to Kirkwall are indirect, occasionally calling at three islands. This is particularly the case for Sanday, Stronsay and Eday, less so Westray. Carrying capacity also becomes a much more severe issue. The refit timetable is seen to significantly inhibit the performance of the island economies and personal travel when in operation.
- 5.3.17 There is an overall lack of resilience in the Outer North Isles service, with no contingency in the event of a vessel breakdown, an increasingly common problem as the vessels get older. Where a breakdown occurs, the service is reduced to the refit timetable.

Length of the Operating Day

⁹⁸ OIITS Aviation Baseline Report (Northpoint Aviation, 2016), pp. 9-14.

5.3.18 One of the key transport problems faced in the Orkney Islands is the length of the operating day, which is significantly shorter than in the Shetland Islands and much of the Clyde & Hebrides. This is driven directly by Orkney Ferries working with only two crews per vessel. The operating day at the individual island level is discussed in more detail in the island specific sections, but it is necessary to reflect on its importance at a network level. To summarise, the length of the operating day is important because it determines:

- the length of time on Orkney mainland and on the island;
- the ability to commute and access off-island education;
- freight schedules;
- the maximum length of any day-trip (with implications for popular tourist islands like Hoy and Shapinsay);
- the ability to engage in social activities on Orkney mainland in the evenings and at weekends; and
- the ability to return to the island in the evening if travelling from the Scottish mainland.

5.3.19 In terms of the ferry service, all Orkney Ferries vessels are operated by a single crew daily. The crews work on the basis of an annualised hours contract, which can permit more intensive operations in the summer and less intensive operations in the winter (or combinations as required). However, the Maritime & Coastguard Agency (MCA) imposes strict limitations on hours of rest. They stipulate that:

- *The hours of rest shall be not less than: a) 10 hours in any 24-hour period; and b) 77 hours in any 7-day period. Note: Hours of rest may be divided into no more than 2 periods, one of which should be at least 6 hours long, and the interval in between should not exceed 14 hours.*⁹⁹

5.3.20 The single crew operation and hours of rest requirements significantly constrain the timetable. Vessels can operate either a full day (around 12 hours) with an early start and early finish, later start and later finish, or a split shift. Regardless of the combination used, the length of the operating day is constrained – if it permits commuting and access to education, it will limit the ability to undertake evening social activities on the mainland and vice versa. For the Inner and South Isles, the ferry is the only means of travelling off-island (although Flotta and Shapinsay have access to out-of-hours private services) and thus time on mainland and on the island is limited.

5.3.21 Whilst the Outer North Isles have longer ferry crossing times, they do have access to an air service. However, that service is equally constrained by crewing hour limitations and, in the winter time, the available hours of daylight.

5.3.22 The socio-economic baselining and community consultation has suggested that the relatively short operating day (compared to elsewhere in Scotland) acts as constraint on the respective island economies and as a deterrent to in-migration.

Weekday / Weekend Service Variation

5.3.23 The crewing constraints explained above also have an impact on the level of weekend service provision. Whilst there is a generally accepted position with transport services that weekend (particularly Sunday) connectivity is less than that on a typical weekday, the position in terms of the Orkney inter-island services is particularly poor in this regard.

⁹⁹ Hours of Work, Safe Manning and Watchkeeping – Revised Provisions from September 2002 (MCA, 2002), p. 3.

- 5.3.24 Weekend service provision is lower across the board on both the air and ferry service. This is particularly the case with the ferries during the winter. The annualised hours contracts on which the crew work tend to load more sailing hours into the summer, which leads to a reduction in weekly connectivity in the winter, much of this reduction being concentrated in the weekend period.
- 5.3.25 The islands where this issue is most marked are Rousay, Egilsay, Wyre and Flotta, which do not have any Sunday sailings during the winter. Hoy has no sailings on the Ro-Ro route via Lyness, although there is a single rotation on the route via Graemsay. Other islands such as Shapinsay and Graemsay are limited to a single return sailing on a Sunday.¹⁰⁰
- 5.3.26 The reduced level of weekend connectivity presents a significant problem for these islands, particularly where there are no Sunday connections during the winter. As well as restricting the ability to undertake leisure / personal business on the mainland, the absence of Sunday sailings during the winter months presents a significant problem for the important tourism industry on these islands, constraining both the weekend and day tourism markets. Residents also face an overnight stay on the Orkney mainland if they want to travel south on the Sunday during winter. Overall, these and other issues mean that poor weekend (and particularly winter Sunday connectivity) impact highly negatively on the economies of the islands.

Capacity

- 5.3.27 Capacity is a significant problem on the inter-island transport network. There are various elements to this which are initially set out in the bullets below and explained in more detail thereafter:
- **Ferry vehicle deck capacity:** there are various instances throughout the year where car deck capacity (in terms of lane metres) is insufficient for the needs of the routes, particularly in the larger islands like Westray and Sanday.
 - **Ferry deadweight limitations:** the Orkney Ferries fleet is limited in terms of the total tonnage which can be carried on any one sailing. These data are not recorded in a systematic manner but Orkney Ferries has explained that this is a significant problem, with certain sailings being 'full' with as few as one or two HGVs onboard.
 - **Ferry winter passenger capacity:** the Orkney fleet generally operates with differing passenger certificates in the summer and winter (with the exception of the MV *Hoy Head*) due to a lack of indoor seating. This can lead to passenger capacity constraints in the winter.
 - **Air service capacity:** The air service can only offer eight seats per flight (nine if weight allows) and is thus highly constrained, particularly on flights used by school children and itinerant teachers (see below).
- 5.3.28 In terms of **vehicle deck capacity and deadweight limitations**, Orkney Ferries does not systematically record the extent of this problem. However, as part of this study, a summer (August) and winter (November) month of carryings data and standbys were recorded. The data suggest that capacity is a particular problem on the Westray, Sanday and Hoy & Flotta (i.e. the Lyness route) routes. The data show that, on these routes, 118 standbys were offered, of which 46 were declined and 22 users decided to book an alternative sailing. The sample carryings data suggest that deadweight is a bigger constraint than car deck lane metres (although this is only based on one month of data).¹⁰¹ Either way, it is clear that ferry capacity is a problem, particularly during the refit timetable when connections are reduced and / or smaller vessels are used on certain routes.

¹⁰⁰ The OIITS Air & Ferry Connectivity papers set these points out in detail.

¹⁰¹ OIITS Market Analysis Report (Peter Brett Associates, 2016), pp. 1-7.

- 5.3.29 Orkney Ferries has identified the following sailings as being the most problematic from a capacity perspective:
- Westray – Kirkwall: 0900 departure on a Monday.
 - Kirkwall – Westray: 1620 sailing, particularly on Fridays
 - Sanday / Stronsay / Eday – as services are always linked i.e. either Stronsay/Eday or Sanday/Eday, this leads to pressure on capacity. The main trade however is generated by Sanday.
 - Lyness – Houton: being a commuter route, the first sailing in the morning (0910 ex Lyness) and last sailing out of Lyness at night (1640 ex Lyness)
 - Houton – Lyness: the reverse of the above. the busy sailings are the 1015 ex Houton and the 17:30 ex Houton.
- 5.3.30 The issue of **winter passenger capacity** has been flagged as a problem in the consultation and by Orkney Ferries. The sample month of data do not particularly highlight this issue, although it is clear from analysing the reduction in the winter passenger certificate that this could indeed be a problem, particularly during refit.
- 5.3.31 The Islander **aircraft can only accommodate eight passengers** (nine if weight restrictions allow) and lack of capacity is seen to be a major issue and deterrence to travel amongst islanders. It is our understanding that the cited capacity problems relate to specific peak flights, for example morning flights on a Monday used to convey children to school and afternoon return flights to Kirkwall conveying itinerant teachers (see below).
- 5.3.32 The only evidence available on latent demand was a study undertaken between February and September 2012 where Loganair monitored unmet demand for inter-isles services via its reservations line in Kirkwall. Each call where the passenger was unable to travel on his/her first choice of flight was logged, noting the date of call; intended travel date; travel route; number of passengers and alternative means of travel taken by the passenger.
- 5.3.33 The data analysis identified 1,253 passengers who were unable to travel on their preferred flight – this equates to approximately 10% of total passengers over that period. Some 47% of the passengers who could not access their preferred flight chose not to travel at all – some 583 passengers in all. Of the remainder, 22% flew on another day and 29% travelled by ferry instead (the remaining 3% did not know or chose not to say what their alternatives were).
- 5.3.34 The data analysis indicates consistency across the months – ie the turned-away demand fell evenly throughout the months analysed and the capacity issue is not solely confined to the peak summer season. This is an important point as it highlights a day-to-day problem for island residents, rather than an occasional problem for visitors.
- 5.3.35 Loganair also estimates that approximately 50% of usage relates to the education department, whilst approximately 5% of users are on other Council business and 5% are on health-related journeys.¹⁰²
- 5.3.36 The predominance of education usage means that it is necessary to consider this issue in more detail. In particular, air services are key to delivering the McCrone cover for teachers, something which could not be delivered by ferry services. Children and teachers travel on a range of different flights but the baselining report identified where particular pinch-points exist. In particular, it is worth noting that there is need for a teacher to go out to Eday on an *ad hoc*

¹⁰² OIITS Aviation Baseline Report (Northpoint Aviation, 2016), p. 44.

basis, which is why the times are scheduled as they are at present. This is summarised in the table below for academic year 2014-15:

Table 5.1: Flights Used for Education Purposes

Flight	Day	Route	Comment
377	Sunday	Kirkwall – North Ron – PW - Kirkwall	2 children board in Papa Westray (25% of capacity).
311	Monday	Kirkwall – North Ron – Eday - Kirkwall	2 children board in North Ronaldsay (25% of capacity) and a further 2 children board in Eday (cumulative 50% of capacity).
312	Monday	Kirkwall – Westray – PW - Kirkwall	2 teachers (25% of capacity) board in Kirkwall and alight in Westray. 3 children board in Papa Westray (38% of capacity).
313	Monday	Kirkwall – Stronsay – Sanday - Kirkwall	6 teachers board in Kirkwall (75% of capacity), 2 alight in Stronsay and 4 alight in Sanday.
317	Monday	Kirkwall – Papa Westray – Westray - Kirkwall	2 teachers board in Westray (25% of capacity).
318	Monday	Kirkwall – Stronsay – Sanday - Kirkwall	4 teachers board in Sanday (50% of capacity) and a further 2 teachers board in Stronsay (cumulative 75% of capacity).
322	Tuesday	Kirkwall – Stronsay – Sanday - Kirkwall	5 teachers board the plane in Kirkwall (63% of capacity), with 3 alighting in Stronsay and 2 in Sanday.
323	Tuesday	Kirkwall – Westray – Papa Westray - Kirkwall	4 teachers (50% of capacity) board in Kirkwall and alight in Westray.
327	Tuesday	Kirkwall – Stronsay – Sanday - Kirkwall	2 teachers board the plane in Sanday (25% of capacity), with a further three boarding in Stronsay (cumulative 63% of capacity)
328	Tuesday	Kirkwall – Papa Westray – Westray - Kirkwall	4 teachers board in Westray (50% of capacity).
332	Wednesday	Kirkwall – Stronsay – Sanday - Kirkwall	7 teachers board the plane in Kirkwall (88% of capacity) with 5 alighting in Stronsay and 2 alighting in Sanday
333	Wednesday	Kirkwall – Westray – Papa Westray - Kirkwall	1 teacher (13% of capacity) boards in Kirkwall and alights in Westray.
337	Wednesday	Kirkwall – Stronsay – Sanday - Kirkwall	2 teachers board the plane in Sanday (25% of capacity), with a further five boarding in Stronsay (cumulative 88% of capacity)
338	Wednesday	Kirkwall – Papa Westray – Westray - Kirkwall	1 teacher boards in Westray (13% of capacity).
342	Thursday	Kirkwall – Stronsay – Sanday - Kirkwall	6 teachers board the plane in Kirkwall (75% of capacity), with 3 alighting in Stronsay and 3 alighting in Sanday
343	Thursday	Kirkwall – Westray – PW - Kirkwall	2 teachers (25% of capacity) board in Kirkwall and alight in Westray.
347	Thursday	Kirkwall – Stronsay – Sanday - Kirkwall	3 teachers board the plane in Sanday (38% of capacity), with a further 3 boarding in Stronsay (cumulative 75% of capacity)

Flight	Day	Route	Comment
348	Thursday	Kirkwall – Papa Westray – Westray - Kirkwall	2 teachers board in Westray (25% of capacity).
352	Friday	Kirkwall – Stronsay – Sanday - Kirkwall	7 teachers board the plane in Kirkwall (88% of capacity), with 4 alighting in Stronsay and 3 alighting in Sanday.
353	Friday	Kirkwall – Westray – PW - Kirkwall	1 teacher (13% of capacity) boards in Kirkwall and alights in Westray.
357	Friday	Kirkwall – Stronsay – Sanday - Kirkwall	3 teachers board the plane in Sanday (38% of capacity), with a further 4 boarding in Stronsay (cumulative 88% of capacity)
356	Friday	Kirkwall – PW – North Ron - Kirkwall	7 children board in Kirkwall (88% of capacity), with five alighting in Papa Westray and two alighting in North Ronaldsay. This service is specifically for pupils and would not otherwise exist.
358	Friday	Kirkwall – Papa Westray – Westray - Kirkwall	1 teacher boards in Westray (13% of capacity).

- 5.3.37 The most noticeable issue from the above table is that Sanday & Stronsay effectively lose the majority of the capacity on the outbound morning flight from Kirkwall and the inbound inter-peak / evening flight from the island. This is a key issue because, with only two return flights a day, the lack of capacity on the planes makes a day return by plane particularly difficult to achieve during the school-term. There is likely to be a negative effect on demand amongst other user groups, with the reduction in effective capacity potentially inhibiting other travellers. However, whilst education and indeed health consume significant capacity on the flights, the inter-island air network is essential to meeting the travel needs of these key services.
- 5.3.38 The issue is less prominent in other islands, although the Monday morning flights out of North Ronaldsay & Papa Westray and the Friday afternoon return services have very limited capacity, which could have a negative impact on any islander undertaking a 'week commute' (ie spending Monday to Friday on the mainland).
- 5.3.39 Overall, air and ferry capacity is a clear and evidenced problem in the context of the internal Orkney transport network, the addressing of which must be a key objective of this study.¹⁰³

Strategic Public Transport Integration

- 5.3.40 Connections between the inter-island transport services and the onward connections to the Scottish mainland (and the Shetland Islands) are considered on an island by-island basis below. However, it is worth noting more generally that the relatively short operating day and limited weekend connectivity often mean that an overnight stay is required on Orkney mainland before and / or after a trip to the Scottish mainland. This has cost implications for island residents, businesses and the public sector (e.g. the NHS).

Requirement for Lo-Lo Vessels

- 5.3.41 The continued requirement for Lo-Lo vessels to serve North Ronaldsay, Papa Westray and Graemsay / Moaness is a problem which will have to be considered in some detail as part of the option generation phase of this study. The problems can be summarised as follows:

¹⁰³ Orkney Outer North Isles STAG 1 Report (Peter Brett Associates, 2015), pp. 33-35.

- Lo-Lo vessels are typically less efficient than Ro-Ro vessels, with the requirement for the lifting derrick impacting on design considerations.
- With the current Outer North Isles fleet coming to the end of its working life, there will be a need to procure at least two new Lo-Lo vessels if this issue is not resolved.
- the Tuesday and Friday calls at North Ronaldsay and Papa Westray during the summer timetable consume almost **17 hours** of operating time but these crossings carry very few passengers and cars / tonnage.

5.3.42 The concept of a tidal block arrangement has been considered in detail by the Council and will be included in the options appraisal.

Multi-Journey Ticket Books

5.3.43 A consistent problem to emerge through the consultation was the issue of access to multi-journey ticket books. The 10, 20 and, where valid, 50 journey ticket books offer significant savings over and above the walk-up fare and are widely used by islanders. The purpose of the multi-journey books is that they both reward the frequency of travel over a defined period and also offer significant administrative savings for the ship in terms of fares collection.

5.3.44 However, these tickets need to be paid up-front, are time limited and specific to the individual purchaser. The need for up-front payment is seen to be detrimental to all islands as it is argued only the wealthiest islanders can afford to purchase multi-journey books.¹⁰⁴

5.3.45 It should also be noted those travelling frequently are more likely to receive the 50% discount as it is worthwhile purchasing a 50 book of tickets i.e. a commuter from inner isles. Those travelling less frequently are less liable to purchase a 50 book of tickets and therefore are unable to access the 50% discount, hence giving rise to another equity issue.

Landside Human Resources

5.3.46 The majority of islands in the Orkney archipelago have an ageing and, in some cases, a declining population. There is a long-term challenge in terms of meeting the landside needs of the inter-island transport services.

5.3.47 An ongoing challenge is meeting the Rescue & Fire Fighting Services (RFFS) needs of the Outer North Isles airfields. At present, the Council is managing this challenge well and the issue surrounding the provision of RFFS is less marked than in the Shetland Islands. Nonetheless, it remains an important consideration for the long-term sustainability of the air service.¹⁰⁵

5.3.48 There is also a challenge in terms of securing able bodied individuals to act as linesmen for the ferry service. This challenge is again broadly being managed at present except in North Ronaldsay where it is becoming an increasingly acute problem. Orkney Ferries indicated during the consultation phase that the task of securing the ferry's lines at a challenging port like North Ronaldsay requires fit and able people and the company foresees a situation in the future where there will be few islanders able to fulfil this function, putting the ferry service at risk.

Physical Access & Comfort

5.3.49 As has been noted above, the Orkney Ferries fleet is ageing, which presents users with a series of physical accessibility challenges, a particularly important point given the ageing

¹⁰⁴ OIITS Consultation Report (Peter Brett Associates, 2016).

¹⁰⁵ OIITS Aviation Baseline Report (Northpoint Aviation, 2016), pp. 9-14.

population in the islands. The lack of step-free access to the passenger lounges and other physical accessibility issues (such as boarding the Lo-Lo vessels) can act as a deterrent to travel. There are certain workarounds in place at present (such as allowing people to stay in their cars) but these measures are less than ideal.

- 5.3.50 It is also worth noting that the sailings between the Outer North Isles and Kirkwall are relatively long, particularly when they are indirect. The onboard facilities on the ONI vessels are quite dated and of a much lower standard than is found on vessels in the Shetland Islands and the west coast. Food options are available but are limited. Whilst overall levels of comfort may not be a travel deterrent for islanders, this may not be the case for visitors, who could be put off by the lack of amenity.
- 5.3.51 The NHS also explained that patients have expressed concern about the physical accessibility of the aircraft and ferries. Outwith the key challenge of getting on and off of the transport assets, it is our understanding through discussions with the NHS that recent Civil Aviation Authority (CAA) regulations mean that a person is not permitted to board the aircraft if they cannot independently evacuate in the event of an emergency. This is a particular issue in North Ronaldsay where the low frequency and unreliability of the ferry service over the winter months can lead to significantly delayed discharge, blocking beds and increasing cost to the NHS. Whilst such cases are small in number, they do nonetheless present a challenge.
- 5.3.52 There is also a challenge in transporting patients with severe mental health issues. Such patients cannot be conveyed by air and are generally moved by ferry. However, in islands with low service frequency, it has not been unknown for a tug with a Police Officer onboard to provide the transport link to the mainland.¹⁰⁶

Issues

Economic Environment

- 5.3.53 In developing the options appraisal it is necessary to understand how changes in the local and macro-economic environment will impact on the demand for transport and hence the connectivity requirements. The OIITS Economic Baseline & Future Planning Horizon provides positive / negative forecasts for each island and Orkney as a whole, which does provide some context.
- 5.3.54 However, there will clearly remain considerable uncertainty given the vulnerability of small islands to even small changes in economic circumstances (e.g. the loss of a single employer, trends in world commodity prices, public sector spending reductions etc).

Aircraft Ownership

- 5.3.55 The Inter Island Air Services PSO Contract is tendered by Orkney Islands Council, whereby the operator must provide their own aircraft. The two current Britten Norman islander aircraft used to operate the service are owned outright by the current operator of the service, Loganair. The inclusion of additional aircraft within the future Invitation to Tender may significantly increase the cost of the Contract.

