



now
part of



Stantec

M

MOTT
MACDONALD

M

Orkney Inter-Island Transport Study – Outer North Isles Outline Business Case Phase 1

Stronsay Public
Exhibition

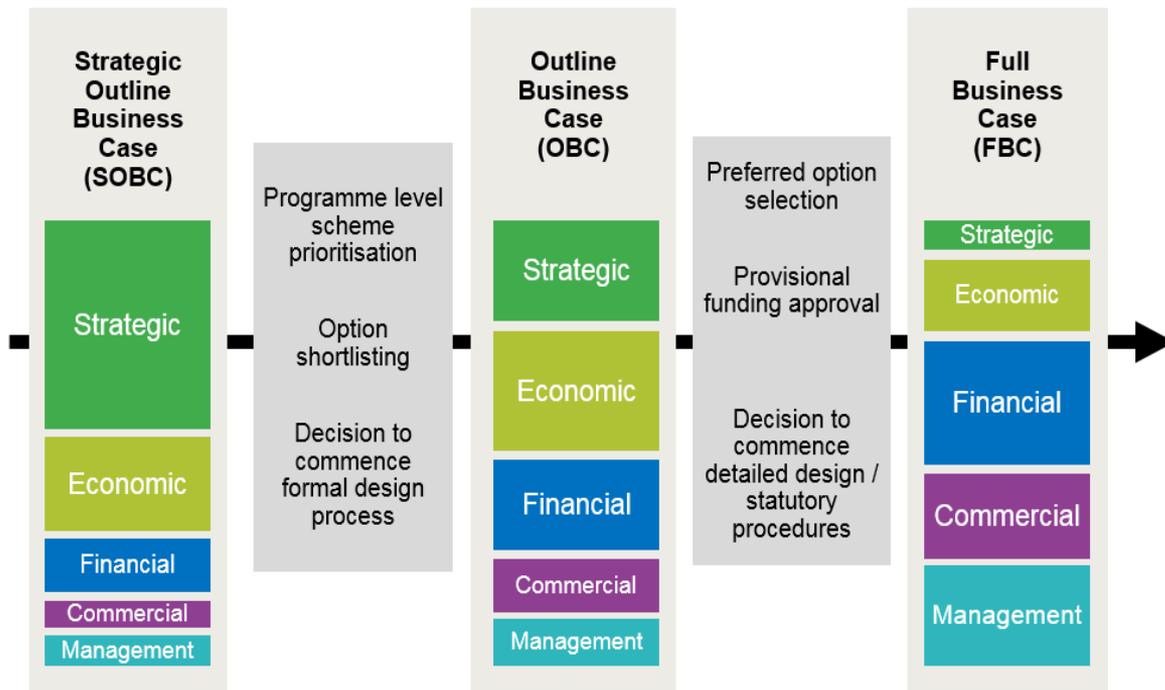
26th June 2019

The story so far...

- In autumn 2015, Orkney Islands Council, in partnership with HITRANS, Highlands & Islands Enterprise and Transport Scotland commissioned the Orkney Inter-Island Transport Study (OIITS)
 - The study made the case for additional capital & revenue funding for Orkney's internal transport network, recognising that both service levels and the replacement of capital assets lagged equivalent areas of Scotland
- The initial phase of OIITS ran from September 2015 to October 2016 and developed the **Strategic Business Case (SBC)**, which:
 - Developed the 'case for change' for investment in inter-island transport infrastructure and services across the Orkney Islands
 - Developed and appraised a range of options to meet the identified transport needs of each island and shortlisted a number of these options for further consideration at Outline Business Case stage
- The SBC concluded that the immediate priorities to progress to **Outline Business Case (OBC)** were:
 - additional **revenue funding** to operate more services
 - capital investment in **new vessels and supporting infrastructure** for the Outer North Isles

Making the case for investment...