Aviation Fuel

- 5.3.56 The Britten-Norman Islander aircraft engines burn AVGAS (aviation gasoline). This is an aviation fuel used in spark-ignited internal-combustion engines to propel aircraft. There are **questions over the long-term availability of this fuel type** and the eventual withdrawal of

¹⁰⁶ OIITS Consultation Report (Peter Brett Associates, 2016), pp. 44-45.

AVGAS could provide future complications and cost to the service or could, *in extremis*, force a fleet renewal at some point.¹⁰⁷

Opportunities

Our Islands, Our Future

- 5.3.57 As explained at the outset of this report, the Scottish Government has issued its *Empowering Scotland's Island Communities Prospectus* as part of the "Our Islands, Our Future" initiative. The *Our Islands, Our Future* document references the disproportionate financial burden placed on island local authorities by the operation of ferry services. It further explains that the Scottish Government recognises that the provision of transport services **should not place a disproportionate financial burden on any Council**. The document commits to meaningful negotiation to conclude this issue. From a political and funding perspective, this should be seen as a key opportunity in the context of this study.

Constraints

- 5.3.58 The network constraints for both air and ferry relate to the legislative and regulatory environment in which these services are operated. There are no specific constraints in this respect except in relation to available funding, an issue which is being considered in parallel to rather than as part of this study.

5.4 Island Specific

- 5.4.1 This section covers the island specific problems and constraints that have been identified through the pre-appraisal research (issues, opportunities and constraints are reported at the network level).
- 5.4.2 We have developed a checklist covering all elements of transport connectivity which has been used to assess all the potential characteristics of connectivity for each island. These aspects of inter-island connectivity and their associated generic potential transport problems are outlined in the table below.

Table 5.2 Checklist of Potential Transport Problems

Aspect of Connectivity	Potential Problems Arising
Overall journey time to Kirkwall / Stromness	Long total journey times to Orkney mainland impact on the ability to take up employment and conduct personal business in Kirkwall, Stromness or elsewhere. This aspect of connectivity includes land-based travel on the island and the mainland.
First sailing / flight	This will determine when islanders can arrive at mainland jobs, appointments or onward transport connections. Too late a first sailing / flight will restrict islanders' opportunities on the mainland (both Orkney and Scottish).
Last sailing / flight	This will determine when islanders have to leave appointments, jobs or evenings out to catch the last ferry or flight home.
Time on mainland (for islanders accessing jobs, shops, services, friends and family etc on the mainland);	The time window provided on the mainland will limit the activities which can be undertaken by islanders without the requirement for an overnight stay. A short window would prevent the completion of a working day, thus severely restricting employment opportunities and providing a barrier to prospective island residents.
Time in Kirkwall / Stromness (for islanders accessing jobs, shops, services, friends and family etc in the main town);	The time window provided in Kirkwall / Stromness will limit the activities which can be undertaken by islanders in Kirkwall / Stromness where most employment and services are based without the requirement for an overnight stay. A short window would prevent the completion of a working

¹⁰⁷ OIITS Aviation Baseline Report (Peter Brett Associates, 2016), p. 31.

Aspect of Connectivity	Potential Problems Arising
	day, thus severely restricting employment opportunities and providing a barrier to prospective island residents.
Time on island (for those visiting or undertaking business on the island);	The daily time window provided on each island will limit the activities which can be undertaken by visitors or those providing services / doing business without the requirement for an overnight stay. At its most severe, this can lead to businesses refusing to provide services to islands or significantly marking up the cost of doing so.
Frequency / Timetable gaps	A low service frequency or long gaps in the timetable creates a problem because it limits the times at which people can travel impacting on flexibility and accessibility. This restricts access to services and facilities on the mainland and could make the island unattractive as a place to live or do business. Infrequent services means that there is a long wait between services (eg if one sailing is narrowly missed) which can be inefficient.
Vessel / Aircraft capacity	If the vessel / aircraft is regularly full, this limits the certainty with which islanders and visitors can travel. On services where no booking is possible, a longer wait time will be incurred until the next available sailing. For the Outer North Isles, if the aircraft is fully booked, this will essentially place a barrier on travel (depending on the ferry options) leading to missed appointments etc
Cost to the user (fares)	Air and ferry fares can place a barrier on travel meaning that islanders cannot take up opportunities on the mainland or visitors may be deterred from visiting the islands. There are very few services on some islands which means that residents have to make regular air and ferry journeys incurring additional costs compared to those who live on the mainland.
Reliability (weather / mechanical)	A service which has a poor reliability record means that islanders and visitors have a lack of certainty surrounding travel. This also impacts on the supply chain to and from each island
Comfort	The level of comfort provided by a given ferry / aircraft can be a barrier to its use. This can affect access to key services and the attractiveness of the island for potential in-migrants.
Physical access	Given that the ferry or aircraft is the only means of travelling to / from the island, issues of physical access are crucial for those with any form of mobility impairment. This is a particularly key issue as the ageing population across the islands means that physical access issues will become increasingly important.
Integration with PT (local bus)	Without taxis / lifts off others, those without access to a car are reliant on public transport for connections at either end of the ferry or air journey. If these connections are infrequent or non-existent, this places a severe restriction on the ability to travel and take up employment, leisure and other opportunities. The quality of public transport on the islands will also have an impact on the ability of visitors to get around the island.
Integration with PT (strategic)	When islanders have to make onward journeys from Orkney to the rest of the UK or overseas, being able to connect with flights from Kirkwall and ferries from Kirkwall / Stromness / St Margaret's Hope is important. If the first flight / ferry connection out of the islands cannot be reached, then this can mean that a day trip eg Aberdeen cannot be made without the necessity of an overnight stay. The same applies in terms of the last departure to the island. The absence of the middle of the day sailing on the Scrabster – Stromness route is seen to give rise to a specific gap in connectivity.
Crossing / flight times	Long crossing times are an impediment to travel and reduce accessibility between the island and the mainland. This can act as a deterrent to living or working on a given island.
Onboard facilities (ferries)	The lack of facilities on some vessels can limit the productive use of time whilst travelling.
Weekday / weekend service variation	A reduced service at the weekend (especially Sundays) will impact on islanders' potential activities and also restrict those wishing to travel from the mainland to the island.
Landside infrastructure issues	The landside infrastructure can provide a transport problem by limiting the nature of vessels / aircraft employed on the route thus contributing to some of the issues outlined above.

Aspect of Connectivity	Potential Problems Arising
Landside human resource issues	The lack of landside human resources on the island can impact on the current and future provision of services to that island.

- 5.4.3 Each island is now considered in turn through a series of island specific tables. The tables:
- note whether there is any evidence to indicate that each of these aspects of connectivity is an actual or perceived (through the consultation) problem;
 - provide the supporting local evidence; and
 - provide a clear statement of why this is a problem.
- 5.4.4 This process therefore outlines the local manifestation of the generic problem outlined in the above checklist. In the interests of brevity, only key points are reported, with references provided to the relevant baselining reports.
- 5.4.5 The key for the tables is as follows:
- ✓ - This element of connectivity is not deemed to be a problem.
 - ✗ - This element of connectivity is deemed be a minor problem.
 - ✗✗ - This element of connectivity is deemed to be a moderate problem.
 - ✗✗✗ - This element of connectivity is deemed to be a major problem.
- 5.4.6 The objectives developed for each island will reflect the range and extent of the transport problems set out in the tables.
- 5.4.7 The RSM outcomes for each island are presented before the table. Note that we report the RSM results as expressed in the RSM report, although the majority of islands have a level of weekend provision which falls well below the RSM standard.
- 5.4.8 Whilst we have identified that fares / cost to the user represents a transport problem, the method of setting fares and their absolute level is a policy issue and should be addressed in the Local and / or Regional Transport Strategy context. This issue is therefore not considered further in the tables below.
- 5.4.9 Issues such as physical accessibility, comfort and onboard facilities can be considered a transport problem in that they can reduce the accessibility and amenity of the service and the propensity to travel. However, unless there is evidence that these issues are creating a true barrier to travel, they are not considered as problems which in themselves would trigger the need for investment. However, any new tonnage / aircraft / infrastructure would clearly have to comply with current legislation in this respect.

North Ronaldsay

- 5.4.10 It should be noted at the outset of this section that North Ronaldsay's lifeline transport connection is by air.

RSM Results

- 5.4.11 The Orkney RSM study was undertaken in late 2014 and defines a model level of service (in terms of the number of sailing days, connections per day and operating day) for the internal

Orkney routes. The RSM report and the methodology underpinning it are available in a separate report and, in the interest of brevity, only the results are summarised here.

5.4.12 The RSM results for North Ronaldsay are set out in the table below:

Table 5.3: North Ronaldsay RSM Results

Island	Connection Days	Connections Per Day	Operating Day
North Ronaldsay	Service should be offered 7 days-a-week, although this is currently significantly in excess of the current service Substantial under-provision	Acceptable	Acceptable

5.4.13 In summary, the current service provision for North Ronaldsay matches the model service provision except in terms of the number of days on which a connection is available.

5.4.14 If the air service is considered a connection (which would be pragmatic in this context given the high level of connectivity), North Ronaldsay would have a service profile which matched the RSM model service proposal, albeit the majority of connections would be limited to eight passengers and no cars. In addition, whilst the plane can carry a small amount of freight, it cannot carry hazardous goods.

Table 5.4: North Ronaldsay Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?
1	Overall Journey Time to Kirkwall	✓	Whilst the direct ferry service from North Ronaldsay to Kirkwall takes around 160 minutes, the air service is defined as the lifeline mode. The direct flight time is 18 minutes and indirect flight time 25 minutes (although most flights are direct). There is a half hourly bus from Kirkwall airport, with a journey time of around 10-15 minutes.
2	First sailing / flight	✓	The first flight from North Ronaldsay generally departs at 0758 in summer and winter (08:23 on a winter Monday), facilitating a working day on Orkney mainland.
3	Last sailing / flight	✗	The last departure in summer is 17:30, providing a near full day in the mainland. The last departure from Kirkwall in the winter is 17:00, which is facilitated by the runway lighting on North Ronaldsay. However, our research suggests that in 2014-15, 42% of the 17:00 flights to North Ronaldsay were brought forward to 16:00 or 14:00 as a result of anticipated visibility issues at North Ronaldsay. ¹⁰⁸ This can lead to significant disruption and uncertainty for those working on or visiting the mainland and vice versa.
4	Time on mainland	✓	North Ronaldsay residents have the most time on the mainland out of all of the Outer North Isles given the flights times. Some islanders would like to see an additional 'middle of the day' flight in winter, so as to be able to undertake a half day rather than a full day on the mainland in the winter months. The time on mainland can be negatively affected by the last flight being brought forward to 16:00 or 14:00 during the winter – 1 to 3 hours on the mainland are lost on each day that the flight is brought forward. The hours ashore by timetable by mode is summarised in the table below and values are rounded up or down to the nearest whole hour:

¹⁰⁸ In 2015, the flight was brought forward to 1600 between 26/10/15 – 10/11/15 and 19/01/16 – 14/02/16 and to 1400 between 11/11/15 and 18/01/16.

Service Characteristics	Rating	Why is this a problem or not?																																																																									
		<table border="1"> <thead> <tr> <th colspan="9">North Ronaldsay-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Winter</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Refit</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Air - Summer</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>5</td> <td>6</td> <td>57</td> </tr> <tr> <td>Air - Winter</td> <td>8</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>5</td> <td>0</td> <td>48</td> </tr> <tr> <td>Air - Refit</td> <td>8</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>7</td> <td>0</td> <td>51</td> </tr> </tbody> </table> <p>The Refit timetable provides additional time on the mainland on a Saturday.</p>	North Ronaldsay-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	0	0	0	0	0	0	0	0	Ferry - Winter	0	0	0	0	0	0	0	0	Ferry - Refit	0	0	0	0	0	0	0	0	Air - Summer	9	9	9	9	9	5	6	57	Air - Winter	8	9	9	9	9	5	0	48	Air - Refit	8	9	9	9	9	7	0	51	
North Ronaldsay-Time on Mainland																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	0	0	0	0	0	0	0	0																																																																			
Ferry - Winter	0	0	0	0	0	0	0	0																																																																			
Ferry - Refit	0	0	0	0	0	0	0	0																																																																			
Air - Summer	9	9	9	9	9	5	6	57																																																																			
Air - Winter	8	9	9	9	9	5	0	48																																																																			
Air - Refit	8	9	9	9	9	7	0	51																																																																			
5	Time in Kirkwall	✓	See point 4 – the hours in Kirkwall are very similar to the time on the mainland, although the interchange and time on the bus has to be taken into account.																																																																								
6	Time on island	✓	<p>As with time on mainland, it has been suggested that an additional 'middle of the day' flight would be of value for those only undertaking a half day of work on the island.</p> <p>The time on the island is reduced in the winter if the final North Ronaldsay rotation of the day is brought forward to a 14:00 departure from Kirkwall.</p> <p>The hours on island by timetable by mode is summarised in the table below and values are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">North Ronaldsay-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Winter</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Refit</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Air - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>6</td> <td>7</td> <td>63</td> </tr> <tr> <td>Air - Winter</td> <td>9</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>6</td> <td>0</td> <td>53</td> </tr> <tr> <td>Air - Refit</td> <td>9</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>8</td> <td>0</td> <td>55</td> </tr> </tbody> </table> <p>The services therefore provide more time on the island than time on the mainland.</p>	North Ronaldsay-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	0	0	0	0	0	0	0	0	Ferry - Winter	0	0	0	0	0	0	0	0	Ferry - Refit	0	0	0	0	0	0	0	0	Air - Summer	10	10	10	10	10	6	7	63	Air - Winter	9	10	10	10	10	6	0	53	Air - Refit	9	10	10	10	10	8	0	55
North Ronaldsay-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	0	0	0	0	0	0	0	0																																																																			
Ferry - Winter	0	0	0	0	0	0	0	0																																																																			
Ferry - Refit	0	0	0	0	0	0	0	0																																																																			
Air - Summer	10	10	10	10	10	6	7	63																																																																			
Air - Winter	9	10	10	10	10	6	0	53																																																																			
Air - Refit	9	10	10	10	10	8	0	55																																																																			
7	Frequency / Sailings per day / Timetable gaps	✗	<p>North Ronaldsay has the highest frequency air service of any Scottish island. However, the ferry only operates twice a week in summer and once a week in winter (although Orkney Ferries supplement the winter service with a chartered air freight service once per week, which transports perishables, chilled & frozen food and other emergency supplies and additional flights are chartered if sailings are disrupted).</p> <p>Furthermore, the highly constrained ferry berth in the island means that, in winter in particular, it can be several weeks between ferry calls. Whilst personal accessibility is maintained by the air service, the supply chain of the island can be negatively affected.</p> <p>A further issue is that the timetables have to align with the tides so sailings do not depart / arrive at the same time every day / week.</p>																																																																								
8	Capacity	✗	The air service is limited to eight passengers which, in the absence of a reliable ferry service, places a hard constraint on the number of people who can travel to and from the island at any given time. However, it should be noted that the																																																																								

	Service Characteristics	Rating	Why is this a problem or not?
			<p>population of North Ronaldsay is low, and the 8-9 seats on the plane generally meet the island's needs at present.</p> <p>Whilst the majority of North Ronaldsay's flights are direct, a handful are shared (via Eday or Papa Westray), which can impose a further limitation on capacity. <i>Ad hoc</i> flights are operated to support special events in North Ronaldsay.</p>
9	Reliability (weather / mechanical)	xx	<p>The ferry service is unreliable due to weather – the berth is exposed to swell and is tidally constrained, leading to sustained service outages, particularly during the winter months.</p> <p>The air service, which is the lifeline mode, is generally very reliable and can operate in most weather conditions (fog being the main problem). However, the last rotation of the day during winter is frequently brought forward to 14:00 or 16:00 as visibility restrictions prevent night landings.</p>
10	Comfort	x	<p>The ferry is lightly used by passengers so the facilities are broadly appropriate for the length of the crossing, if somewhat dated. The plane is also broadly appropriate given the short flight times, although the RSM survey picked up various complaints about the aircraft being cold during the winter months.</p>
11	Physical access	xxx	<p>Physical access to transport services is a problem in North Ronaldsay, particularly in light of the ageing population. Access to the ferry for the disabled can be challenging, whilst feedback from the NHS suggests an air passenger is only permitted on the plane if they can self-evacuate the aircraft.</p>
12	Integration with PT (local bus)	✓	<p>The ferry travels into the heart of Kirkwall, whilst there is a relatively frequent bus service to and from Kirkwall Airport.</p>
13	Integration with PT (strategic)	xx	<p>North Ronaldsay residents cannot connect with the first NorthLink or Pentland Ferries services (although they can get the 11:50 departure from St Margaret's Hope and the 11:00 NorthLink service from Stromness, which operates during the peak timetable). Residents also cannot catch the first flights to Aberdeen or Edinburgh, although they can make the first flights to Glasgow and Sumburgh. The first Inverness flight could possibly be connected with on Tuesday through Friday, although the timing is tight.</p> <p>They can however access the late night NorthLink sailings to Aberdeen and Lerwick on the days which this service operates via Kirkwall.</p> <p>The last flight to North Ronaldsay is generally before the last inbound flights and ferries to Orkney from the Scottish mainland and Shetland.</p> <p>Current strategic transport connectivity makes it difficult to undertake a day return to the Scottish mainland, leading to costly overnight stays.</p>
14	Crossing / flight time	✓	<p>See point 1.</p>
15	Onboard facilities	x	<p>The air service is appropriate to the journey length. Facilities on the ferry are dated but adequate and appropriate to a lifeline service, although of a lesser standard than found in other parts of Scotland.</p>
16	Weekday / weekend service variation	xx	<p>There is no day return to North Ronaldsay on a winter or Refit Sunday. The Sunday flight from North Ronaldsay also calls at Sanday and Stronsay on request, so capacity on this flight is likely to be a problem.</p>
17	Landside infrastructure issues	xxx	<p>The ferry berth at North Ronaldsay is challenging to operate to and from. The berth is exposed, tidally constrained and the pier is marginally too short for the ONI vessels. North Ronaldsay is also a Lo-Lo port, which can make carrying anything other than passengers or small pieces of freight problematic. The constrained nature of this port means that the island can go extended periods without a ferry call.</p> <p>North Ronaldsay is the only airfield in the ONI network with precision runway</p>

	Service Characteristics	Rating	Why is this a problem or not?
			lighting but this has been of only limited effectiveness in supporting flying during the hours of darkness due to visibility constraints.
18	Landside human resources	***	Orkney Islands Council has successfully managed Rescue & Fire Fighting Services at its airfields but this will always be an ongoing challenge, particularly with an ageing population in North Ronaldsay. The ageing population also presents a challenge in terms of sustaining the ferry service. The difficult berthing conditions mean that able-bodied and fit linesmen are required to secure the vessel, which is likely to become an increasingly challenging requirement in the future.

Papa Westray

5.4.15 It should be noted at the outset of this section that Papa Westray's lifeline transport connection is by air, although the passenger ferry to Westray also fulfils an important connectivity role.

RSM Results

5.4.16 The RSM results for Papa Westray are set out in the table below. It should be noted **that the RSM, as prescribed by Transport Scotland, focuses on connectivity to Orkney mainland and does not consider inter-island links** (i.e. the connection to Westray), although this study will consider these connections in detail.

Table 5.5: Papa Westray RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Papa Westray	Service should be offered 7 days-a-week, although this is currently significantly in excess of the current service Substantial under-provision	Acceptable	Acceptable

5.4.17 In summary, the current service provision for Papa Westray matches the model service provision except in terms of the number of days on which a connection is available. If the air service is considered a connection (which, like North Ronaldsay, it would be pragmatic to do so) Papa Westray would have a service profile which matched the RSM model service, albeit the majority of those connections would be limited to eight passengers and no cars. It should also be noted that Papa Westray has a summer only passenger only connection with Westray and a contracted winter service to meet the education and health needs of the island. Community transport funding is also provided for *ad hoc* connections to Westray outwith the timetable.

Table 5.6: Papa Westray Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?
1	Overall Journey Time to Kirkwall	✓	Whilst the direct ferry service from Papa Westray to Kirkwall takes around 105 minutes, the air service is defined as lifeline mode. The direct flight time is 16 minutes and indirect flight time 23 minutes. There is a half hourly bus from Kirkwall airport, with a journey time of around 10-15 minutes.
2	First sailing / flight	✓	Papa Westray's flight schedule does not permit commuting to full time employment on Orkney mainland. However, the first flight does generally arrive in Kirkwall between 09:00 and 09:30 (although there are some later arrivals in the summer,

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
			typically 10:12), which is a reasonable start time for conducting personal business.																																																																								
3	Last sailing / flight	✓	The last flight to Papa Westray typically arrives at 15:21 in winter and at 16:51 in summer, although with some daily variations.																																																																								
4	Time on mainland	✓	<p>The time ashore by timetable by mode is summarised in the table below and values are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Papa Westray-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Winter</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Refit</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Air - Summer</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>7</td> <td>5</td> <td>43</td> </tr> <tr> <td>Air - Winter</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>35</td> </tr> <tr> <td>Air - Refit</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>4</td> <td>0</td> <td>33</td> </tr> </tbody> </table>	Papa Westray-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	0	0	0	0	0	0	0	0	Ferry - Winter	0	0	0	0	0	0	0	0	Ferry - Refit	0	0	0	0	0	0	0	0	Air - Summer	6	6	6	6	6	7	5	43	Air - Winter	6	6	6	6	6	6	0	35	Air - Refit	6	6	6	6	6	4	0	33
Papa Westray-Time on Mainland																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	0	0	0	0	0	0	0	0																																																																			
Ferry - Winter	0	0	0	0	0	0	0	0																																																																			
Ferry - Refit	0	0	0	0	0	0	0	0																																																																			
Air - Summer	6	6	6	6	6	7	5	43																																																																			
Air - Winter	6	6	6	6	6	6	0	35																																																																			
Air - Refit	6	6	6	6	6	4	0	33																																																																			
5	Time in Kirkwall	✓	See point 4 – the hours in Kirkwall are similar, although the interchange time on the bus has to be taken into account.																																																																								
6	Time on island	✓	<p>The hours on island by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Papa Westray-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Winter</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Ferry - Refit</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Air - Summer</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>8</td> <td>6</td> <td>48</td> </tr> <tr> <td>Air - Winter</td> <td>7</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>7</td> <td>0</td> <td>39</td> </tr> <tr> <td>Air - Refit</td> <td>7</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>5</td> <td>0</td> <td>37</td> </tr> </tbody> </table> <p>The services therefore provide more time on the island than time on the mainland.</p>	Papa Westray-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	0	0	0	0	0	0	0	0	Ferry - Winter	0	0	0	0	0	0	0	0	Ferry - Refit	0	0	0	0	0	0	0	0	Air - Summer	7	7	7	7	7	8	6	48	Air - Winter	7	6	6	6	6	7	0	39	Air - Refit	7	6	6	6	6	5	0	37
Papa Westray-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	0	0	0	0	0	0	0	0																																																																			
Ferry - Winter	0	0	0	0	0	0	0	0																																																																			
Ferry - Refit	0	0	0	0	0	0	0	0																																																																			
Air - Summer	7	7	7	7	7	8	6	48																																																																			
Air - Winter	7	6	6	6	6	7	0	39																																																																			
Air - Refit	7	6	6	6	6	5	0	37																																																																			
7	Frequency / Sailings per day / Timetable gaps	✓	<p>Whilst the ferry service is limited, the air service provides 3 services a day Monday to Thursday during the summer (two on other days), which typically reduces to two flights a day during winter. This is sufficient for carrying out personal business on the mainland. In addition, where there is a middle of the day flight in the summer, it permits a half day visit to the mainland.</p> <p>In the summer months, Papa Westray residents also have access to Westray (and in turn sailings from Westray to Kirkwall) using the Papa Westray – Pierowall passenger ferry service.</p>																																																																								
8	Capacity	xx	<p>The air service is limited to eight passengers which, in the absence of a reliable ferry service, places a hard constraint on the number of people who can travel to and from the island at any given time.</p> <p>The majority of Papa Westray's flights are shared with Westray on the inbound or outbound leg, which further limits capacity.</p> <p><i>Ad hoc</i> flights are operated to support special events in Papa Westray.</p>																																																																								
9	Reliability (weather /	xx	Whilst the berth at Papa Westray is better than that at North Ronaldsay, it is still somewhat exposed and prone to weather related disruption. However, the air																																																																								

	Service Characteristics	Rating	Why is this a problem or not?
	mechanical)		service is generally reliable and, in the summer, the connection via Westray provides an alternative to the Lo-Lo service.
10	Comfort	✘	The Lo-Lo ferry is lightly used so the facilities are broadly appropriate for the length of the crossing, if somewhat dated. The plane is also broadly appropriate. The MV <i>Golden Mariana</i> which links Papa Westray and Westray is an old vessel and in need of replacement.
11	Physical access	✘✘✘	Physical access is a problem in Papa Westray. Access to the passenger vessel, the MV <i>Golden Mariana</i> , is particularly challenging, whilst feedback from the NHS suggests an air passenger is only permitted on the plane if they can self-evacuate the aircraft.
12	Integration with PT (local bus)	✓	The ferry travels into the heart of Kirkwall, whilst there is also a relatively frequent bus service to and from Kirkwall Airport. The seasonal foot passenger ferry to Westray travels to one of the more populous areas of the island and there are public bus services on the island that specifically connect with Rapness, where the ferry to Kirkwall departs.
13	Integration with PT (strategic)	✘✘✘	Papa Westray's strategic transport integration is limited. It is not possible to catch either the first NorthLink or Pentland Ferries departures, although the 11:50 Pentland departure and the 11:00 NorthLink service from Stromness, which operates during the peak timetable, are accessible. Papa Westray residents cannot catch the first flights to Aberdeen, Edinburgh or Inverness, although they can catch the first flights to Glasgow and Sumburgh. They can however access the late night NorthLink sailings to Aberdeen and Lerwick on the days which this service operates via Kirkwall. The evening ferry and air arrivals to Orkney from the Scottish mainland arrive too late for onward connections to Papa Westray. Trips to the Scottish mainland therefore require at least one off-island overnight stay.
14	Crossing / flight time	✓	See point 1.
15	Onboard facilities	✘	The air service is appropriate to the journey length. Facilities on the ferry are dated but adequate and appropriate to a lifeline service, although of a lesser standard than found in other parts of Scotland.
16	Weekday / weekend service variation	✘✘	There is no day return to Papa Westray on a winter or refit Sunday. The flight from Papa Westray also arrives via Westray so capacity on this flight is likely to be an issue.
17	Landside infrastructure issues	✘✘	The Lo-Lo berth at Papa Westray is relatively exposed and access to the vessel is poor, with only a narrow gangway provided.
18	Landside human resources	✓	Whilst Papa Westray will face the same longer term challenges as other islands in terms of maintaining RFFS and linesmen for the ferry, there is no suggestion of an immediate problem surrounding such provision.

Westray

RSM Results

5.4.18 The RSM results for Westray are set out in the table below:

Table 5.7: Westray RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Westray	Acceptable	Current 1-2 sailings p/d should be increased to 3-5 sailings p/d Marginal under-provision	Current operating day should be extended to up to 14 hours, 6am – 8pm. Substantial under-provision

5.4.19 Whilst Westray has a seven day service, the RSM deems the island to be marginally under-provided in terms of the number connections per day and substantially under-provided in terms of the length of the operating day. If the air service is considered a connection, the overall number of connections would meet the RSM, but the length of the operating would remain well short of the RSM specified level. It again has to be borne in mind that the air service is limited to eight passengers and no cars.

Table 5.8: Westray Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
1	Overall Journey Time to Kirkwall	✘	The journey by ferry from Westray takes 85 minutes which is deemed to be acceptable, although marginally longer than journey times for equivalent distances in other parts of Scotland. However, the direct flight from Westray takes only 16 minutes, whilst the indirect flight via Papa Westray takes 23 minutes.																																																																								
2	First sailing / flight	✘	The ferry is the lifeline mode for the island, particularly given that Westray is the most freight intensive island in the network. The first ferry does not depart the island until 09:00, which means that the first arrival into Kirkwall is not until 10:25. This can limit interaction with the mainland and can lead to problems for businesses, e.g. late arrival into the marts.																																																																								
3	Last sailing / flight	✓	The last ferry generally departs at 16:20 and the last flight at 15:00 (winter) and 16:30 (summer). There are minor variations by day in summer and winter.																																																																								
4	Time on mainland	✓	<p>The hours ashore by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Westray-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>6</td> <td>3</td> <td>6</td> <td>6</td> <td>7</td> <td>6</td> <td>0</td> <td>34</td> </tr> <tr> <td>Ferry - Winter</td> <td>6</td> <td>3</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>33</td> </tr> <tr> <td>Ferry - Refit</td> <td>6</td> <td>3</td> <td>6</td> <td>3</td> <td>6</td> <td>0</td> <td>0</td> <td>23</td> </tr> <tr> <td>Air - Summer</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>0</td> <td>31</td> </tr> <tr> <td>Air - Winter</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>0</td> <td>29</td> </tr> <tr> <td>Air - Refit</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>4</td> <td>0</td> <td>33</td> </tr> </tbody> </table> <p>It is therefore not possible to make a day trip to the mainland from Westray on a Sunday. Additional air services on a Saturday replace the ferries during refit.</p>	Westray-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	6	3	6	6	7	6	0	34	Ferry - Winter	6	3	6	6	6	6	0	33	Ferry - Refit	6	3	6	3	6	0	0	23	Air - Summer	6	6	6	6	6	0	0	31	Air - Winter	6	6	6	6	6	0	0	29	Air - Refit	6	6	6	6	6	4	0	33
Westray-Time on Mainland																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	6	3	6	6	7	6	0	34																																																																			
Ferry - Winter	6	3	6	6	6	6	0	33																																																																			
Ferry - Refit	6	3	6	3	6	0	0	23																																																																			
Air - Summer	6	6	6	6	6	0	0	31																																																																			
Air - Winter	6	6	6	6	6	0	0	29																																																																			
Air - Refit	6	6	6	6	6	4	0	33																																																																			
5	Time in Kirkwall	✓	See point 4 above.																																																																								
6	Time on island	✓	The time on island is generally felt to be adequate. The hours on island by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:																																																																								

	Service Characteristics	Rating	Why is this a problem or not?								
			Westray-Time on Island								
			Mo	Tu	We	Th	Fr	Sa	Su	Total	
			Ferry - Summer	7	6	9	9	10	9	7	58
			Ferry - Winter	9	9	9	6	9	9	0	55
			Ferry - Refit	9	9	9	6	9	0	0	43
			Air - Summer	7	7	7	7	7	0	0	36
			Air - Winter	7	7	7	7	7	0	0	33
			Air - Refit	7	7	7	7	7	5	0	38
			The services therefore provide more time on the island than time on the mainland, and it possible to make a day trip to Westray on a summer Sunday. Additional air services on a Saturday replace the ferries during refit.								
7	Frequency / Sailings per day / Timetable gaps	xx	Westray is the most populous and freight intensive island on the network, requiring relatively frequent connections. During the summer timetable, there is a regular 'middle boat' from the island which does not run during the winter. This can lead to capacity constraints on this busy route (see below).								
8	Capacity	xxx	<p>The capacity data provided by Orkney Ferries suggests that capacity constraints are a significant factor on Westray sailings to the extent that they are constraining the growth of the island economy.</p> <p>As the island generates significant volumes of freight, a small number of commercial vehicles can quickly lead to deadweight constraints on the vessel whilst vehicle deck space remains available. Data from Orkney Ferries shows that the Westray route, despite generally being direct (ie not shared), generates the largest number of standbys. The gap between sailings further amplifies this problem – bookings are essential on busy sailings, which can make discretionary travel a challenge at times.</p> <p>The air service is also capacity constrained, particularly because most flights are shared with Papa Westray, where the air service is the lifeline mode. Booking of itinerant teachers also reduces the amount of available capacity for the community.</p>								
9	Reliability (weather / mechanical)	x	There are no major reliability issues on this route but the consultation and data suggests that mechanical problems with the vessels are becoming more frequent as they get older.								
10	Comfort	x	The facilities on the ferry are broadly appropriate for the length of the crossing, if somewhat dated. The plane is also broadly appropriate.								
11	Physical access	xx	<p>Physical access is a problem. The MV <i>Varagen</i> has disabled facilities but the two <i>Earls</i> are more limited in this respect.</p> <p>Feedback from the NHS suggests an air passenger is only permitted on the plane if they can self-evacuate the aircraft.</p>								
12	Integration with PT (local bus)	✓	<p>The ferry travels into the heart of Kirkwall, whilst there is a relatively frequent bus service to and from Kirkwall Airport.</p> <p>There is also a bus service which meets the arrival/departure of the ferry in Westray.</p>								
13	Integration with PT (strategic)	xx	Westray's strategic transport integration is limited and best accessed via the air service. It is not possible to catch either the first NorthLink or Pentland Ferries departures, although the 11:50 Pentland departure and the 11:00 NorthLink service from Stromness, which operates during the peak timetable, are accessible. Westray residents cannot catch the first flights to Aberdeen, Edinburgh or Inverness, although they can catch the first flights to Glasgow and Sumburgh. They								

	Service Characteristics	Rating	Why is this a problem or not?
			<p>can however access the late night NorthLink sailings to Aberdeen and Lerwick on the days which this service operates via Kirkwall.</p> <p>The evening ferry and air arrivals to Orkney from the Scottish mainland arrive too late for onward connections to Westray.</p> <p>Trips to the Scottish mainland therefore require at least one off-island overnight stay.</p> <p>Freight integration is also limited given that a Westray haulier could not have goods on the Scottish mainland (Caithness) until almost 13:00.</p>
14	Crossing / flight time	✘	See point 1
15	Onboard facilities	✘	The air service is appropriate to the journey length. Facilities on the ferry are dated but adequate and appropriate to a lifeline service, although of a lesser standard than found elsewhere in Scotland.
16	Weekday / weekend service variation	✘✘	<p>The weekday and Saturday timetables are relatively similar (although there is no middle of the day sailing on a summer Saturday).</p> <p>It is not possible to make a meaningful day return trip to the mainland or the island on a Sunday during the winter. A day return trip can be made to the island but not the mainland by ferry on a summer Sunday.</p> <p>Combining air and ferry services on a summer Sunday does allow for a very short afternoon trip to the mainland, although there would be cost / ticket interchangeability issues.</p> <p>Day return services by air are available on all weekdays.</p>
17	Landside infrastructure issues	✔	Landside infrastructure in Westray is broadly fit for purpose but the ferry can lie over in the island only in calm conditions hence not during the winter months.
18	Landside human resources	✔	As a more populous island, Westray manages the challenges of landside human resources appropriately.

Sanday

RSM Results

5.4.20 The RSM results for Sanday are set out in the table below:

Table 5.9: Sanday RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Sanday	Acceptable	Current 1-2 sailings p/d should be increased to 3-5 sailings p/d Marginal under-provision	Current operating day should be extended to up to 14 hours, 6am – 8pm. Substantial under-provision

5.4.21 Whilst Sanday has a seven day service, the RSM deems the island to be marginally under-provided in terms of the number connections per day and substantially under-provided in

terms of the length of the operating day. If the air service is considered a connection, the overall number of connections would meet the RSM, but the length of the operating would remain well short of the RSM specified level. It again has to be borne in mind that the air service is limited to eight passengers (and the Sanday route is one of the most itinerant teacher intensive) and no cars.

Table 5.10: Sanday Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
1	Overall Journey Time to Kirkwall	xx	<p>The direct journey time from Sanday to Kirkwall is 85 minutes, which is deemed to be acceptable, although marginally longer than journey times for equivalent distances in other parts of Scotland. However, indirect connections via Stronsay (+55 minutes, Saturday only) and Eday (+20 minutes) add significantly to journey times. This is a particularly key issue during the refit timetable when the majority of services are indirect, shared with both Eday and Stronsay.</p> <p>The flight times are seen to be reasonable at 14 minutes direct and 22 minutes indirect.</p>																																																																								
2	First sailing / flight	xx	<p>The first ferry departure does not typically allow Sanday residents to get to Kirkwall until mid-morning (except on summer Mondays and Wednesdays), whilst the variation in this departure time over the week would present a challenge for any user unfamiliar with the timetable.</p> <p>The first flight from Sanday also departs later than from North Ronaldsay, although it does still permit a mainland arrival pre-09:30 on most days of the week, summer and winter.</p>																																																																								
3	Last sailing / flight	x	<p>The last ferry generally departs at 15:20 in the winter and 16:40 in the summer. The last weekday flight in summer is typically 15:44, leaving slightly earlier in the winter.</p> <p>However, it should be noted that the long layover for school children on a Friday is seen as a problem. School finishes at 12:00 but the ferry does not depart until 16:40, arriving into Sanday at 18:05, which truncates an already short weekend.</p>																																																																								
4	Time on mainland	xx	<p>The hours ashore by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1" data-bbox="523 1339 1398 1720"> <thead> <tr> <th></th> <th colspan="7">Sanday-Time on Mainland</th> <th></th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>7</td> <td>6</td> <td>8</td> <td>4</td> <td>3</td> <td>6</td> <td>0</td> <td>34</td> </tr> <tr> <td>Ferry - Winter</td> <td>5</td> <td>4</td> <td>5</td> <td>5</td> <td>4</td> <td>4</td> <td>0</td> <td>26</td> </tr> <tr> <td>Ferry - Refit</td> <td>4</td> <td>4</td> <td>4</td> <td>5</td> <td>3</td> <td>0</td> <td>0</td> <td>19</td> </tr> <tr> <td>Air - Summer</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>0</td> <td>31</td> </tr> <tr> <td>Air - Winter</td> <td>5</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>0</td> <td>30</td> </tr> <tr> <td>Air - Refit</td> <td>5</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>4</td> <td>0</td> <td>34</td> </tr> </tbody> </table> <p>It is therefore not possible to make a day trip to the mainland from Sanday on a Sunday. Additional air services on a Saturday replace the ferries during refit.</p>		Sanday-Time on Mainland									Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	7	6	8	4	3	6	0	34	Ferry - Winter	5	4	5	5	4	4	0	26	Ferry - Refit	4	4	4	5	3	0	0	19	Air - Summer	6	6	6	6	6	0	0	31	Air - Winter	5	6	6	6	6	0	0	30	Air - Refit	5	6	6	6	6	4	0	34
	Sanday-Time on Mainland																																																																										
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	7	6	8	4	3	6	0	34																																																																			
Ferry - Winter	5	4	5	5	4	4	0	26																																																																			
Ferry - Refit	4	4	4	5	3	0	0	19																																																																			
Air - Summer	6	6	6	6	6	0	0	31																																																																			
Air - Winter	5	6	6	6	6	0	0	30																																																																			
Air - Refit	5	6	6	6	6	4	0	34																																																																			
5	Time in Kirkwall	xx	See point 4 above.																																																																								
6	Time on island	✓	The time on island is generally felt to be adequate. The hours on island by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:																																																																								