- Securing investment in transport infrastructure in Scotland requires a 'business case' to be made in three stages:
 - **Strategic Business Case (SBC):** Develops and considers a range of options to meet an identified set of transport needs
 - **Outline Business Case (OBC):** Determines a **preferred option** and outlines the means by which it should be funded, procured and delivered
 - **Final Business Case (FBC):** Undertaken at the point of procurement refines business case and finalises the funding, procurement and delivery mechanisms



Outer North Isles Capital Outline Business Case

- The SBC concluded the following for the Outer North Isles network:
 - There is a requirement for **four** new vessels (plus a replacement for the MV *Golden Mariana*) if the year-round level of service offered is to be in line with RSM:
 - This may be either
 - **4 Ro-Pax** (roll-on/roll-off passenger vessels) or
 - **3 Ro-Pax vessels and 1 freighter** (which would carry freight and cars but would be limited in terms of passenger numbers)
- The ONI Capital OBC was commissioned in September 2018 and consists of two phases:
 - **Phase 1 (September 2018 – August 2019)**
 - answers a set of infrastructure questions which will define the future shape of the ONI network
 - **Phase 2 (August 2019 – end 2019 / early 2020)**
 - will determine the preferred vessel mix, the case for a third aircraft and timetables / service levels which could be derived from this

What are we presenting today – Phase 1?

- ‘Phase 1’ of the OBC defines the network which will be served by the four new vessels:
 - Is this a **six or five island** solution (i.e. if Papa Westray’s link is converted to a Ro-Ro service to Westray)?
 - Should **Stronsay ferry terminal** be relocated to the west of the island?
 - Are **crane-based vessels** required or should a different solution be adopted for North Ronaldsay (and potentially Papa Westray)?
 - What are the costs and technical solutions for developing year-round **overnight berths at Eday and Westray**?

Option Development & Costing

- **Option Development**

- **‘Indicative Outer North Isles design vessel’** was required for the purpose of developing terminal drawings and costings:
 - A design for a double-ended 31 car (based on today’s size of car) ferry certified to operate in the ONI waters was provided by a naval architect
 - It is 65m length overall and provides a common baseline against which to compare the relative costs of different options

- **Option Costing**

- Costing of options undertaken in ‘Phase 1’ provide sufficient detail to make a decision on the major infrastructure questions
- Any options progressed will be subject to further development in ‘Phase 2’ of the OBC

North Ronaldsay & Papa Westray

North Ronaldsay – The Case for Change

- **Exposed berth**
 - Poor reliability – island can go several weeks without a sailing in winter, disrupting the supply-chain
 - Vessel moves vertically and horizontally whilst on berth, making crane-based operations challenging
- **Ship-based crane operation**
 - Impacts on future ONI Ro-Pax design (1 or 2 vessels would require a crane) or bespoke freighter required
 - Restrictions on weight / size of goods moved
 - Perception of potential medium-term safety & regulatory concerns on more exposed berths
- **Tidally constrained berth**
 - Requires an envelope of hours to be allocated in timetable – affects network efficiency and steaming hours available to other islands
- **Long turn-around times**
 - Lo-Lo (Lift on–Lift off) is one of the factors requiring the long time-slot in the timetable for North Ronaldsay runs
 - Tightens the windows in which the service can operate
- **Fresh products brought in by air**
 - Requirement for bespoke freight flights
- North Ronaldsay also has an aspiration to grow its tourism market, which is challenging at present given the dependence on capacity-constrained aircraft

Papa Westray – The Case for Change

- **Exposed berth**

- Whilst not as exposed or tidally constrained as North Ronaldsay, the current berth does impact on reliability

- **Ship-based crane operation**

- Impacts on future ONI Ro-Pax design (1-2 vessels would require a crane) or bespoke freighter required
- Restrictions on weight / size of goods moved
- Perception of potential medium-term safety & regulatory concerns

- **Long turnaround times for Lo-Lo**

The Future of Lo-Lo

- The SBC **ruled out** converting North Ronaldsay and Papa Westray (Kirkwall service) to Ro-Ro, largely on cost grounds but also because the air service carries 95% of passengers and the technical challenges of building at such exposed sites.

However, In further developing the SBC:

- Continued Lo-Lo operation would have **implications for the size, design and cost of any new ferries**, thus impacting on the service to the other islands
- There is **no precedent** for a life-expired Lo-Lo service to be replaced on a like-for-like basis
- There has been a **long-term programme of conversion of Lo-Lo to Ro-Ro** in Scotland (and in Orkney)
- Even in islands of **low population (e.g. the Small Isles)**, significant investment has been made to convert the service to Ro-Ro **for improved handling of freight**
- **Perceived** risk that health & safety or other regulatory changes could narrow the operational window in which crane operations can take place
- **Lo-Lo is no longer considered a viable option and is excluded from further consideration**

Papa Westray-Westray Ro-Ro Costs

| | Cost (£m) | Cost including Optimism Bias (£m) |
|--|--------------------|-----------------------------------|
| Papa Westray slipway for 30m vessel | £5.7 | £8.1 |
| Pierowall slipway for 30m vessel (All 3 options) | £3.3 | £4.8 |
| Vessel | £1.5-£3.0 | N/A |
| TOTAL | £10.5-£12.0 | £14.4-£15.9 |

- Total infrastructure & vessel costs for a Papa Westray – Westray Ro-Ro service would therefore be in the region of **£10.5m-£12.0m** (or **£14.4m-£15.9m** when ‘*optimism bias*’ is included for appraisal purposes)
- There would be an increase in net operating cost of around **£275k per annum**, although dependent on vessel size and certification
- Having considered the option of a Papa Westray to Westray RoRo, the next slides consider a **Papa Westray (Moclett) to Kirkwall RoRo service**

North Ronaldsay & Papa Westray Infrastructure Costs

| | Cost (£m) | Cost including Optimism Bias (£m) |
|--|--------------|-----------------------------------|
| North Ronaldsay | | |
| Vessel Scenario 1 – 45m Linkspan | £12.5 | £18.0 |
| Vessel Scenario 2 – 50m Slipway | £9.9 | £14.2 |
| Vessel Scenario 3 – 65m Linkspan | £14.1 | £20.3 |
| Papa Westray | | |
| Vessel Scenario 1 – 45m Linkspan | £10.7 | £15.4 |
| Vessel Scenario 2 – 50m Slipway | £7.6 | £10.9 |
| Vessel Scenario 3 – 65m Linkspan | £12.5 | £18.0 |
| Totals | | |
| Vessel Scenario 1 – 45m Linkspans | £23.2 | £33.4 |
| Vessel Scenario 2 – 50m Slipways | £17.5 | £25.1 |
| Vessel Scenario 3 – 65m Linkspans | £26.6 | £38.3 |

- Breakwater at North Ronaldsay considered to improve shelter, but anticipated that it would cost in excess of £10m - ruled out on value for money grounds
- Vessel Scenario 1 would represent a **13% saving** on the 'max' option
- Vessel Scenario 2 would represent a **34% saving** on the 'max' option

Papa Westray – Preferred Option

- Approximate cost of a **Papa Westray – Westray Ro-Ro** service is:
 - **£9m** for harbour **infrastructure**
 - **£1.5m-£3m** for an appropriate **vessel**, making a total of:
 - **£10.5m-£12m** (excluding optimism bias), plus...
 - a net increase in **operating costs** of around **£0.275m** per annum
- The approximate cost range for infrastructure for a **Papa Westray – Kirkwall Ro-Ro** is:
 - **£7.6m-£12.5m** (excluding optimism bias), with no additional vessel or operating costs
- There is little difference in *infrastructure costs* between the two options, but the Papa Westray–Westray Ro-Ro would require a long-term commitment to funding the revenue costs of the scaled-up service, which makes it more expensive over a long period
- The decision finely balanced, but on the grounds that the Papa Westray – Westray Ro-Ro would be more expensive in the long-term and does not appear to enjoy majority local support, this option is **ruled out**
- The preferred option for **Papa Westray is therefore a Kirkwall Ro-Ro service**