	Service Characteristics	Rating	Why is this a problem or not?																																																																													
			<table border="1"> <thead> <tr> <th></th> <th colspan="8">Sanday-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>6</td> <td>0</td> <td>6</td> <td>8</td> <td>6</td> <td>9</td> <td>7</td> <td>42</td> </tr> <tr> <td>Ferry - Winter</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>7</td> <td>9</td> <td>0</td> <td>47</td> </tr> <tr> <td>Ferry - Refit</td> <td>8</td> <td>9</td> <td>8</td> <td>9</td> <td>6</td> <td>0</td> <td>0</td> <td>40</td> </tr> <tr> <td>Air - Summer</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>0</td> <td>0</td> <td>34</td> </tr> <tr> <td>Air - Winter</td> <td>6</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>0</td> <td>0</td> <td>33</td> </tr> <tr> <td>Air - Refit</td> <td>6</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>5</td> <td>0</td> <td>38</td> </tr> </tbody> </table>										Sanday-Time on Island									Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	6	0	6	8	6	9	7	42	Ferry - Winter	8	8	8	8	7	9	0	47	Ferry - Refit	8	9	8	9	6	0	0	40	Air - Summer	7	7	7	7	7	0	0	34	Air - Winter	6	7	7	7	7	0	0	33	Air - Refit	6	7	7	7	7
	Sanday-Time on Island																																																																															
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																								
Ferry - Summer	6	0	6	8	6	9	7	42																																																																								
Ferry - Winter	8	8	8	8	7	9	0	47																																																																								
Ferry - Refit	8	9	8	9	6	0	0	40																																																																								
Air - Summer	7	7	7	7	7	0	0	34																																																																								
Air - Winter	6	7	7	7	7	0	0	33																																																																								
Air - Refit	6	7	7	7	7	5	0	38																																																																								
			<p>The services therefore provide more time on the island than time on the mainland, and it possible to make a day trip to Sanday on a summer Sunday. Additional air services on a Saturday replace the ferries during refit.</p>																																																																													
7	Frequency / Sailings per day / Timetable gaps	xx	<p>Sanday is the second most populous and freight intensive island in the ONI, requiring relatively frequent connections. The frequency of the service is seen to be broadly appropriate but connections can be lost to capacity issues (see below).</p> <p>The frequency of direct connections during the refit timetable is significantly reduced. This is a major challenge for the island as both frequency and capacity are reduced.</p>																																																																													
8	Capacity	xxx	<p>The capacity data provided by Orkney Ferries suggest that ferry capacity constraints, although not as severe as on Westray, are a significant factor on Sanday, to the extent that they are constraining the growth of the island economy. Sanday's vessel is often shared with other islands, which reduces the effective capacity on any given sailing.</p> <p>As the island is amongst the larger freight generators on the network, a small number of commercial vehicles can quickly lead to deadweight constraints on the vessel, when vehicle deck space is still available. Data from Orkney Ferries shows that the Sanday route generates the third largest number of standbys. The gap between sailings and frequent indirect connections via Eday and occasionally Stronsay further amplifies this problem – bookings are essential on busy sailings, making discretionary travel a challenge at times.</p> <p>The air service is also highly capacity constrained, particularly the first flight out from and last flight back to Kirkwall. This is because the Sanday / Stronsay route is the most itinerant teacher intensive route on the network, with some flights being almost fully utilised by teachers.</p>																																																																													
9	Reliability (weather / mechanical)	x	<p>There are no major reliability issues on this route but the consultation and data suggests that mechanical problems with the vessels are becoming more frequent as they get older.</p>																																																																													
10	Comfort	x	<p>The facilities on the ferry are broadly appropriate for the length of the crossing, if somewhat dated. The plane is also broadly appropriate.</p>																																																																													
11	Physical access	xx	<p>Physical access is a problem. The MV <i>Varagen</i> has disabled facilities but the two <i>Earls</i>, which are generally operated on this route, are more limited in this respect. Feedback from the NHS suggests an air passenger is only permitted on the plane if they can self-evacuate the aircraft.</p>																																																																													
12	Integration with PT (local bus)	✓	<p>The ferry travels into the heart of Kirkwall, whilst there is a relatively frequent bus service to and from Kirkwall Airport.</p> <p>Sanday also has a public bus service on the island to connect with the arrival / departure of the ferries.</p>																																																																													
13	Integration with	xxx	<p>Sanday's strategic transport integration is limited and best accessed via the inter-</p>																																																																													

	Service Characteristics	Rating	Why is this a problem or not?
	PT (strategic)		<p>island air service. It is not possible to catch either the first NorthLink or Pentland Ferries departures, although the 11:50 Pentland departure is generally accessible. The 11:00 NorthLink departure from Stromness, which operates during the peak timetable, is also accessible.</p> <p>Sanday residents cannot catch the first flights to Aberdeen, Edinburgh or Inverness, although they can catch the first flights to Glasgow and Sumburgh. They can however access the late night NorthLink sailings to Aberdeen and Lerwick on the days which this service operates via Kirkwall.</p> <p>The evening ferry and air arrivals to Orkney from the Scottish mainland arrive too late for onward connections to Sanday.</p> <p>Trips to the Scottish mainland therefore require at least one off-island overnight stay.</p> <p>Freight integration is also limited given that, on most days, a Sanday haulier could not have goods on the Scottish mainland (Caithness) until almost 13:00 (and it is also worth noting that making the 11:50 Pentland departure from St Margaret's Hope is not guaranteed on all days given arrival times into Kirkwall.</p>
14	Crossing / flight time	✘	See point 1
15	Onboard facilities	✘	The air service is appropriate to the journey length. Facilities on the ferry are dated but adequate and appropriate to a lifeline service, although of a lesser standard than found in other parts of Scotland.
16	Weekday / weekend service variation	✘✘	<p>The weekday and Saturday timetables are relatively similar, although it is not possible to make a meaningful day return trip to the mainland or the island on a winter Sunday.</p> <p>A day return to the island on a Sunday is possible during the summer timetable but a day return to the mainland is still not possible.</p>
17	Landside infrastructure issues	✓	Landside infrastructure in Sanday is broadly fit for purpose and the ferry can lie over in the island in calm conditions.
18	Landside human resources	✓	As a more populous island, Sanday manages the challenges of landside human resources appropriately.

Stronsay

RSM Results

5.4.22 The RSM results for Stronsay are set out in the table below:

Table 5.11: Stronsay RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Stronsay	Acceptable	Given that Stronsay shares the same vessel with Eday and Sanday, the future sailings per day profile should be treated along with Eday and Sanday.	Given that Stronsay shares the same vessel with Eday and Sanday, the future operating day profile should be treated along with Eday and Sanday.

5.4.23 Whilst Stronsay has a seven day service, the RSM deems the island to be marginally under-provided in terms of the number connections per day and substantially under-provided in terms of the length of the operating day. If the air service is considered a connection, the overall number of connections would meet the RSM, but the length of the operating day would remain well short of the RSM specified level. It again has to be borne in mind that the air service is limited to eight passengers (and the Stronsay route is one of the most itinerant teacher intensive) and no cars.

Table 5.12: Stronsay Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
1	Overall Journey Time to Kirkwall	xx	<p>The direct journey time from Stronsay to Kirkwall is 95 minutes. This is a relatively long journey time, caused principally by the current position of the ferry terminal on the north east of the island. On other routes, the terminal is located in a way that achieves the shortest crossing distance / time to Kirkwall. This is, uniquely, not the case for Stronsay. The extended journey times impact both on this island and the wider Outer North Isles network.</p> <p>Indirect connections via Eday (+30 minutes) also add significantly to journey times. This is a particularly key issue during the refit timetable when the majority of services are shared with both Sanday and Eday.</p> <p>The flight times are seen to be reasonable at 11 minutes direct and 25 minutes indirect.</p>																																																																								
2	First sailing / flight	xx	<p>The first ferry departure does not typically allow Stronsay residents to get to Kirkwall until mid-morning (except on winter Wednesdays and Fridays & summer Fridays when the vessel overnights in the island and departs early in the morning), whilst the variation in this departure time over the week would present a challenge for any user unfamiliar with the timetable.</p> <p>The first flight from Stronsay also typically departs later than from North Ronaldsay, Papa Westray and Westray.</p>																																																																								
3	Last sailing / flight	✓	<p>During the summer and winter, the last ferry to Stronsay generally departs at 16:00 on weekdays (15:00 on a winter Monday & Friday), with the last flight generally departing Kirkwall at 15:30 in summer and 15:10 in winter.</p> <p>However, it should be noted that the long layover for schoolchildren on a Friday is seen as a problem. School finishes at 12:00 but the ferry does not depart until 16:00, arriving into Stronsay at 18:05, which truncates an already short weekend.</p>																																																																								
4	Time on mainland	xx	<p>The length of time on the mainland can be extended by taking the first flight to the mainland and last ferry back to the island, although this has ticket interchangeability and cost issues.</p> <p>The hours ashore by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th></th> <th colspan="7">Stronsay-Time on Mainland</th> <th>Total</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th></th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>6</td> <td>6</td> <td>5</td> <td>5</td> <td>6</td> <td>5</td> <td>0</td> <td>33</td> </tr> <tr> <td>Ferry - Winter</td> <td>4</td> <td>5</td> <td>5</td> <td>5</td> <td>6</td> <td>4</td> <td>0</td> <td>31</td> </tr> <tr> <td>Ferry - Refit</td> <td>4</td> <td>4</td> <td>4</td> <td>0</td> <td>6</td> <td>0</td> <td>0</td> <td>18</td> </tr> <tr> <td>Air - Summer</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>0</td> <td>31</td> </tr> <tr> <td>Air - Winter</td> <td>5</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>0</td> <td>0</td> <td>30</td> </tr> <tr> <td>Air - Refit</td> <td>5</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>4</td> <td>0</td> <td>34</td> </tr> </tbody> </table> <p>It is therefore not possible to make a day trip to the mainland from Stronsay on a</p>		Stronsay-Time on Mainland							Total		Mo	Tu	We	Th	Fr	Sa	Su		Ferry - Summer	6	6	5	5	6	5	0	33	Ferry - Winter	4	5	5	5	6	4	0	31	Ferry - Refit	4	4	4	0	6	0	0	18	Air - Summer	6	6	6	6	6	0	0	31	Air - Winter	5	6	6	6	6	0	0	30	Air - Refit	5	6	6	6	6	4	0	34
	Stronsay-Time on Mainland							Total																																																																			
	Mo	Tu	We	Th	Fr	Sa	Su																																																																				
Ferry - Summer	6	6	5	5	6	5	0	33																																																																			
Ferry - Winter	4	5	5	5	6	4	0	31																																																																			
Ferry - Refit	4	4	4	0	6	0	0	18																																																																			
Air - Summer	6	6	6	6	6	0	0	31																																																																			
Air - Winter	5	6	6	6	6	0	0	30																																																																			
Air - Refit	5	6	6	6	6	4	0	34																																																																			

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
			Sunday. Additional air services on a Saturday replace the ferries during refit.																																																																								
5	Time in Kirkwall	xx	See point 4 above.																																																																								
6	Time on island	✓	<p>The time on island is generally felt to be adequate. The hours on island by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Stromsøy-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>7</td> <td>9</td> <td>10</td> <td>0</td> <td>0</td> <td>9</td> <td>7</td> <td>41</td> </tr> <tr> <td>Ferry - Winter</td> <td>9</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>8</td> <td>0</td> <td>23</td> </tr> <tr> <td>Ferry - Refit</td> <td>10</td> <td>7</td> <td>9</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>26</td> </tr> <tr> <td>Air - Summer</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>0</td> <td>0</td> <td>36</td> </tr> <tr> <td>Air - Winter</td> <td>6</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>0</td> <td>0</td> <td>34</td> </tr> <tr> <td>Air - Refit</td> <td>6</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>5</td> <td>0</td> <td>38</td> </tr> </tbody> </table> <p>The services therefore provide more time on the island than time on the mainland, and it possible to make a day trip to Stromsøy on a summer Sunday. Additional air services on a Saturday replace the ferries during refit. Day trips to Stromsøy by ferry cannot be made on Thursdays and Fridays in summer and Tuesday to Friday in winter.</p>	Stromsøy-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	7	9	10	0	0	9	7	41	Ferry - Winter	9	0	0	0	0	8	0	23	Ferry - Refit	10	7	9	0	0	0	0	26	Air - Summer	7	7	7	7	7	0	0	36	Air - Winter	6	7	7	7	7	0	0	34	Air - Refit	6	7	7	7	7	5	0	38
Stromsøy-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	7	9	10	0	0	9	7	41																																																																			
Ferry - Winter	9	0	0	0	0	8	0	23																																																																			
Ferry - Refit	10	7	9	0	0	0	0	26																																																																			
Air - Summer	7	7	7	7	7	0	0	36																																																																			
Air - Winter	6	7	7	7	7	0	0	34																																																																			
Air - Refit	6	7	7	7	7	5	0	38																																																																			
7	Frequency / Sailings per day / Timetable gaps	✓	The frequency of this service is seen to be broadly appropriate, although the turnaround time for the island haulier on the mainland is relatively tight on most days.																																																																								
8	Capacity	xx	<p>The ferry capacity issues on Stromsøy are not as marked as those experienced in Sanday and Westray, although capacity problems do still emerge from time to time, particularly on indirect sailings via Eday.</p> <p>The air service is however highly capacity constrained, particularly the first flight out from and last flight back to Kirkwall. This is because the Stromsøy / Sanday route is the most itinerant teacher intensive route on the network, with some flights being almost fully utilised by teachers.</p>																																																																								
9	Reliability (weather / mechanical)	x	There are no major reliability issues on this route but the consultation and data suggests that mechanical problems with the vessels are becoming more frequent as they get older.																																																																								
10	Comfort	x	The facilities on the ferry are broadly appropriate for the length of the crossing, if somewhat dated. The plane is also broadly appropriate.																																																																								
11	Physical access	xx	Physical access is a problem. The MV <i>Varagen</i> has disabled facilities but the two <i>Earls</i> , which are the usual vessels on this route, are more limited in this respect. Feedback from the NHS suggests an air passenger is only permitted on the plane if they can self-evacuate the aircraft.																																																																								
12	Integration with PT (local bus)	✓	The ferry travels into the heart of Kirkwall, whilst there is a relatively frequent bus service to and from Kirkwall Airport.																																																																								
13	Integration with PT (strategic)	xxx	Stromsøy's strategic transport integration is limited and best accessed via the air service. It is not possible to catch either the first NorthLink or Pentland Ferries departures, although the 11:50 Pentland Ferries departure is accessible (although for those taking the ferry, they would likely need a car on certain days to make this connection). The 11:00 NorthLink departure from Stromness, which operates during peak season, can be accessed by Stromsøy residents using the air service (Tuesday – Friday) and the ferry on a Friday (and potentially on other weekdays but the connection times are tight).																																																																								

	Service Characteristics	Rating	Why is this a problem or not?
			<p>Stromsay residents cannot catch the first flights to Aberdeen, Edinburgh or Inverness, although they can catch the first flights to Glasgow and Sumburgh. They can however access the late night NorthLink sailings to Aberdeen and Lerwick on the days which this service operates via Kirkwall.</p> <p>The evening ferry and air arrivals to Orkney from the Scottish mainland arrive too late for onward connections to Stromsay.</p> <p>Trips to the Scottish mainland therefore require at least one off-island overnight stay.</p>
14	Crossing / flight time	✘	See point 1
15	Onboard facilities	✘	The air service is appropriate to the journey length. Facilities on the ferry are dated but adequate and appropriate to a lifeline service, although of a lesser standard than found in other parts of Scotland.
16	Weekday / weekend service variation	✘✘	<p>The weekday and Saturday timetables are relatively similar, although it is not possible to make a meaningful day return trip to the mainland or the island on a winter Sunday.</p> <p>A day return to the island on a Sunday is possible during the summer timetable but a day return to the mainland is still not possible.</p> <p>Connections to the island drop off significantly in winter.</p>
17	Landside infrastructure issues	✘✘	The location of Stromsay pier in the north east of the island adds to journey times.
18	Landside human resources	✓	<p>With a relatively small population, managing the long-term human resource needs of the air and ferry services will present a challenge. However, there have been no specific problems in Stromsay identified in the baselining.</p> <p>It should however be noted that there are problems recruiting airfield staff to work on a Sunday.</p>

Eday

RSM Results

5.4.24 The RSM results for Eday are set out in the table below:

Table 5.13: Eday RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Eday	Acceptable	Current 1-2 sailings p/d should be increased to 3-5 sailings p/d Marginal under-provision	Current operating day should be extended to up to 14 hours, 6am – 8pm. Substantial under-provision

5.4.25 Whilst Eday has a seven day service, the RSM deems the island to be marginally under-provided in terms of the number connections per day and substantially under-provided in terms of the length of the operating day.

Table 5.14: Eday Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
1	Overall Journey Time to Kirkwall	*	<p>The direct journey time from Eday to Kirkwall is 75 minutes, which is deemed to be acceptable, although marginally longer than journey times for equivalent distances in other parts of Scotland. Whilst the majority of connections are direct, indirect connections via Sanday (+40 minutes) and Stronsay (+65 minutes) add very significantly to journey times. This is a particular issue during refit period, particularly given Eday's lack of a meaningful air service.</p> <p>Journey times to and from Eday can be significantly extended in poor weather, when the vessel transits via Eday Sound.</p>																																																																								
2	First sailing / flight	**	<p>The first sailing from Eday does not depart Eday until after 09:00 except on a winter Wednesday and Friday and a summer Friday, which means that the first arrival into Kirkwall is not until mid-morning. This can limit interaction with the mainland and can lead to problems for businesses, e.g. late arrival into the marts.</p> <p>With the exception of a Tuesday and Friday, no sailings depart Eday before 10:00 on weekdays during the refit timetable.</p> <p>The lack of a Monday morning ferry to allow children to get to KGS for the start of the school week is seen as a major problem amongst the community (driven principally by the lack of a Junior High in Eday). As a result of this, S1 and S2 aged pupils from Eday travel in on a Monday morning by air. Their view is that the children having to leave the island on a Sunday night for school is undermining the long-term sustainability of the island community (although note that this is a broadly common issue across the Outer North Isles).</p>																																																																								
3	Last sailing / flight	*	<p>The last sailing time is seen to be broadly acceptable, although the long layover for schoolchildren on a Friday is seen as a problem. School finishes at 12:00 but the ferry does not depart until 16:00, arriving into Eday at 17:15, which truncates an already short weekend.</p>																																																																								
4	Time on mainland	***	<p>Eday has the least amount of time on Orkney mainland of all of the islands within the archipelago. As the small number of flights from the island is predominantly for use by school children, the ferry is the dominant mode of travel for Eday residents. A day return to Eday by air is only available on a Wednesday and the time varies between term-time and school holidays.</p> <p>The hours ashore by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th></th> <th colspan="8">Eday-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>6</td> <td>6</td> <td>5</td> <td>5</td> <td>6</td> <td>5</td> <td>0</td> <td>33</td> </tr> <tr> <td>Ferry - Winter</td> <td>4</td> <td>4</td> <td>5</td> <td>5</td> <td>6</td> <td>4</td> <td>0</td> <td>29</td> </tr> <tr> <td>Ferry - Refit</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>6</td> <td>0</td> <td>0</td> <td>22</td> </tr> <tr> <td>Air - Summer</td> <td>0</td> <td>0</td> <td>6</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>6</td> </tr> <tr> <td>Air - Winter</td> <td>0</td> <td>0</td> <td>5</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>5</td> </tr> <tr> <td>Air - Refit</td> <td>0</td> <td>0</td> <td>7</td> <td>0</td> <td>0</td> <td>7</td> <td>0</td> <td>14</td> </tr> </tbody> </table> <p>Notes: - Wednesday Air Winter & Refit, 5 hours October to mid-January and 6 hours mid-January to March - Wednesday Air Summer, 9 hours during school holidays Saturday flights replace Saturday ferries during refit. A day trip to the mainland cannot be made on a Sunday.</p>		Eday-Time on Mainland									Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	6	6	5	5	6	5	0	33	Ferry - Winter	4	4	5	5	6	4	0	29	Ferry - Refit	4	4	4	4	6	0	0	22	Air - Summer	0	0	6	0	0	0	0	6	Air - Winter	0	0	5	0	0	0	0	5	Air - Refit	0	0	7	0	0	7	0	14
	Eday-Time on Mainland																																																																										
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	6	6	5	5	6	5	0	33																																																																			
Ferry - Winter	4	4	5	5	6	4	0	29																																																																			
Ferry - Refit	4	4	4	4	6	0	0	22																																																																			
Air - Summer	0	0	6	0	0	0	0	6																																																																			
Air - Winter	0	0	5	0	0	0	0	5																																																																			
Air - Refit	0	0	7	0	0	7	0	14																																																																			
5	Time in Kirkwall	***	See point 4.																																																																								