Papa Westray & North Ronaldsay – Preferred Option

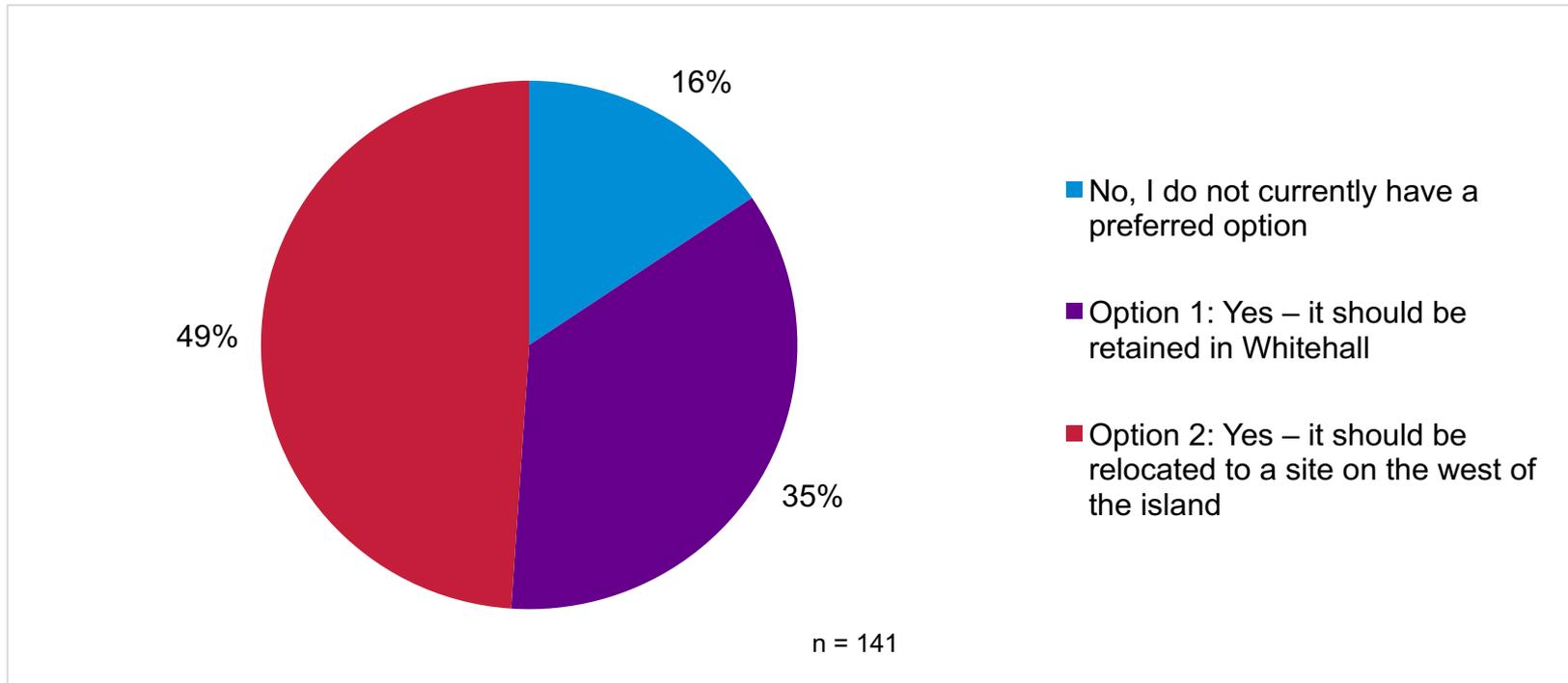
- To maximise operational efficiency, a **common solution is required for Papa Westray and North Ronaldsay**. Combined infrastructure costs (excluding optimism bias) for the vessel scenarios are as follows:
 - Vessel Scenario 1: 45m linkspan = £23.2m
 - Vessel Scenario 2: 50m slipway = £17.5m
 - Vessel Scenario 3: 65m linkspan= £26.0m
- **65m linkspan Ro-Pax ferry**
 - This would provide complete consistency of vessels and infrastructure across the planned ONI network. However, the current North Ronaldsay & Papa Westray services are predominantly supply-chain links only, with 1-2 calls per week
 - From a value for money perspective, the scale of investment associated with this option is therefore disproportionate
- **50m Slipway Ro-Pax ferry**
 - Whilst lower cost, this would limit vessel deployment flexibility and in many cases would require operating a slipway-design vessel from linkspans
 - It is unlikely that there would be a refit vessel capable of operating from a slipway available for North Ronaldsay and Papa Westray
 - Vessel design and construction costs could also be higher as the design would deviate from the other proposed ONI vessels
- A more appropriate option is to operate the service using a **45m linkspan Ro-Pax ferry**
 - This vessel would be of sufficient size for North Ronaldsay & Papa Westray and could operate lower volume sailings across the network on times / days when not serving these two islands
 - This solution depends on adequate refit cover from either (a) the retention of one of the *Earls* in the short-term (reverting to Lo-Lo during this time); (b) the deployment of MV *Thorsvoe* in freight mode; or (c) chartering of a multi-cat type vessel
 - **The current preferred option for Papa Westray and North Ronaldsay is a Kirkwall-based Ro-Ro service using a 45m vessel operating from linkspans, with an estimated capital cost of £23.2m (excluding optimism bias), although further consideration is being to the slipway option.**
 - If a suitable relief vessel could not be found, the solution would either be to build two of the new ONI vessels to 45m LOA or scale up North Ronaldsay and Papa Westray to accommodate the 65m vessel