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
6	Time on island	xx	<p>The hours on island by timetable by mode is summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th></th> <th colspan="8">Eday-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>5</td> <td>0</td> <td>8</td> <td>8</td> <td>6</td> <td>10</td> <td>8</td> <td>45</td> </tr> <tr> <td>Ferry - Winter</td> <td>7</td> <td>9</td> <td>0</td> <td>0</td> <td>0</td> <td>10</td> <td>0</td> <td>31</td> </tr> <tr> <td>Ferry - Refit</td> <td>7</td> <td>10</td> <td>7</td> <td>0</td> <td>6</td> <td>0</td> <td>0</td> <td>30</td> </tr> <tr> <td>Air - Summer</td> <td>0</td> <td>0</td> <td>7</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>7</td> </tr> <tr> <td>Air - Winter</td> <td>0</td> <td>0</td> <td>5</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>5</td> </tr> <tr> <td>Air - Refit</td> <td>0</td> <td>0</td> <td>7</td> <td>0</td> <td>0</td> <td>8</td> <td>0</td> <td>15</td> </tr> </tbody> </table> <p>Notes: - Wednesday Air Winter & Refit, 5 hours October to mid-January and 7 hours mid-January to March - Wednesday Air Summer, 10 hours during school holidays</p>		Eday-Time on Island									Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	5	0	8	8	6	10	8	45	Ferry - Winter	7	9	0	0	0	10	0	31	Ferry - Refit	7	10	7	0	6	0	0	30	Air - Summer	0	0	7	0	0	0	0	7	Air - Winter	0	0	5	0	0	0	0	5	Air - Refit	0	0	7	0	0	8	0	15
	Eday-Time on Island																																																																										
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	5	0	8	8	6	10	8	45																																																																			
Ferry - Winter	7	9	0	0	0	10	0	31																																																																			
Ferry - Refit	7	10	7	0	6	0	0	30																																																																			
Air - Summer	0	0	7	0	0	0	0	7																																																																			
Air - Winter	0	0	5	0	0	0	0	5																																																																			
Air - Refit	0	0	7	0	0	8	0	15																																																																			
7	Frequency / Sailings per day / Timetable gaps	xxx	<p>When considering combined air and ferry connectivity, Eday is the most poorly served island in the Orkney archipelago. With only 16 connections per week (summer timetable), the island lags the other Outer North Isles and the Inner and South Isles where the direct and indirect crossing times are much shorter.</p> <p>Eday's low service frequency significantly disadvantages the island <i>vis a vis</i> other islands. In particular, Eday only gets one return flight per week (on a Wednesday, with the Monday service established for use by school children and shared with North Ronaldsay). An additional return air service is provided on a Saturday during the refit period.</p>																																																																								
8	Capacity	xx	<p>The ferry capacity issues on Eday are not as marked as those experienced in Sanday and Westray, although capacity problems do still emerge from time to time, particularly on indirect sailings to / from Eday (especially when services are shared with Sanday). The (term time only) Monday AM air connection to Kirkwall is severely capacity restricted as the flight starts from North Ronaldsay and any remaining seats are only made available to Eday residents on the Sunday before the flight.</p>																																																																								
9	Reliability (weather / mechanical)	x	<p>There are no major reliability issues on this route but the consultation and data suggests that mechanical problems with the vessels are becoming more frequent as they get older.</p> <p>Journey times to and from Eday can be significantly extended in poor weather when the vessel transits via Eday Sound.</p>																																																																								
10	Comfort	x	<p>The facilities on the ferry are broadly appropriate for the length of the crossing, if somewhat dated.</p>																																																																								
11	Physical access	xx	<p>Physical access is a problem. The MV <i>Varagen</i> has disabled facilities but the two <i>Earls</i> are more limited in this respect.</p>																																																																								
12	Integration with PT (local bus)	✓	<p>The ferry travels into the heart of Kirkwall, whilst there is a relatively frequent bus service to and from Kirkwall Airport. A one day per week public bus service operates on the island to connect with the arrival / departure of the ferry.</p>																																																																								
13	Integration with PT (strategic)	xxx	<p>Eday's strategic transport integration is limited. It is not possible to catch either the first NorthLink or Pentland Ferries departures, although the 11:50 Pentland departure is accessible (although for those taking the ferry, they would likely need a car on certain days to make this connection). The 11:00 NorthLink departure from Stromness, which operates during the peak timetable, can be accessed from Eday by air on a Wednesday and ferry on a Friday (and potentially on a Monday, although the connection time would be very tight).</p>																																																																								

	Service Characteristics	Rating	Why is this a problem or not?
			<p>Eday residents cannot catch the first flights to Aberdeen, Edinburgh or Inverness, although they can catch the first flights to Glasgow and Sumburgh. They can however access the late night NorthLink sailings to Aberdeen and Lerwick on the days which this service operates via Kirkwall.</p> <p>The evening ferry and air arrivals to Orkney from the Scottish mainland arrive too late for onward connections to Eday.</p> <p>Trips to the Scottish mainland therefore require at least one off-island overnight stay.</p>
14	Crossing / flight time	✗	See point 1
15	Onboard facilities	✗	The air service is appropriate to the journey length. Facilities on the ferry are dated but adequate and appropriate to a lifeline service, although of a lesser standard than found in other parts of Scotland.
16	Weekday / weekend service variation	✗✗	The weekday and Saturday timetables are relatively similar, although it is not possible to make a meaningful day return trip to the mainland or the island on a Sunday.
17	Landside infrastructure issues	✓	The landside infrastructure is seen to broadly fit for purpose.
18	Landside human resources	✓	With a relatively small population, managing the long-term human resource needs of the ferry (and to a lesser extent air) services will present a challenge. However, there have been no specific problems in Eday identified in the baselining.

Shapinsay

RSM Results

5.4.26 The RSM results for Shapinsay are set out in the table below:

Table 5.15: Shapinsay RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Shapinsay	Acceptable	Number of sailings should be increased to 20+ p/d Substantial under-provision	Current operating day should be extended to more than 14 hours. Substantial under-provision

5.4.27 In summary, whilst Shapinsay has a seven day service, the island is substantially under-provided in terms of the number of connections per day and the length of the operating day.

Table 5.16: Shapinsay Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?
1	Overall Journey Time to Kirkwall	✓	The crossing time from Shapinsay is 25 minutes. The vessel berths in the heart of Kirkwall.
2	First sailing / flight	✓	The first sailing departs Shapinsay at 0730 Monday – Friday. This departure allows Shapinsay residents to commute and work full time on the mainland.
3	Last sailing /	✗✗	The last departure from Kirkwall sails at 1730. Combined with the early first sailing,

	Service Characteristics	Rating	Why is this a problem or not?																																				
	flight		<p>this permits a full working day on Orkney mainland.</p> <p>However, the time of the last departure does not allow Shapinsay residents to undertake evening social activities on Orkney mainland or connect with the last flights / ferries from the Scottish mainland (see below).</p> <p>The length of the operating day is also substantially less than that identified in the RSM model service provision.</p> <p>It should also be noted that the community use the proceeds from their community wind turbine to charter additional passenger-only sailings from a private operator in the evening. Whilst our review is only concerned with Orkney Ferries' provision, it does highlight the community demand for these services.</p>																																				
4	Time on mainland	✗	<p>The hours ashore by timetable are summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Shapinsay-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>69</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>8</td> <td>3</td> <td>59</td> </tr> </tbody> </table> <p>In this case the vessel overnights in Shapinsay so time on the mainland is greater than time on the island. Connectivity to the mainland is provided 7 days a week.</p>	Shapinsay-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	10	10	10	69	Ferry - Winter	10	10	10	10	10	8	3	59
Shapinsay-Time on Mainland																																							
	Mo	Tu	We	Th	Fr	Sa	Su	Total																															
Ferry - Summer	10	10	10	10	10	10	10	69																															
Ferry - Winter	10	10	10	10	10	8	3	59																															
5	Time in Kirkwall	✗	See point 4																																				
6	Time on island	✓	<p>The hours on island by timetable are summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Shapinsay-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>9</td> <td>9</td> <td>58</td> </tr> <tr> <td>Ferry - Winter</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>7</td> <td>2</td> <td>49</td> </tr> </tbody> </table> <p>Connectivity to Shapinsay is provided 7 days a week.</p>	Shapinsay-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	8	8	8	8	8	9	9	58	Ferry - Winter	8	8	8	8	8	7	2	49
Shapinsay-Time on Island																																							
	Mo	Tu	We	Th	Fr	Sa	Su	Total																															
Ferry - Summer	8	8	8	8	8	9	9	58																															
Ferry - Winter	8	8	8	8	8	7	2	49																															
7	Frequency / Sailings per day / Timetable gaps	✓	With six direct return crossings Monday – Friday (summer and winter), Shapinsay has a relatively high service frequency.																																				
8	Capacity	✓	Orkney Ferries has noted that passenger capacity can be an issue on peak summer sailings, but this is believed to be a relatively minor problem overall.																																				
9	Reliability (weather / mechanical)	✓	There are no major reliability problems on this route.																																				
10	Comfort	✓	The levels of comfort on the vessel are seen to be appropriate for the length of crossing.																																				
11	Physical access	✗	Disabled access to the passenger lounge on the ferry is not step free. Overall amenity is poor, with the disabled seating next to the toilets on the car deck.																																				
12	Integration with PT (local bus)	✓	The ferry travels into the heart of Kirkwall.																																				
13	Integration with PT (strategic)	✗✗	Shapinsay residents cannot catch the first flights to Aberdeen and Edinburgh, although they could possibly make the first Inverness flight and can catch the first Glasgow and Sumburgh flights. Residents also cannot catch the first NorthLink or Pentland Ferries departures, although they can catch the 11:50 Pentland Ferries departure. The 11:00 NorthLink service from Stromness, which operates during peak timetable, can also be accessed.																																				

	Service Characteristics	Rating	Why is this a problem or not?
			Evening integration is poorer – the last ferries of the evening from the Scottish mainland coupled with the flights from Aberdeen, Edinburgh and Inverness all arrive after the last departure of the ferry to Shapinsay. Trips to the Scottish mainland therefore require at least one off-island overnight stay.
14	Crossing / flight time	✓	See point 1 above
15	Onboard facilities	✓	The onboard facilities are considered to be appropriate for the length of the crossing.
16	Weekday / weekend service variation	✗	The Saturday service is broadly similar to the weekday service, with only one return sailing less (the 0730 departure from Shapinsay) in the winter timetable and the same number of sailings in the summer timetable. There is only one less sailing on a Sunday compared to a weekday in the summer. However, limitations on crewing hours mean that winter Sunday rotations reduce to two, although this still allows a brief return trip to the Orkney mainland (around 3 to 3.5 hours).
17	Landside infrastructure issues	✓	The service to Shapinsay is operated using a hard ramp vessel which is not particularly intensive in terms of infrastructure.
18	Landside human resources	✓	The service to Shapinsay is operated using a hard ramp vessel which is not particularly intensive in terms of landside human resources.

Rousay / Egilsay / Wyre

RSM Results

5.4.28 The RSM results for Rousay / Egilsay / Wyre are set out in the table below:

Table 5.17: Rousay / Egilsay / Wyre RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Rousay / Egilsay / Wyre	Acceptable (except during winter)	Number of sailings should be increased to 20+ p/d Marginal under-provision	Current operating day should be extended to more than 14 hours. Marginal under-provision

5.4.29 In summary, Rousay, Egilsay and Wyre have an acceptable number of sailing days over the summer months, but the islands only have a six day connection during the winter. Rousay, Egilsay and Wyre are under-provided in terms of the connections per day and the length of the operating day throughout the year.

Table 5.18: Rousay / Egilsay / Wyre Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?
1	Overall Journey Time to Kirkwall / Stromness	✓	The overall crossing time between Rousay / Egilsay / Wyre and the mainland is relatively short. However, there are a large number of different combinations of indirect connections

	Service Characteristics	Rating	Why is this a problem or not?																																																																																																												
			<p>on this route, which can give rise to extended journey times to Tingwall, particularly for Egilsay and Wyre. For example, some journeys from Egilsay to Tingwall can take up to 70 minutes. The longer 'round-trip' journeys also tie up a significant amount of operating time for a very small number of boardings.</p> <p>There is a connecting bus service from Tingwall to Kirkwall offering a relatively quick journey time overall.</p>																																																																																																												
2	First sailing / flight	✓	The first sailings to the mainland depart Egilsay 07:10, Wyre 07:30 and Rousay 07:45. This timetable supports commuting and travel to KGS & Stromness Academy, with a pre-09:00 arrival into both Kirkwall and Stromness.																																																																																																												
3	Last sailing / flight	✘✘	<p>The last departure from the mainland is 1805. Combined with the early first sailing, this permits a full working day on Orkney mainland.</p> <p>However, the time of the last departure does not allow Rousay / Egilsay / Wyre residents to undertake evening social activities on Orkney mainland or connect with the last flights / ferries from the Scottish mainland (see below).</p> <p>The length of the operating day is also slightly less than that identified in the RSM model service provision.</p>																																																																																																												
4	Time on mainland	✘	<p>Rousay / Egilsay / Wyre residents have amongst the longest amount of time on the Orkney mainland. The hours ashore by timetable summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Rousay-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>8</td> <td>67</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>0</td> <td>60</td> </tr> </tbody> </table> <p>Note the absence of Sunday sailings in the winter.</p> <table border="1"> <thead> <tr> <th colspan="9">Egilsay-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>6</td> <td>65</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>0</td> <td>60</td> </tr> </tbody> </table> <p>Note the absence of Sunday sailings in the winter.</p> <table border="1"> <thead> <tr> <th colspan="9">Wyre-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>6</td> <td>65</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>0</td> <td>60</td> </tr> </tbody> </table> <p>Note the absence of Sunday sailings in the winter.</p>	Rousay-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	10	10	8	67	Ferry - Winter	10	10	10	10	10	10	0	60	Egilsay-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	10	10	6	65	Ferry - Winter	10	10	10	10	10	10	0	60	Wyre-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	10	10	6	65	Ferry - Winter	10	10	10	10	10	10	0	60
Rousay-Time on Mainland																																																																																																															
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																																																							
Ferry - Summer	10	10	10	10	10	10	8	67																																																																																																							
Ferry - Winter	10	10	10	10	10	10	0	60																																																																																																							
Egilsay-Time on Mainland																																																																																																															
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																																																							
Ferry - Summer	10	10	10	10	10	10	6	65																																																																																																							
Ferry - Winter	10	10	10	10	10	10	0	60																																																																																																							
Wyre-Time on Mainland																																																																																																															
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																																																							
Ferry - Summer	10	10	10	10	10	10	6	65																																																																																																							
Ferry - Winter	10	10	10	10	10	10	0	60																																																																																																							
5	Time in Kirkwall / Stromness	✘	See point 4. It should be noted that time in Kirkwall and Stromness is reduced by the need for bus transfer from Tingwall.																																																																																																												
6	Time on island	✓	<p>Time on the islands is also amongst the highest in the archipelago. The frequent service also permits flexibility in the duration of on-island visits, minimising dead time for businesses or those on employers' business.</p> <p>The hours on island by timetable are summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Rousay-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>8</td> <td>6</td> <td>59</td> </tr> <tr> <td>Ferry - Winter</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>8</td> <td>0</td> <td>52</td> </tr> </tbody> </table> <p>Note the absence of Sunday sailings in the winter.</p>	Rousay-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	9	9	9	9	9	8	6	59	Ferry - Winter	9	9	9	9	9	8	0	52																																																																								
Rousay-Time on Island																																																																																																															
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																																																							
Ferry - Summer	9	9	9	9	9	8	6	59																																																																																																							
Ferry - Winter	9	9	9	9	9	8	0	52																																																																																																							

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
			<table border="1"> <thead> <tr> <th colspan="9">Egilsay-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>4</td> <td>3</td> <td>45</td> </tr> <tr> <td>Ferry - Winter</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>4</td> <td>0</td> <td>42</td> </tr> </tbody> </table> <p>Note the absence of Sunday sailings in the winter.</p> <table border="1"> <thead> <tr> <th colspan="9">Wyre-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>3</td> <td>53</td> </tr> <tr> <td>Ferry - Winter</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>0</td> <td>49</td> </tr> </tbody> </table> <p>Note the absence of Sunday sailings in the winter.</p>	Egilsay-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	8	8	8	8	8	4	3	45	Ferry - Winter	8	8	8	8	8	4	0	42	Wyre-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	8	8	8	8	8	8	3	53	Ferry - Winter	8	8	8	8	8	8	0	49
Egilsay-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	8	8	8	8	8	4	3	45																																																																			
Ferry - Winter	8	8	8	8	8	4	0	42																																																																			
Wyre-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	8	8	8	8	8	8	3	53																																																																			
Ferry - Winter	8	8	8	8	8	8	0	49																																																																			
7	Frequency / Sailings per day / Timetable gaps	✓	<p>With up to six connections to Tingwall on a typical day (summer & winter), Rousay / Egilsay / Wyre have a relatively high service frequency.</p> <p>However, it should be noted that Rousay / Egilsay / Wyre have a level of service below the RSM standard.</p>																																																																								
8	Capacity	✗	<p>The sample carryings data provided suggests that there are occasional sailings where vehicle deck capacity issues emerge, particularly at the start at the end of the day. However, capacity constrained sailings appear to be relatively infrequent. It should be noted that the MV <i>Eynhallow</i> is very constrained in terms of deadweight (56 tonnes), which means a sailing can be capacity constrained even if there is space available on the car deck.</p>																																																																								
9	Reliability (weather / mechanical)	✓	<p>There are no major reliability problems on this route. The only minor issues that have emerged during the baselining is that when the MV <i>Shapinsay</i> is relieving on the Rousay / Egilsay / Wyre route, she can be slightly short on power when travelling against the tide to Egilsay. This can lead to slightly extended journey times.</p>																																																																								
10	Comfort	✓	<p>The levels of comfort on the vessel are seen to be appropriate for the length of crossing.</p>																																																																								
11	Physical access	✗	<p>Disabled access to the passenger lounge on the ferry is not step free.</p>																																																																								
12	Integration with PT (local bus)	✓	<p>The connecting bus services at Tingwall are timed to meet the ferry in both directions. The bus will wait for up to 15 minutes for the late arrival of any ferry.</p>																																																																								
13	Integration with PT (strategic)	✗✗	<p>Rousay / Egilsay / Wyre residents cannot catch the first flights to Aberdeen, Edinburgh or Inverness, although they can catch the first Glasgow and Sumburgh flights. Residents also cannot catch the first NorthLink or Pentland Ferries departures, although they can catch the 11:50 Pentland Ferries departure and 11:00 NorthLink departure from Stromness, which operates during peak timetable. Evening integration is poorer – the last ferries of the evening from the Scottish mainland coupled with the flights from Aberdeen, Edinburgh and Inverness arrive after the last departure of the ferry to Rousay / Egilsay / Wyre.</p> <p>Trips to the Scottish mainland therefore require at least one off-island overnight stay.</p>																																																																								
14	Crossing / flight time	✓	<p>The crossing time between Rousay / Egilsay / Wyre and the mainland is relatively short, although indirect crossings can add to the journey time.</p>																																																																								
15	Onboard facilities	✓	<p>The onboard facilities are considered to be appropriate for the length of the crossing.</p>																																																																								
16	Weekday / weekend service variation	✗✗✗	<p>The weekday and Saturday timetables are broadly similar, although Egilsay loses one connection on a Saturday afternoon. The summer Sunday timetable also provides reasonable connectivity.</p> <p>However, the lack of a winter Sunday sailing (due to crewing hours) acts as a</p>																																																																								

	Service Characteristics	Rating	Why is this a problem or not?
			significant constraint on the island, curtailing the ability to undertake day trips to the mainland for personal business. Moreover, if an island resident plans on travelling to the Scottish mainland on a Sunday, they will have to stay on Orkney mainland on the Saturday evening, at significant cost to themselves.
17	Landside infrastructure issues	✓	The service to Rousay / Egilsay / Wyre is operated using a hard ramp vessel which is not particularly intensive in terms of infrastructure.
18	Landside human resources	✓	The service to Rousay / Egilsay / Wyre is operated using a hard ramp vessel which is not particularly intensive in terms of landside human resources.

Hoy (Moaness) & Graemsay

RSM Results

5.4.30 The RSM results for Hoy & Graemsay are set out in the table below:

Table 5.19: Hoy & Graemsay RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Hoy & Graemsay	Acceptable	Number of sailings should be increased to 20+ p/d Substantial under-provision	Current operating day should be extended to more than 14 hours. Marginal under-provision

5.4.31 The Hoy (Moaness) & Graemsay route has seven day sailings throughout the year but the route is substantially under-provided in terms of the number of connections per day and the length of the operating day.

Table 5.20: Hoy (Moaness) & Graemsay Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?
1	Overall Journey Time to Kirkwall / Stromness	✓	The overall journey time between Moaness & Graemsay and Stromness is very short. The ferry berths in the heart of Stromness.
2	First sailing / flight	✓	The first sailing departs Moaness at 08:10 and Graemsay at 07:45 Monday – Friday. This departure allows residents of both islands to commute to work and education on the mainland.
3	Last sailing / flight	xx	<p>The last departure from Stromness departs at 1745. Combined with the early first sailing, this permits a full working day on Orkney mainland.</p> <p>However, the time of the last departure does not allow Graemsay or Hoy residents to undertake evening social activities on Orkney mainland or connect with the last flights / ferries from the Scottish mainland (see below). It also curtails the length of day tourism visits to Hoy, given that the Lyness route has a similar operating day. The only exception to this is on a Friday evening when there is a 21:30 departure from Stromness.</p> <p>The length of the operating day is also substantially less than that identified in the RSM model service provision. A significant step-up in crewing resources would be required meet the RSM defined length of operating day.</p>

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
4	Time on mainland	✘	<p>Hoy and Graemsay residents have amongst the longest amount of time on the Orkney mainland. A 7-day service is provided year round. The hours ashore by timetable summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Hoy (Moaness)-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>13</td> <td>8</td> <td>8</td> <td>65</td> </tr> <tr> <td>Ferry - Winter</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>13</td> <td>6</td> <td>6</td> <td>62</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="9">Graemsay-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>13</td> <td>8</td> <td>8</td> <td>65</td> </tr> <tr> <td>Ferry - Winter</td> <td>9</td> <td>9</td> <td>9</td> <td>9</td> <td>13</td> <td>6</td> <td>6</td> <td>61</td> </tr> </tbody> </table>	Hoy (Moaness)-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	9	9	9	9	13	8	8	65	Ferry - Winter	9	9	9	9	13	6	6	62	Graemsay-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	9	9	9	9	13	8	8	65	Ferry - Winter	9	9	9	9	13	6	6	61
Hoy (Moaness)-Time on Mainland																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	9	9	9	9	13	8	8	65																																																																			
Ferry - Winter	9	9	9	9	13	6	6	62																																																																			
Graemsay-Time on Mainland																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	9	9	9	9	13	8	8	65																																																																			
Ferry - Winter	9	9	9	9	13	6	6	61																																																																			
5	Time in Kirkwall / Stromness	✘	See point 4																																																																								
6	Time on island	✔	<p>Time on the island is amongst the highest in the archipelago. A 7-day service is provided year round. The relatively frequent service also permits flexibility in the duration of on-island visits, minimising dead time for businesses or those on employers' business (whilst the Lyness route provides an alternative means of getting on and off of Hoy).</p> <p>The hours on island by timetable are summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Hoy (Moaness)-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>14</td> <td>9</td> <td>9</td> <td>73</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>14</td> <td>7</td> <td>7</td> <td>69</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="9">Graemsay-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>13</td> <td>8</td> <td>8</td> <td>68</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>13</td> <td>6</td> <td>6</td> <td>64</td> </tr> </tbody> </table>	Hoy (Moaness)-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	14	9	9	73	Ferry - Winter	10	10	10	10	14	7	7	69	Graemsay-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	13	8	8	68	Ferry - Winter	10	10	10	10	13	6	6	64
Hoy (Moaness)-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	10	10	10	10	14	9	9	73																																																																			
Ferry - Winter	10	10	10	10	14	7	7	69																																																																			
Graemsay-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	10	10	10	10	13	8	8	68																																																																			
Ferry - Winter	10	10	10	10	13	6	6	64																																																																			
7	Frequency / Sailings per day / Timetable gaps	✔	With four rotations Monday – Friday (summer and winter) plus an additional freight sailing on Tuesdays, Wednesdays and Fridays and a late evening service on a Friday, this route has a relatively high service frequency.																																																																								
8	Capacity	✘	Capacity is not an issue in terms of total demand. However, the MV <i>Graemsay</i> is a Lo-Lo vessel and can only carry a maximum of two small cars. This deadweight limitation presents a significant constraint on the Moaness – Graemsay – Stromness service, although multi-cats are chartered for use as required.																																																																								
9	Reliability (weather / mechanical)	✘✘✘	Reliability on this route is relatively poor. Tidal constraints at Graemsay frequently lead to the service being rescheduled, whilst the piers at both Graemsay and Moaness are challenging to berth at and exposed to the weather.																																																																								
10	Comfort	✔	The levels of comfort on the vessel are seen to be appropriate for the length of crossing.																																																																								
11	Physical access	✘✘✘	The lack of Ro-Ro facilities and the challenging berths make disabled access to the ferry very poor.																																																																								
12	Integration with	✔	The ferry travels into the heart of Stromness. The X1 public bus service operates																																																																								

	Service Characteristics	Rating	Why is this a problem or not?
	PT (local bus)		on a largely hourly basis to provide onward connections to Kirkwall.
13	Integration with PT (strategic)	xx	<p>The Moaness – Graemsay – Stromness route does not allow Graemsay and Hoy residents to catch the first flights to Aberdeen, Edinburgh and Inverness, although they can catch the first Glasgow and Sumburgh flights. Residents also cannot catch the first NorthLink or Pentland Ferries departures, although they can catch the 1150 Pentland Ferries departure. The 1100 NorthLink service from Stromness, which operates during peak timetable, can also be accessed.</p> <p>Evening integration is poorer – the last ferries of the evening from the Scottish mainland coupled with the flights from Aberdeen, Edinburgh and Inverness arrive after the last departure of the ferry to Graemsay and Moaness.</p> <p>Trips to the Scottish mainland therefore require at least one off-island overnight stay (except on a Friday when there is a late evening sailing).</p>
14	Crossing / flight time	✓	See point 1 above
15	Onboard facilities	✓	The onboard facilities are considered to be appropriate for the length of the crossing.
16	Weekday / weekend service variation	x	<p>Whilst there are fewer weekend than weekday services, the two rotations which operate on a Saturday and Sunday allow for a meaningful day return to be made to both the island and mainland.</p> <p>However, one issue worth noting is that the ferry frequency on a Sunday, combined with the lack of a winter Sunday sailing between Lyness and the mainland may curtail Hoy's crucial tourism industry outwith the summer timetable period.</p>
17	Landside infrastructure issues	xxx	<p>As previously noted, tidal constraints at Graemsay frequently lead to the service being rescheduled, whilst the piers at both Graemsay and Moaness are challenging to berth at and exposed to the weather.</p> <p>An intermediate solution has been proposed to work around the tidal constraints at Graemsay but there are various delivery challenges associated with it.</p>
18	Landside human resources	✓	<p>There were no issues in relation to landside human resources picked up through the consultation.</p> <p>The relatively low population of Graemsay and ongoing need for Lo-Lo facilities could present a long-term challenge in terms of meeting the landside needs of the service.</p>

Hoy (Lyness) & Flotta

5.4.32 This section combines Hoy & Flotta and is focussed specifically on the Lyness – Flotta – Houton route.

RSM Results

5.4.33 The RSM results for Hoy & Flotta are set out in the table below:

Table 5.21: Hoy & Flotta RSM Results

Island	Connection Days	Connections Per Day	Operating Day
Hoy & Flotta	Acceptable (except during winter)	Number of sailings should be increased to 20+ p/d Substantial under-provision	Current operating day should be extended to more than 14 hours. Marginal under-provision

5.4.34 Hoy (Lyness) & Flotta have seven day sailings in the summer (but not in winter) but the route is substantially under-provided in terms of the number of connections per day and the length of the operating day.

Table 5.22: Hoy & Flotta Transport Problems

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
1	Overall Journey Time to Kirkwall / Stromness	✓	The crossing time between Lyness / Flotta and the mainland is relatively short, although indirect crossings can add to the journey time. There are connecting bus services from Houton to Kirkwall and Stromness offering a relatively quick journey time overall.																																																																								
2	First sailing / flight	✓	The first sailing departs Lyness and Flotta at either 06:50 or 07:10. This departure allows residents of both islands to commute to work and education on the mainland.																																																																								
3	Last sailing / flight	✖✖	<p>The last departure from Houton is 17:30. Combined with the early first sailing, this permits a full working day on Orkney mainland (although only just as connections from Kirkwall or Stromness have to be made to Houton, with sufficient contingency built-in).</p> <p>The time of the last departure does not allow Hoy or Flotta residents to undertake evening social activities on Orkney mainland or connect with the last flights / ferries from the Scottish mainland (see below). It also curtails the length of day tourism visits to Hoy, given that the Moaness – Graemsay - Stromness route has a similar operating day.</p> <p>The length of the operating day is also less than that identified in the RSM model service provision.</p> <p>Flotta residents have access to the Talisman launch and can access the mainland outwith the core hours. However, this study is focussed only on future service provision from the perspective of Orkney Ferries.</p>																																																																								
4	Time on mainland	✖	<p>Hoy and Flotta residents have amongst the longest amount of time on the Orkney mainland. The hours ashore by timetable summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1" data-bbox="518 1355 1396 1523"> <thead> <tr> <th colspan="9">Hoy (Lyness)-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>7</td> <td>10</td> <td>66</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>7</td> <td>0</td> <td>55</td> </tr> </tbody> </table> <p>Note the lack of a Sunday connection in winter.</p> <table border="1" data-bbox="518 1545 1396 1713"> <thead> <tr> <th colspan="9">Flotta-Time on Mainland</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>7</td> <td>8</td> <td>64</td> </tr> <tr> <td>Ferry - Winter</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>7</td> <td>0</td> <td>55</td> </tr> </tbody> </table> <p>Note the lack of a Sunday connection in winter.</p>	Hoy (Lyness)-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	10	7	10	66	Ferry - Winter	10	10	10	10	10	7	0	55	Flotta-Time on Mainland										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	10	10	10	10	10	7	8	64	Ferry - Winter	10	10	10	10	10	7	0	55
Hoy (Lyness)-Time on Mainland																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	10	10	10	10	10	7	10	66																																																																			
Ferry - Winter	10	10	10	10	10	7	0	55																																																																			
Flotta-Time on Mainland																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	10	10	10	10	10	7	8	64																																																																			
Ferry - Winter	10	10	10	10	10	7	0	55																																																																			
5	Time in Kirkwall / Stromness	✖	See point 4. It should be noted that the time in Kirkwall & Stromness is slightly reduced by the need to connect from Houton.																																																																								
6	Time on island	✓	Time on the island is amongst the highest in the archipelago. The relatively frequent service also permits flexibility in the duration of on-island visits, minimising dead time for businesses or those on employers' business (whilst the Moaness – Graemsay – Stromness route provides an alternative means of getting on and off of Hoy).																																																																								

	Service Characteristics	Rating	Why is this a problem or not?																																																																								
			<p>The hours on island by timetable are summarised in the table below and are rounded up or down to the nearest whole hour:</p> <table border="1"> <thead> <tr> <th colspan="9">Hoy (Lyness)-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>5</td> <td>9</td> <td>53</td> </tr> <tr> <td>Ferry - Winter</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> <td>5</td> <td>0</td> <td>44</td> </tr> </tbody> </table> <p>Note the lack of a Sunday connection in winter.</p> <table border="1"> <thead> <tr> <th colspan="9">Flotta-Time on Island</th> </tr> <tr> <th></th> <th>Mo</th> <th>Tu</th> <th>We</th> <th>Th</th> <th>Fr</th> <th>Sa</th> <th>Su</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Ferry - Summer</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>4</td> <td>7</td> <td>47</td> </tr> <tr> <td>Ferry - Winter</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>7</td> <td>4</td> <td>0</td> <td>41</td> </tr> </tbody> </table> <p>Note the lack of a Sunday connection in winter.</p>	Hoy (Lyness)-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	8	8	8	8	8	5	9	53	Ferry - Winter	8	8	8	8	8	5	0	44	Flotta-Time on Island										Mo	Tu	We	Th	Fr	Sa	Su	Total	Ferry - Summer	7	7	7	7	7	4	7	47	Ferry - Winter	7	7	7	7	7	4	0	41
Hoy (Lyness)-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	8	8	8	8	8	5	9	53																																																																			
Ferry - Winter	8	8	8	8	8	5	0	44																																																																			
Flotta-Time on Island																																																																											
	Mo	Tu	We	Th	Fr	Sa	Su	Total																																																																			
Ferry - Summer	7	7	7	7	7	4	7	47																																																																			
Ferry - Winter	7	7	7	7	7	4	0	41																																																																			
7	Frequency / Sailings per day / Timetable gaps	✓	With 4-6 rotations Monday – Friday (summer and winter), this route has a relatively high service frequency.																																																																								
8	Capacity	xxx	<p>Car deck capacity and deadweight limitations were alleviated to some extent by the lengthening of the MV <i>Hoy Head</i> in 2013, although car deck capacity does remain a problem on peak sailings.</p> <p>Carryings data from Orkney Ferries suggests that the 09:10 & 16:40 sailings ex-Lyness and 10:15 & 17:30 ex-Houton are the most frequently capacity constrained sailings, highlighting the commuter and day visitor nature of the route.</p> <p>Furthermore, the data suggests that, despite its frequency, the Houton – Lyness – Flotta route records the second highest number of standbys after Westray, suggesting an element of unmet demand.</p> <p>This situation could worsen in the relatively near future if any of the opportunities being pursued for the Lyness Enterprise Area are realised.</p>																																																																								
9	Reliability (weather / mechanical)	✓	There are no major reliability problems on this route.																																																																								
10	Comfort	✗	Whilst only a short crossing, the consultation suggested that the passenger accommodation being below the waterline detracts from the scenic journey to Hoy which tourists enjoy.																																																																								
11	Physical access	✗	Whilst the passenger accommodation is below the water line, physical access is seen to be better than on most older vessels.																																																																								
12	Integration with PT (local bus)	✓	Bus services to Kirkwall and Stromness connect with the ferry at Houton. The bus will wait up to 15 minutes for the late arrival of the ferry.																																																																								
13	Integration with PT (strategic)	xx	<p>Users of the Lyness – Flotta – Houton route cannot catch the first flights to Aberdeen, Edinburgh and Inverness, although they can catch the first Glasgow and Sumburgh flights. Residents also cannot catch the first NorthLink or Pentland Ferries departures, although they can catch the 11:50 Pentland Ferries departure. The 11:00 NorthLink service from Stromness, which operates during peak timetable, can also be accessed.</p> <p>Evening integration is poorer – the last ferries of the evening from the Scottish mainland coupled with the flights from Aberdeen, Edinburgh and Inverness arrive after the last departure of the ferry to Lyness and Flotta. Trips to the Scottish mainland therefore require at least one off-island overnight stay.</p>																																																																								

	Service Characteristics	Rating	Why is this a problem or not?
14	Crossing / flight time	✓	The crossing time between Lyness / Flotta and the mainland is relatively short.
15	Onboard facilities	✓	The onboard facilities are considered to be appropriate for the length of the crossing.
16	Weekday / weekend service variation	***	<p>The Saturday service offers around half the number of connections that are available on a typical weekday. This level of connectivity is relatively low given the popularity of Hoy amongst tourists and day-trippers.</p> <p>There is a good summer Sunday service. However, the lack of a winter Sunday sailing (due to crewing hours) acts as a significant constraint on the islands. As well as curtailing the ability to undertake day trips to the mainland for personal business, it suppresses any inbound travel (particularly tourism). Moreover, if an island resident plans on travelling to the Scottish mainland on a Sunday, they will have to stay on Orkney mainland on the Saturday evening, at significant cost to themselves.</p>
17	Landside infrastructure issues	✗	Landside infrastructure in Lyness & Flotta is broadly fit for purpose. However, there is an ongoing debate as to whether the MV <i>Hoy Head</i> should berth overnight at Lyness (which would require harbour works) rather than at Longhope. The overnighting of the vessel at Longhope leads to an element of 'dead-legging' in the morning and evening, which takes up crewing hours and reduces the number of connections to the mainland. In addition, the vessel was recently damaged in a storm at its overnight berth.
18	Landside human resources	✓	Lyness & Flotta manage the challenges of landside human resources appropriately.

6 Objective Setting

6.1 Overview

- 6.1.1 The setting of Transport Planning Objectives (TPOs) is a key step in the STAG process as they define what the policymaker should be seeking to achieve through the transport intervention. Chapter 5 established the evidence-based transport problems drawing upon the baselining research and community consultation. This chapter sets out the TPOs for the OITS study.
- 6.1.2 We have developed common objectives which can be applied to all islands / routes. These objectives are based on the island 'problems tables' and the wider review of network problems set out in Chapter 5. This common set of TPOs will ensure consistency in the appraisal of options but, at the same time, allow the analysis to take account of the very individual nature of the problems faced by these islands.
- 6.1.3 By applying the TPOs to each island, it will be possible to identify where the current assets and revenue resource are failing to meet the TPOs, which in turn will assist in developing and appraising the options. These TPOs will be used in conjunction with the STAG criteria in the subsequent appraisal.
- 6.1.4 In summary, the main problems (from the above tables) and the corresponding objective developed in relation to each are:
- **Capacity:** the lack of capacity creates uncertainty of travel, or an actual barrier to travel. The capacity issue is a particular problem for the Outer North Isles and Hoy (Lyness route), although other routes have occasional capacity issues. Capacity problems vary by type across island but exist in terms of car deck lane metres, vessel deadweight limitations, reduced vessel winter passenger certificates and a shortage of seats on the air services (exacerbated by education and health use).
 - **Transport Planning Objective 1:** *The capacity of the services should not act as a constraint to regular and essential personal, vehicular and freight travel between the island(s) and Orkney Mainland.*
 - **Time in Kirkwall and / or Stromness / on mainland / on island:** The curtailed periods of time on the mainland and on the island can limit the ability to undertake commuting, personal and employer's business at these locations. This is a particularly key problem in Orkney where the typically single crew, single vessel / aircraft operation leads to a relatively short operating day and many indirect connections to Kirkwall.
 - **Transport Planning Objective 2a:** *Where an island has a 'commutable' combined ferry or drive / public transport / walk time to a main employment centre (e.g. 80 minutes), the connections provided should reliably facilitate commuting.¹⁰⁹*
 - **Transport Planning Objective 2b:** *Where an island does not have a 'commutable' combined ferry or air / drive / public transport / walk time to a main employment centre, the scheduled connections should permit at least a half day (e.g. 4 hours) in Kirkwall or Stromness 7-days a week, all year round.*
 - **Frequency / Sailings per Day / Timetable Gaps:** Frequent timetabled connections provide flexibility and minimise 'dead' time for passengers between ferries / flights. A low service frequency is a particular issue in the Outer North Isles (particularly Eday), although

¹⁰⁹ The assumption here is that it is not reasonable to be expected to provide an air-based commuting service.

the service frequency for islands much closer to the Orkney mainland is relatively low, constrained by single crew, single vessel operations

- **Transport Planning Objective 3:** *The scheduled time between connections should be minimised to increase flexibility for passengers and freight by maximising the number of island connections across the operating day.*
 - **Weekday / Weekend Service Variation:** Whilst there is a generally accepted position with transport services that weekend (particularly Sunday) connectivity is less than that on a typical weekday, the evidence gathered suggests that variations in weekday and weekend services are having a negative impact on islanders in terms of their ability to: interact with the Orkney mainland; make weekend trips to the Scottish mainland; and for tourists to make weekend trips to the islands. Hoy and Rousay / Egilsay / Wyre fare particularly poorly in this respect in that they have no Sunday sailings, whilst a meaningful day return cannot be made from many of the Outer North Isles on a Sunday or during refit period.
 - **Transport Planning Objective 4:** *The level of connectivity provided should minimise the variation within and between weekdays, evenings, Saturdays and Sundays.*
 - **Integration with Public Transport (Strategic):** None of the islands can connect with the first flights / ferries out of Orkney or return to their home island by returning to Orkney on the last flight / ferries. This limits the ability to undertake a day return trip to the Scottish mainland for employer or personal business and leads to costly overnight stays.
 - **Transport Planning Objective 5:** *Where practicable, islanders should be provided with links to strategic onward transport connections without the need for an overnight stay on Orkney mainland.*
- 6.1.5 Whilst weather-related reliability, physical access, comfort and onboard facilities have been identified as problems for a number of the islands, they are issues which will be considered as part of the option development and appraisal process (STAG criteria). For example, any new vessel which emerged from this process would be constructed to modern standards in terms of disabled access and would be designed to ensure the best possible seakeeping etc. The harbour infrastructure would be similarly refurbished or upgraded (depending on the size of the ferry) to meet this requirement.
- 6.1.6 In addition, we have identified a number of issues in relation to integration with local public transport services. The issue of public transport integration sits more within the framework of the Local or Regional Transport Strategy.
- 6.1.7 Landside infrastructure and human resources will also be considered when appraising the cost and risks associated with different options.
- 6.1.8 The table below summarises the extent to which the current service to each island meets the above objectives. A ✓ indicates that the current service delivers this objective, whilst a ✗ indicates otherwise. A 'o' indicates that a given objectives is not relevant to a given island.