Stronsay Harbour

Overview

- Stronsay ferry terminal is located in the main settlement of Whitehall in the north of the island
- During the conversion of the ONI network to Ro-Ro in the 1980s, proposals for relocating Stronsay ferry terminal to the west of the island were considered but not implemented
- The retention of Whitehall as Stronsay's ferry terminal has created a number of challenges
 - The steaming time to Stronsay from Kirkwall, Eday and Sanday is longer than would be the case if the terminal was located in the west of the island
 - The berth at Whitehall is exposed to wind and wave motion from the north
 - The passage to / from the berth is exposed to easterly and south-easterly winds in Sanday Sound and the channel at Papa Stronsay
 - The channel also requires regular dredging to maintain adequate under-keel clearance
- A review of the location of Stronsay Harbour is therefore a key 'network definition' task in the OBC

Views of Stronsay Residents – Household Survey (1)



- Outer North Isles Household Survey
 - 49% (69 respondents) of Stronsay respondents selected relocation of the ferry terminal to west side of the island as their preferred option
 - However, 35% (50 respondents) indicated that their preference was for the retention of terminal in Whitehall

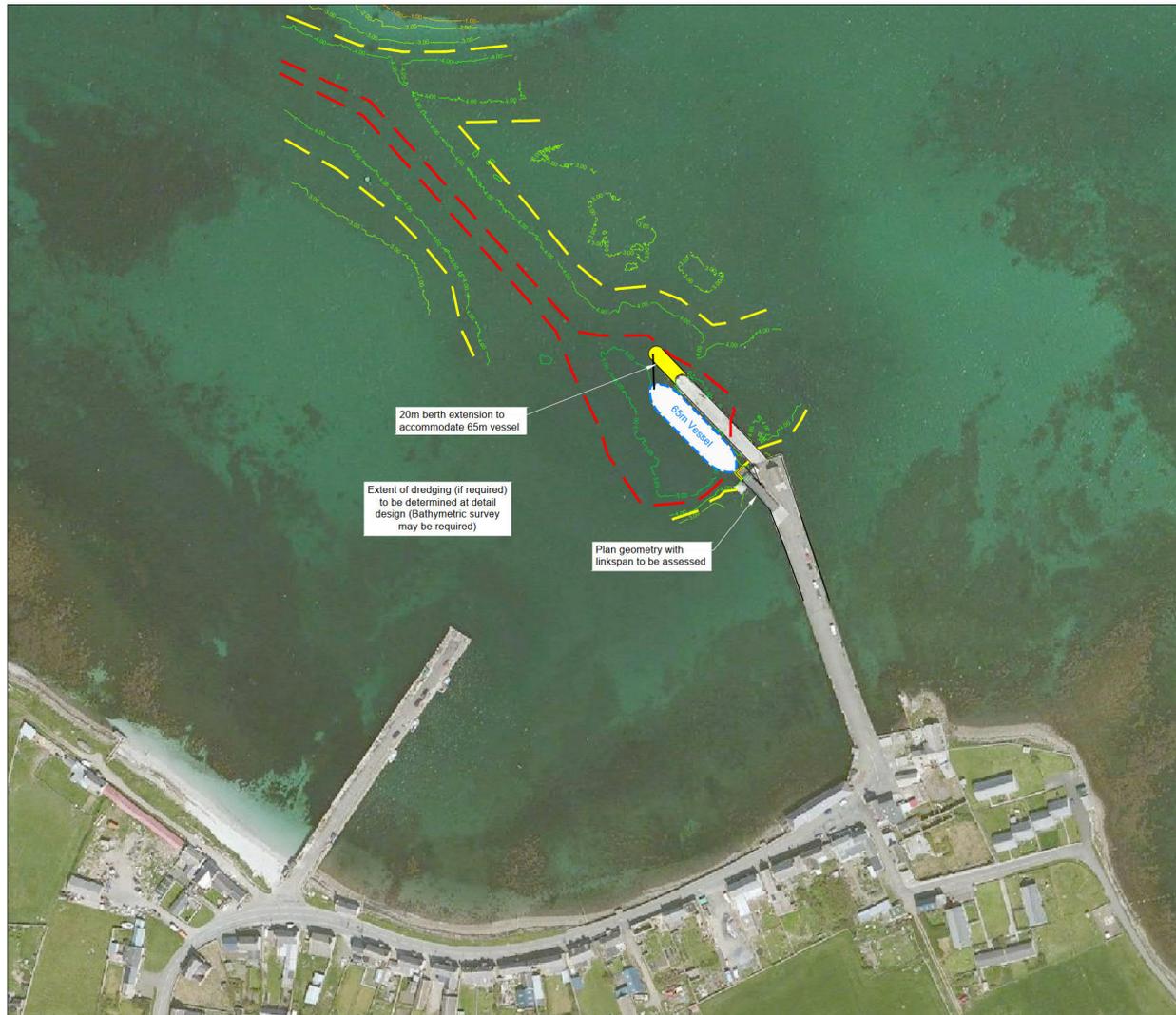
Views of Stronsay Residents – Household Survey (2)