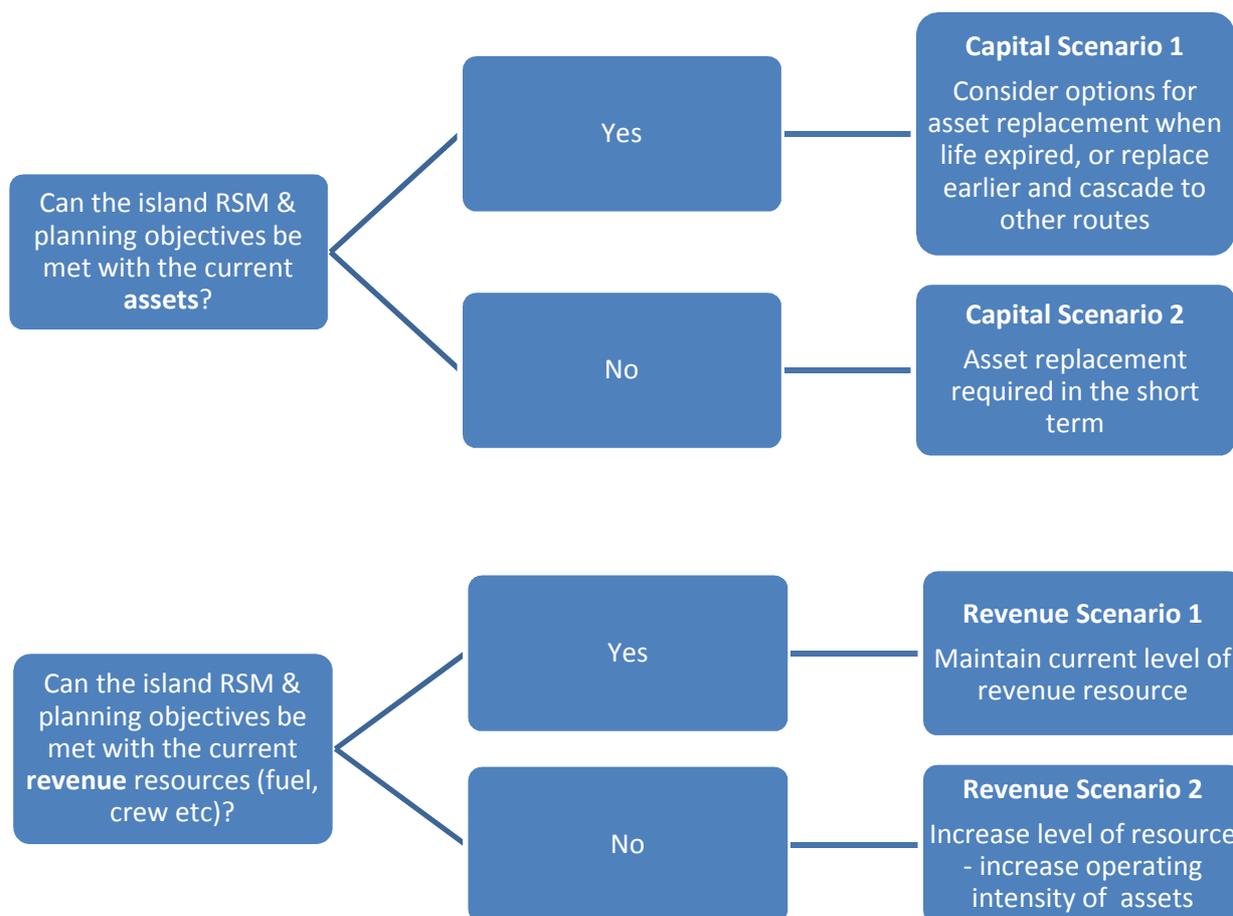
Table 6.1: Current Service and Objectives

Service Characteristics	Does the current service to this island deliver this objective?									
	N Ronaldsay	Papa Westray	Westray	Sanday	Stronsay	Eday	Shapinsay	Rousay / Egilsay / Wyre	Hoy & Graemsay	Hoy & Flotta
Transport Planning Objective 1: The capacity of the services should not act as a constraint to regular and essential personal, vehicular and freight travel between the island and Orkney mainland.	x	x	x	x	x	x	✓	x	x	x
Transport Planning Objective 2a: Where an island has a 'commutable' combined ferry or drive / public transport / walk time to a main employment centre (e.g. 80 minutes), the connections provided should facilitate commuting.	o	o	o	o	o	o	✓	✓	✓	✓
Transport Planning Objective 2b: Where an island does not have a 'commutable' combined ferry or air / drive / public transport / walk time to a main employment centre, the connections provided should permit at least a half day (e.g. 4 hours) in Kirkwall or Stromness 7-days a week, all year round.	✓	✓	✓	✓	✓	✓	o	o	o	o
Transport Planning Objective 3: The scheduled time between connections should be minimised to increase flexibility for passengers and freight by maximising the number of island connections across the operating day.	✓	✓	x	x	x	x	✓	✓	✓	✓
Transport Planning Objective 4: The level of connectivity provided should minimise the variation within and between weekdays, evenings, Saturdays and Sundays.	x	x	x	x	x	x	x	x	x	x
Transport Planning Objective 5: Where practicable and realistic, islanders should be provided with links to strategic onward connections without the need for an overnight stay on Orkney mainland.	x	x	x	x	x	x	x	x	x	x

7 Initial Option Development

7.1 Option Generation

- 7.1.1 A range of transport problems has been identified in relation to each island / island groups and in no cases were there found to be no problem with current connections. The resulting transport planning objectives can be delivered through a combination of **capital** and **revenue** based initiatives.
- 7.1.2 Having set the Transport Planning Objectives for each island stemming from the service-based problems identified, a set of options needs to be generated and in this case, options are being generated across 13 different islands. In dealing with this number of islands, a strategic approach has been adopted to provide structure to the process and to avoid an *ad hoc* approach to option generation. In doing this, a distinction has also been retained between **capital** investment and **revenue** based expenditure. A key issue here is that over a 30 year appraisal period virtually all ferries will require to be replaced (assuming a typical 20-30 year ferry lifespan). The issue is when these vessels are replaced.
- 7.1.3 In broad terms the high level option scenarios and timing of these options in terms of capital and revenue based actions are defined through the following two key questions:



- 7.1.4 Where the current asset mix cannot clearly meet the needs of the island communities as defined through the RSM and planning objectives, a short-term intervention is required.

Where the current assets could meet these needs (either with current or increased revenue resource), it is assumed that the vessel(s) will only be replaced on life expiry unless there is pressing need to do so beforehand. It should be noted that, in Orkney, a number of the vessels are close to life expiry and would have to be replaced in the short-term in any case, the MV *Eynhallow* for example.

7.1.5 In this context, at the island level, an initial assessment of the likely scenarios for **ferry services** is set out in the table below. Note that ‘replace in the short term’ is only flagged if the current assets cannot deliver the required service.

Table 7.1: Capital & Revenue Scenarios

	Anticipated Vessel Life Expiry (based on a 30 year life expiry) ¹¹⁰	Capital Scenario		Revenue Scenario	
		1 – Replace on Life Expiry or replace and cascade	2 – Replace in Short Term	1 – Current Resource	2 – Increased Resource
Outer North Isles	MV <i>Earl Sigurd</i> (2019); MV <i>Earl Thorfinn</i> (2020); MV <i>Varagen</i> (2018), MV <i>Golden Mariana</i> (2003)		✓		✓
Rousay / Egilsay / Wyre	MV <i>Eynhallow</i> (2017)	✓			✓
Shapinsay	MV <i>Shapinsay</i> (2018)	✓			✓
Graemsay & Hoy (Moaness)	MV <i>Graemsay</i> (2026)	✓			✓
Hoy (Lyness) & Flotta	MV <i>Hoy Head</i> (2024)	✓			✓

7.1.6 This initial assessment has been included at this stage to provide context for the option generation and development which follows. It is worth noting that the analysis and evidence has pointed to the need for additional revenue resource (principally crew and fuel) across all of the routes. The appraisal will identify and assess the options in this respect and establish the cost implications and value for money associated with any increase in the service specification.

7.1.7 Note that STAG states that: ‘*The **Option Sifting** process should be undertaken when an unmanageably large number of options have been generated or where there is general consensus that a particular option or options generated will clearly not achieve the intended objectives or meet the identified transport problems and/or opportunities*’.

7.1.8 To this end, this section documents a process whereby:

- options are generated on a systematic basis derived from a set of common themes;
- these options are initially sifted based on the above STAG condition;
- capital-based option themes are expanded upon to produce island specific options

¹¹⁰ Note – the MV *Golden Mariana* is currently scheduled for replacement and the MV *Thorsvoe* would be replaced in 2021 based on a 30 year lifespan.

- revenue-based options are developed to produce island specific options; and
- the surviving capital and revenue options will form the long list for initial appraisal against the planning objectives and STAG criteria.

7.1.9 For each island, three tables are therefore presented as follows:

7.1.10 **Capital Option Themes Sift:** a number of consistent option themes have been developed for ferry-based, air-based and fixed-link based options in turn. For consistency, each option theme is considered in the context of each island and those option themes which are clearly not relevant or appropriate for a given island are sifted out at this stage. A brief note is included explaining any option theme's exclusion to provide a decision making audit trail. Note that at this stage option themes are included or excluded from the '*long list*' on the basis of their potential contribution to the planning objectives and the STAG Criteria ***in their own right*** (they may have an enabling role in relation to another option though). Any option themes in *italics* are specific to that island.

7.1.11 For each route, the 'Do Nothing' involves ongoing use of the current assets, with continuing use of existing assets and the operation of the current service. Given that this study has a thirty-year time horizon during which all assets will have to be replaced, it is assumed that the Do Nothing is not appropriate on any route and is therefore sifted at this stage.

7.1.12 The options at this stage do not address how the vessels will be crewed (e.g. mainland-based, island-based or vessel-based). This is an issue which will be addressed as part of the options appraisal.

7.1.13 The option themes for a **single vessel route** are as follows:

- Do minimum - Replace life expired assets on a like-for-like basis (in terms of capacity). Retain current service / timetable. A like-for-like vessel on a capacity basis would likely have a larger hull form, with implications for pier / linkspan infrastructure.
- One larger capacity vessel
- Two smaller capacity vessels
- Two vessels of the same capacity
- Two larger capacity vessels
- Any role for Freight vessel
- Any role for Passenger only vessel
- New overnight berths
- Relocated harbours
- Conversion of LoLo to RoRo
- Introduce a new air service
- Fixed link – bridge
- Fixed link – causeway
- Fixed link – tunnel

- 7.1.14 Note within each option theme, there can be variants – e.g. in the ‘two smaller capacity vessels’ option, it could be possible to have one smaller vessel and one vessel of the same capacity (the key issue being the point at which a new vessel triggers harbour works).
- 7.1.15 The equivalent list for a **multi-vessel** route which, in the Orkney context is the Outer North Isles is:
- Do minimum - Replace life expired assets on a like-for-like basis (in terms of capacity and built to modern standards). Retain current service / timetable. Like-for-like vessels, in terms of capacity, will be larger than the current vessels
 - Three ferry solution.
 - Four ferry solution.
 - New overnight berths
 - Relocated harbours
 - Conversion of LoLo to RoRo
 - Introduce a new air service
 - Fixed link – bridge
 - Fixed link – causeway
 - Fixed link – tunnel
- 7.1.16 Note that on multi-vessel routes, there could be various combinations of vessel sizes, whilst redeployment options may also be considered. The outturn vessel(s) size would depend on projected loadings associated with the timetable specification. It should also be noted that, replacement vessels may not be introduced at the same time but their introduction / redeployment may be staggered over several years.
- 7.1.17 The issue of the age at which a vessel should be replaced is a complex one. For the purposes of this study, we are assuming a 30 year appraisal horizon, which is used by Transport Scotland in the Scottish Ferries Plan. However, in practice, the design life of current / future vessels and the operational needs of the network will be the key factors in determining replacement dates.
- 7.1.18 **Selected Capital Options:** Each option theme emerging from this initial sift is developed in an island specific context. As well as detailing the **direct option which affects the service offered** (eg new vessel) it also notes any **enabling measures** (eg harbour improvements) which would be required to support this option.
- 7.1.19 **Revenue Options:** A range of revenue based options have also been developed – these are generally associated with more intense use of existing assets (aircraft / vessels) and resources (crew).
- 7.1.20 Each option is described, together with the implication for the service provided and also the likely impact on the level of revenue resource required.
- 7.1.21 Following the consideration of island specific factors, a range of **network wide issues and options** are then outlined (which covers the majority of air service related capital options).

7.1.22 Note that whilst we have identified islands where fares / cost to the user represents a transport problem, the method of setting fares and their absolute level is a policy issue which is beyond the scope of this study.

7.1.23 The Outer North Isles are considered first followed by the Inner and South Isles.

7.2 Outer North Isles

7.2.1 The Outer North Isles have already been the subject of a STAG Part 1 Appraisal completed in March 2015. The network here is complex with:

- three vessels serving six islands;
- a mix of Ro-Ro and Lo-Lo harbours;
- a range of inter-island connections in addition to island to Kirkwall connections; and
- a mix of air and ferry services.

7.2.2 Given this complexity, there are a large number of potential options permutations in delivering the service across this network. The STAG 1 process narrowed the full range of options down but did not get to the stage of defining sets of connections as service options.

7.2.3 All three vessels are nearly 30 years old and in need of imminent replacement.

7.2.4 The service / connectivity options for the Outer North Isles are a combination of island based and network based measures and these are laid out in the table below. This table also reflects the end point of the Part 1 Appraisal.

Capital / Asset-based Option Themes – Outer North Isles

Option Theme		Island Specific Measure						
		ONI Network Wide	Eday	North Ronaldsay	Papa Westray	Sanday	Stronsay	Westray
	Ferry							
Fe1	3 ferry solution	✓						
Fe2	4 ferry solution	✓						
Fe3	Role for Freight vessel / LoLo	✓						
Fe4	Role for Passenger only vessel	✓						
Fe5	New overnight berths		✓	✓	✓			✓
Fe6	Relocated harbours		✓				✓	
Fe7	Conversion of LoLo to RoRo			✓	✓			
Fe8	Conversion from foot passenger service				✓			✓ ¹¹¹
Fe9	Harbour improvements			✓	✓			
	Air							
Air 1	Replacement aircraft	✓						
Air 2	Additional aircraft	✓						
Air 3	Runway lighting	✓						
	Fixed Links							

¹¹¹ Papa Westray – Pierowall service

Option Theme		ON1 Network Wide	Island Specific Measure					
			Eday	North Ronaldsay	Papa Westray	Sanday	Stronsay	Westray
FL1	Fixed Link – bridge (inter-island)		✓ ¹¹²		✓ ¹¹³			✓ ¹¹⁴
FL2	Fixed link – causeway (inter-island)		✓		✓			✓
FL3	Fixed link – tunnel (inter-island)		✓		✓			✓

7.2.5 These broad options are reported in more detail in the table below.

Outer North Isles - Capital / Infrastructure Options

Options	Enabling Measures
Theme Fe1: –Do Minimum	
Replace current vessels with new ferries of a similar capacity	- Potential need for harbour works.
Theme Fe1: –3 * RoPax Ferry Solution	
Replace the current vessels with 3 new ferries, at least one of which offers an increased capacity over the current vessels. For resilience, at least two would need a derrick for Lo-Lo operation at non Ro-Ro harbours.	- Very likely to require harbour works at some locations across the network to accommodate larger vessels.
Theme Fe2: 4 * RoPax Ferry Solution	
Replace the current vessels with 4 new ferries – the size of these ferries would be determined by projected carryings and these could be smaller, the same size or larger than the current vessels. For resilience, at least two would need a derrick for Lo-Lo operation at non Ro-Ro harbours.	- May require harbour works depending on the nature of the vessel - potential requirement for additional overnight berths depending on service configuration.
Theme Fe3: Freight Vessel	
Incorporate a Lo-Lo or Ro-Ro freight only vessel (new or an existing ONI vessel) into the network, primarily to serve North Ronaldsay and Papa Westray. Given that 95% of person trips between North Ronaldsay / Papa Westray and Kirkwall are made by air, there is only a limited requirement for passenger travel which could be carried by a freight vessel certified to carry 12 passengers. Benefits would be a more frequent and flexible service to NR and PW and the vessel could make supplementary calls at other islands, especially if designed for Ro-Ro operations.	- May require harbour works depending on the nature of the vessel
Theme Fe4: Passenger Only Vessel	
Seasonal / school service runs between Papa Westray and Westray. Incorporate a passenger only vessel into the network, primarily to serve Eday – Sanday for the purposes of school children on Eday accessing Sanday Junior High school daily. Could be other opportunities to supplement RoPax services.	- May require minor harbour works depending on the vessel.
Theme Fe5: Overnight Berths	
Improved harbours (and vessels) would permit ferries to overnight in the islands providing an early morning departure to Kirkwall. First departure times from Eday, Sanday, Stronsay and Westray vary widely across the week.	- Vessel accommodation would have to be fit for purpose

¹¹² Westray – Eday for all options

¹¹³ Papa Westray – Westray for all options

¹¹⁴ Westray – Eday and Westray – Papa Westray for all options

Options	Enabling Measures
Vessels cannot currently safely overnight in all conditions at North Ronaldsay, Papa Westray, Eday, or Westray (winter).	
Theme Fe6: Relocated Harbours	
There has long been a proposal to relocate Stronsay harbour to the west of the island to reduce journey times to / from Kirkwall. A relocated harbour to the west of Eday has been proposed in combination with an Eday-Westray fixed link	- None
Theme Fe7: Conversion of LoLo to RoRo	
North Ronaldsay and Papa Westray have no RoRo facility. This would see full RoRo harbour facilities constructed at North Ronaldsay and / or Papa Westray. There could also be intermediate solutions which would see RoRo operation being possible at certain states of the tide	- Vessels would no longer need lifting derricks
Theme Fe8: Conversion from Passenger only	
Papa Westray to Westray (Pierowall) currently runs as a seasonal foot passenger service and year round school service. A RoRo service here would reduce / remove the requirement for the Kirkwall-Papa Westray Lo-Lo ferry connections (although it would put additional pressure on the Kirkwall – Westray service).	- Ro-Ro harbour facilities and suitable vessel
Theme Fe9: Harbour Improvements	
Papa Westray and North Ronaldsay harbours do not facilitate reliable timetabled services. Harbour improvements here would have a direct impact on the current service in their own right.	
Theme Air 1: Replacement Aircraft	
Assumed to offer a greater carrying capacity than current BN Islanders hence more reliable availability of connectivity.	- range of landside infrastructure upgrades at airstrips - landside human resources (fire cover etc) - potential need for navigational aids
Theme Air 2: Additional Aircraft	
May be larger or the same as current aircraft – increase to three or more operational aircraft would greatly increase the number of connections possible on a daily or weekly basis.	- if larger, range of landside infrastructure upgrades at airstrips & potential need for navigational aids - landside human resources (fire cover etc)
Theme Air 3: Runway Lighting	
At a range of ONI islands to facilitate a longer year round operating day	- Additional navigational aids may be required to cater for the cloud base / visibility restrictions at night.
Theme FL1: Fixed Links	
Papa Westray – Westray Westray – Eday	- basic ferry facilities to provide resilience in event of fixed link failure / maintenance etc - supporting road improvements

Outer North Isles: Combinations and Permutations

- 7.2.6 There are a clearly a large number of permutations and combinations of the above infrastructure options, all of which could be thought of as being **components** of an **overall service offering** for the ONI. The next step will to develop these options to determine their feasibility / broad cost and specify the opportunities associated with each.
- 7.2.7 The options which come through this option development process as feasible (technically and financially) will be developed into a manageable set of '**ONI Service Specification**' options.

These will then be subjected to appraisal against the Transport Planning Objectives and STAG criteria and the outcome of this taken to consultation.

7.2.8 A key to developing these ONI Network Specification Options is whether the number of islands to be served changes via the construction of fixed links, ie the number of islands to be served clearly impacts on the number of vessels and aircraft required to provide the appropriate level of connectivity across the ONI ie:

- 6-island scenario – present day arrangements
- 5-island scenario (Westray linked to Papa Westray, or Westray linked to Eday)
 - Reduces the number of harbours / airfields by one
- 4-island scenario (Westray linked to Papa Westray and Westray linked to Eday)
 - Reduces the number of harbours / airfields by two

7.2.9 Also, were Papa Westray to be linked to Westray with a RoPax service, the case for a timetable slot to serve Papa Westray with a Kirkwall service would be much reduced.

7.2.10 These issues will feed into the next stage following option development.

Revenue Options: Outer North Isles

7.2.11 The four most populous ONIs were determined to be under-provided in the RSM in terms of sailings per day and length of operating day. The length of the operating day is essentially constrained by crewing hours and hours of rest legislation.

7.2.12 At present, Orkney Ferries operate on a single crew basis – i.e. one crew operates the vessel on any given day. Broadly speaking the effect of this is to limit the available operating hours to approximately 90 hours per week. The issue then is how this 90 hours is distributed across the day and week.

7.2.13 With three vessels to serve the four primary island and two smaller islands, three vessels and a single crew have been demonstrated not to meet the transport planning objectives and the RSM requirements implying that a step up on revenue and / or capital resources will be required. Some potential revenue options are laid out below.

Option	Service Change	Resource Implication
Do Minimum	None	- maintain current revenue spend levels
Stagger operating day by vessel – eg 0600-1800, 0800-2000 and 1000-2200.	Earlier and later sailings could be achieved	- no additional sailing / working hours but potential contractual issues and implications for shore staff of earlier / later operation
Operate split shift system	Earlier and later sailings could be achieved	- no additional sailing / working hours but potential contractual issues and implications for shore staff of earlier / later operation - This option would be bounded in by minimum hours of rest and may require additional crew. This will be analysed further in the options appraisal.
Use any extended middle of day down time (i.e. outwith time	Additional eg 2 connections per day in early afternoon to Westray / Eday	- fuel & operating costs

Option	Service Change	Resource Implication
required for fuelling, safety drills, maintenance etc).	/ Sanday / Stronsay	
Additional Crew increments	An extended operating day would be achieved – more connections possible across the week	- crew costs - fuel & operating costs
2 * Full Additional Crew.	A full 18 hour operating day would be achieved – many more connections possible across the week	- crew costs - fuel & operating costs
Additional flying hours through increased air resource – crew / aircraft	- Many more connections by air possible - reduction in indirect flights	- crew costs - fuel & operating costs - ground crew costs

7.3 Inner and South Isles

7.3.1 The Inner and South Isles comprise a number of natural mini-networks:

- Graemsay and Hoy (Moaness);
- Hoy (Lyness) and Flotta;
- Rousay, Egilsay and Wyre; and
- Shapinsay

7.3.2 Each of these is taken in turn below and a range of capital and revenue-based options are developed in the context of each.

Graemsay / Hoy (Moaness)

7.3.3 The RSM suggests these islands are under-provided in terms of number of connections and length of operating day. Given the short crossing times to /from the Inner and South Isles, the RSM model service includes a much longer operating day and more services per day when compared to the Outer North Isles.

Capital / Asset-based Option Themes Sift: Graemsay / Hoy (Moaness)

Option Theme		Consider?	Notes
	Ferry		
Fe1	Replace life expired assets on a like-for-like basis	✓	<i>MV Graemsay will be 30 years old in 2026</i>
Fe2	One larger capacity vessel	✓	
Fe3	Two smaller capacity vessels	✗	<i>Low volumes / small populations do not merit consideration of a second vessel</i>
Fe4	Two vessels of the same capacity	✗	<i>Low volumes / small populations do not merit consideration of a second vessel</i>
Fe5	Two larger capacity vessels	✗	<i>Low volumes / small populations do not merit consideration of a second vessel</i>
Fe6	Any role for Freight vessel	✗	<i>The current MV Graemsay is a combi Lo-Lo / passenger vessel and thus a like-for-like replacement would offer a</i>

Option Theme		Consider?	Notes
			<i>better service than a freight only vessel.</i>
Fe7	Any role for Passenger only vessel	✘	<i>Low volumes / small populations do not merit consideration of a second vessel</i>
Fe8	New overnight berths	✘	<i>Vessel overnights in Stromness</i>
Fe9	Relocated harbours	✘	<i>Current locations are suitable</i>
Fe10	Conversion of LoLo to RoRo	✔	<i>This would be a ramp based Ro-Ro</i>
Fe11	Harbour Improvements	✔	
	Air		
Ai1	Investment in air based infrastructure to support current / new air service	✘	
	Fixed Link		
FL1	Fixed link – bridge	✘	
FL2	Fixed link – causeway	✘	
FL3	Fixed link – tunnel	✘	

Selected Capital Options: Graemsay – Hoy (Moaness)

Options	Enabling Measure
Theme Fe1: –Do Minimum	
Replace <i>MV Graemsay</i> with a broadly like-for-like and fit-for-purpose Lo-Lo vessel (73/41 passengers, 24 tonnes, including the ability to handle at least 1 item of plant).	- None
Theme Fe2: – 1 * larger capacity vessel	
Replace <i>MV Graemsay</i> with a larger capacity Lo-Lo vessel.	- This option will likely require some harbour works at Moaness and Graemsay to accommodate the larger vessel.
Theme Fe10: - Conversion to RoRo	
Replace the <i>MV Graemsay</i> with a vessel capable of offering an intermediate solution combining a Lo-Lo and Ro-Ro facility at certain tidal conditions.	- This option will likely require harbour works at Moaness, Graemsay and / or Stromness to accommodate the new vessels depending on the timetable operated.
Replace the <i>MV Graemsay</i> with a full ramp-based Ro-Ro vessel.	- This option will likely require harbour works at Moaness, Graemsay and / or Stromness to accommodate the new vessels depending on the timetable operated.
Theme Fe11: - Harbour Improvements	
The length of the current pier at Moaness creates a tidal restriction on services. Lengthening the pier could remove this restriction.	- None

Revenue Options: Graemsay – Hoy (Moaness)

Option	Service Change	Resource Implication
Do Minimum	None	Continuation of trend on resource funding
Maximise operating intensity of current working day – reduce in port down time (i.e. outwith time)	Would increase service frequency within current operating day	- fuel & operating costs

Option	Service Change	Resource Implication
required for fuelling, safety drills, maintenance etc).		
Additional Crew increments	An extended operating day would be achieved – more connections possible across the week Additional Sunday sailings in Winter Could facilitate more on request early and late sailings	- crew costs - fuel & operating costs
2 * Full Additional Crew	A full 18 hour operating day would be achieved – many more connections possible across the week Sunday sailings in Winter Could facilitate more on request early and late sailings	- crew costs - fuel & operating costs

Hoy (Lyness) / Flotta

Capital / Asset-based Option Themes Sift: Hoy (Lyness) - Flotta

7.3.4 RSM suggests these islands are under-provided in terms of number of connections and length of operating day. In addition there is currently no Sunday service provided in the winter timetable so the RSM requirement for a 7-day service is not met.

Option Theme		Consider?	Notes
	Ferry		
Fe1	Replace life expired assets on a like-for-like basis	x	<i>MV Hoy Head will be 30 years old in 2024. Current vessel has vehicle deck capacity limitations at peak times which materially affect the route (despite recent lengthening of the vessel).</i>
Fe2	One larger capacity vessel	✓	<i>This new vessel could be faster to increase the number of rotations over the length of the operating day.</i>
Fe3	Two smaller capacity vessels	✓	
Fe4	Two vessels of the same capacity	✓	
Fe5	Two larger capacity vessels	✓	
Fe6	Any role for Freight vessel	x	<i>No obvious requirement for freighter in addition to standard service</i>
Fe7	Any role for Passenger only vessel	✓	
Fe8	New overnight berths	✓	
Fe9	Relocated harbours	✓	
Fe10	Conversion of LoLo to RoRo	x	<i>All four harbours are currently RoRo with linkspans</i>
Fe11	Harbour Improvements	✓	<i>See Fe8</i>
	Air		
Ai1	Investment in air based infrastructure to support new air service	x	<i>No obvious need to consider air given proximity and current connectivity to Stromness and Kirkwall</i>
	Fixed Link		

Option Theme		Consider?	Notes
FL1	Fixed link – bridge	x	<i>Hoy is more than 3km from the mainland</i>
FL2	Fixed link – causeway	x	<i>Hoy is more than 3km from the mainland</i>
FL3	Fixed link – tunnel	x	<i>Hoy is more than 3km from the mainland</i>

Selected Capital Options: Hoy (Lyness) and Flotta

Options	Enabling Measure
Theme Fe2: - 1 Vessel Solution	
Replace <i>MV Hoy Head</i> with one vessel with a larger vehicle deck capacity. Exact vessel size would depend on loadings associated with timetable specification. Vessel could be double ended to facilitate easier loading and faster turnaround times in port.	- Likely to require harbour works to accommodate larger vessel
Theme Fe3 and Fe 4: 2 Vessel Solution	
Replace <i>MV Hoy Head</i> with two vessels of similar capacity characteristics to the current vessel. Exact vessel size would depend on loadings associated with timetable specification. Vessels could be double ended to facilitate easier loading and faster turnaround times in port.	- May require harbour works to accommodate new vessels - Additional overnight berth required
Fe7: Passenger Only Vessel	
The <i>MV Flotta Lass</i> currently runs between Flotta and Houton for Flotta oil terminal staff. This service is available to Flotta residents and suggests there could be demand for a permanent foot-passenger service from Flotta. The vessel could conceivably also supplement on the Houton-Lyness route perhaps on a seasonal basis.	- None
Fe8: New Overnight Berths	
<i>MV Hoy Head</i> currently overnights at Longhope and the crew is Hoy-based. A safe overnight berth at Lyness would negate the Longhope leg at the start and end of the day and provide more operating hours on the 'main' route.	- None
Fe9: Relocated Harbours	
A new harbour between Lyness and Moaness has been suggested to provide a shorter, single link to Hoy from the mainland.	- In addition to the harbour itself, significant shoreside investment would be required in the road and other infrastructure.

Revenue Options: Hoy and Flotta

Option	Service Change	Resource Implication
Do Minimum	None	Continuation of trend on resource funding
Additional Crew increments	An extended operating day would be achieved – more connections possible across the week Sunday sailings in Winter Could facilitate more on request	- crew costs - fuel & operating costs

Option	Service Change	Resource Implication
	early and late sailings	
2 * Full Additional Crew	A full 18 hour operating day would be achieved – many more connections possible across the week Sunday sailings in Winter Could facilitate more on request early and late sailings	- crew costs - fuel & operating costs
Remove Longhope start and end of day leg – in combination with Fe8 above	Longer operating day on principal crossing	- crew costs - fuel & operating costs
Split triangular route and provide Houton-Lyness shuttle – in combination with 2-vessel solution	Step change in Houton-Lyness service	- crew costs - fuel & operating costs

Rousay / Egilsay / Wyre

7.3.5 Taken as a group, the RSM suggests these islands are marginally under-provided in terms of number of connections and length of operating day. In addition there is currently no Sunday service provided in the winter timetable so the RSM requirement for a 7-day service is not met.

Capital / Asset-based Option Themes Sift: Rousay-Egilsay-Wyre

Option Theme		Consider?	Notes
Fe1	Replace life expired assets on a like-for-like basis	✓	<i>MV Eynhallow will be 30 years old in 2017</i>
Fe2	One larger capacity vessel	✓	
Fe3	Two smaller capacity vessels	✓	
Fe4	Two vessels of the same capacity	✓	
Fe5	Two larger capacity vessels	✗	<i>Carryings do not merit consideration of two larger vessels</i>
Fe6	Any role for Freight vessel	✗	<i>No obvious role for freight vessel given the level of frequency provided by the ferry service</i>
Fe7	Any role for Passenger only vessel	✓	<i>This vessel would support some of the Egilsay and Wyre connections, either to Rousay or the mainland.</i>
Fe8	New overnight berths	✗	<i>Vessel overnights at Rousay which is satisfactory</i>
Fe9	Relocated harbours	✗	<i>Harbour locations are broadly suitable</i>
Fe10	Conversion of LoLo to RoRo	✗	<i>All harbours are currently hard ramps</i>
Fe11	Harbour Improvements	✗	<i>Current harbour arrangements do not routinely inhibit ferry operations</i>
	Air		
Ai1	Investment in air based infrastructure to support new air service	✗	
	Fixed Link		
FL1	Fixed link – Egilsay-Rousay bridge	✓	
FL2	Fixed link – Egilsay-Rousay causeway	✓	

Option Theme		Consider?	Notes
FL3	Fixed link – tunnel	x	

Selected Capital Options: Rousay-Egilsay-Wyre

Options	Enabling Measure
Theme Fe1: Do Minimum	
Replace <i>MV Eynhallow</i> with a broadly like-for-like and fit-for-purpose vessel.	- None
Theme Fe2: 1 * larger capacity vessel	
Replace <i>MV Eynhallow</i> with a hard-ramp compliant larger vessel. Could be double-ended to facilitate easier loading faster turn-around in port. Size and specification dependent on projected carryings and timetable. Capacity increase should be for vehicle deck and dead weight.	- This option may require harbour works to accommodate a new and larger vessel.
Theme Fe3 and Fe 4: 2 Vessel Solution	
Replace <i>MV Eynhallow</i> with two vessels of similar capacity characteristics to the current vessel. Exact vessel size would depend on loadings associated with timetable specification. Vessels could be double ended to facilitate easier loading and faster turnaround times in port.	- May require harbour works to accommodate new vessels - Additional overnight berth required
Theme Fe7: Foot Passenger Ferry	
A foot passenger ferry could provide more frequent connections to Rousay from Egilsay and Wyre. This would free up the main vessel to make more regular trips between Rousay and Tingwall.	- Some harbour works may be required to accommodate the new foot passenger vessels.
Theme FL1 & FL2: – Fixed Links	
A fixed link has previously been proposed between Egilsay and Rousay.	- supporting road improvements

Revenue Options: Rousay-Egilsay-Wyre

Option	Service Change	Resource Implication
Do Minimum	None	Continuation of trend on resource funding
Additional Crew increments	An extended operating day would be achieved – more connections possible across the week Sunday sailings in Winter Could facilitate more on request early and late sailings	- crew costs - fuel & operating costs
2 * Full Additional Crew	A full 18 hour operating day would be achieved – many more connections possible across the week Sunday sailings in Winter Could facilitate more on request early and late sailings	- crew costs - fuel & operating costs - crew availability

Shapinsay

7.3.6 The RSM suggests that Shapinsay is substantially under-provided in terms of number of connections and length of operating day.

Capital / Asset-based Option Themes Sift: Shapinsay

Option Theme		Consider?	Notes
Fe1	Replace life expired assets on a like-for-like basis	✓	<i>MV Shapinsay</i> will be 30 years old in 2018, although has benefitted from recent life extension work.
Fe2	One larger capacity vessel	✓	
Fe3	Two smaller capacity vessels	✓	
Fe4	Two vessels of the same capacity	✓	
Fe5	Two larger capacity vessels	✗	<i>Carryings do not merit consideration of two larger vessels</i>
Fe6	Any role for Freight vessel	✗	<i>No obvious role for freight vessel given the level of frequency provided by the ferry service</i>
Fe7	Any role for Passenger only vessel	✓	
Fe8	New overnight berths	✗	<i>Vessel overnights at Shapinsay which is satisfactory</i>
Fe9	Relocated harbours	✗	<i>Harbour locations are appropriate</i>
Fe10	Conversion of LoLo to RoRo	✗	<i>Harbours are currently hard ramps</i>
Fe11	Harbour Improvements	✗	<i>Current harbour arrangements do not routinely inhibit ferry operations</i>
	Air		
Ai1	Investment in air based infrastructure to support new air service	✗	<i>Shapinsay is the closest island to Kirkwall</i>
	Fixed Link		
FL1	Fixed link – bridge	✗	<i>Option was ruled out during the ONI STAG Part 1</i>
FL2	Fixed link – causeway	✗	<i>Option was ruled out during the ONI STAG Part 1</i>
FL3	Fixed link – tunnel	✗	<i>Option was ruled out during the ONI STAG Part 1</i>

Selected Capital Options: Shapinsay

Options	Enabling Measure
Theme Fe1: Do Minimum	
Replace <i>MV Shapinsay</i> with a broadly like-for-like and fit-for-purpose vessel.	- None
Theme Fe2: 1 * larger capacity vessel	
Replace <i>MV Shapinsay</i> with a hard-ramp compliant larger vessel. Could be double-ended to facilitate easier loading faster turn-around in port. Size and specification dependent on projected carryings and timetable. Capacity increase should be for vehicle deck and dead weight.	- May require harbour work to accommodate new vessels.
Theme Fe3 and Fe 4: 2 Vessel Solution	
Replace <i>MV Shapinsay</i> with two vessels of similar capacity characteristics to the current vessel. Exact vessel size would depend on loadings associated with	- May require harbour works to accommodate new vessels - Additional overnight berth required

Options	Enabling Measure
timetable specification. Vessels could be double ended to facilitate easier loading and faster turnaround times in port.	
Theme Fe7: Foot Passenger Ferry	
A community-run foot passenger ferry runs additional sailings at present, beyond the current timetable.	- Some harbour works may be required to accommodate any new foot passenger vessels.

Revenue Options: Shapinsay

Option	Service Change	Resource Implication
Do Minimum	None	Continuation of trend on resource funding
Maximise operating intensity of current working day – reduce in port down time (i.e. outwith time required for fuelling, safety drills, maintenance etc).	Would increase service frequency within current operating day	- fuel & operating costs
Additional Crew increments	An extended operating day would be achieved – more connections possible across the week Sunday sailings in Winter Could facilitate more on request early and late sailings	- crew costs - fuel & operating costs
2 * Full Additional Crew	A full 18 hour operating day would be achieved – many more connections possible across the week Sunday sailings in Winter Could facilitate more on request early and late sailings	- crew costs - fuel & ope/rating costs

7.4 Network Wide Options

7.4.1 There are a number of aspects of the service delivery which do not lend themselves to consideration at the island level. These are discussed in this section.

Aircraft

7.4.2 Aircraft are clearly not tied to routes to the degree that ferries are. Options surrounding future aircraft policy (ie number, size, specification) cannot therefore be considered on an individual route or island basis. Over the 30 year plan period the main options are:

Option Themes	Enabling Measure
Do Minimum	
Maintain and continue with current Britten Norman Islanders (retained as the Do Minimum) for the next 30 years	- no major works required
Theme 1: – like for like replacements	
Replace the two aircraft with new / newer Britten Norman Islanders when life expired	- no major works required
Theme 2: - addition of a third aircraft, like-for-like	
Supplement the two aircraft or their replacements with a third Britten Norman Islander.	- no major works required - crewing implications

Option Themes	Enabling Measure
Theme 3: – larger capacity aircraft	
Replace the two aircraft with new larger capacity aircraft	- likely to require works at island airstrips
Theme 4: – addition of third larger capacity aircraft	
Supplement Theme 2 or Theme 3 with one additional larger aircraft.	- likely to require works at island airstrips - crewing implications
Theme 5: Rotary Solutions	
Use of helicopters to provide island air services	- likely to require some landside investment on the islands and potentially at Kirkwall.
Theme 6: Runway Lighting	
Install runway lighting on island airstrips to facilitate take-off and landing after nightfall. A longer year round operating day could potentially be provided.	- none
Theme 7: Navigational Aids	
Ground and / or air based aids to navigation to facilitate flying in visibility and at night that Visual Flight Rules would prevent. Improved reliability.	- none

7.4.3 Note that it would not be possible to provide an air service with only one aircraft as it is essential that a year round, resilient service is provided and this would not be possible with only one aircraft.

7.4.4 Any development of the scale of the air service beyond that which is currently provided would imply a major investment in aircraft, airstrips and associated infrastructure. The costs associated with this will be considered in the context of the benefits which could arise.

Fuel Types (Ferries)

7.4.5 There are a range of potential options for fuel types for future vessels. Some of these would have a landside infrastructure requirement. All these network wide options will be considered as part of the Appraisal.

7.5 Next Steps – Option Development and Appraisal

Option Development

7.5.1 The above capital / infrastructure and revenue options can be thought of as **components** of the potential **service specifications** for each island, ie the components are:

- vessels & aircraft;
- harbours and airstrips;
- timetables and connectivity;
- supporting infrastructure (eg navigational aids); and
- crewing and other human resources.

7.5.2 Any **service specification** will therefore comprise a range of these **components**.

7.5.3 During the **option development** phase, each of the components which have come through the sifting process described in this section will be worked up in sufficient and proportionate detail to determine their outline feasibility (cost / technical) or otherwise. Having determined

this, a manageable subset of **service specifications** will be developed for each island / network and it is these which will be taken into the appraisal process.

Service Specification Appraisal

7.5.4 This qualitative appraisal will then consider these service specification options in the context of:

- Transport planning objectives
- Routes and Services Methodology outcomes
- STAG criteria
- Established policy directives
- Feasibility, affordability and likely public acceptability