- Of the 69 respondents which supported relocation of the terminal, 63 provided their reasons – of these:
 - 15 people commented that the reduced journey times to Kirkwall would improve accessibility to Orkney mainland and would grow tourism on the island
 - 6 respondents noted that relocating the terminal would reduce the crossing time on indirect services, which would be of particular benefit during the refit period
 - Other comments included easier navigation to the berth
- Of the 50 respondents which supported the retention of the ferry terminal in Whitehall:
 - The majority of comments expressed concern about the impact on the village in terms of a loss of passing trade
 - The second most cited issue was the reduction accessibility for foot passengers, particularly for those without access to a vehicle
 - It was also thought that this could increase the demand for taking a vehicle onto the ferry, giving rise to capacity pressures
 - One respondent noted that Linga Holm is a breeding and hauling out ground for common seals, and thus any terminal in that location could have an impact upon them (although the site has no environmental designations)
- It should be noted that the wider ONI consultation exercise did identify strong support for relocating the terminal in Eday and Sanday as it would reduce journey times on indirect sailings

Assessment of Options

- Four options for the future location of Stronsay harbour were considered
- **Option 1: Retain terminal in Whitehall**
 - Retains and improves current operation
 - Whitehall is however exposed to wind & wave motion from the north
 - Passage through Sanday Sound is exposed to easterly and south-easterly winds
 - Channel at Papa Stronsay navigationally challenging
 - **Retained for further consideration – maintains current position**
- **Option 2: New harbour in Huip Sound East**
 - Adjacent to airfield – any new harbour would need to be in the south of the bay, which moves into shallows and exposes it more to the weather
 - Journey time savings limited compared to alternative options
 - **Rejected from further consideration – few benefits for scale of cost**
- **Option 3: New harbour in Linga Sound**
 - More sheltered than Option 2 (although exposed to westerlies)
 - Significant journey time savings
 - Landform at location unfavourable - with a 5 metre cliff, extensive cut and fill exercise would be required to arrange access to quays etc.
 - **Rejected from further consideration due to challenging topography and exposure to westerlies**
- **Option 4: New harbour in lee of Linga Holm**
 - Landform favourable and more sheltered than Options 2&3. Also more sheltered
 - Significant journey time savings
 - Common seal breeds on Linga Holm but this is not a designated site.
 - **Retained for further consideration as the most advantageous ‘west of island’ option**

Option 1: Retain Terminal in Whitehall



Orkney ONI OBC Option Development Stronsay (Whitehall)

Current Vessels

- 3 ONI RoRo Vessels; MV Earl Sigurd, MV Earl Thorfinn and MV Varagen

Potential Future Vessel (Shown)

- 65m RoRo Vessel, 14.3m beam and 3.7m draught, maintaining capacity of current fleet
- Double ended vessel should help with manoeuvrability

Potential Solution (Shown)

- Extend berth by 20m to accommodate 65m vessel

Notes

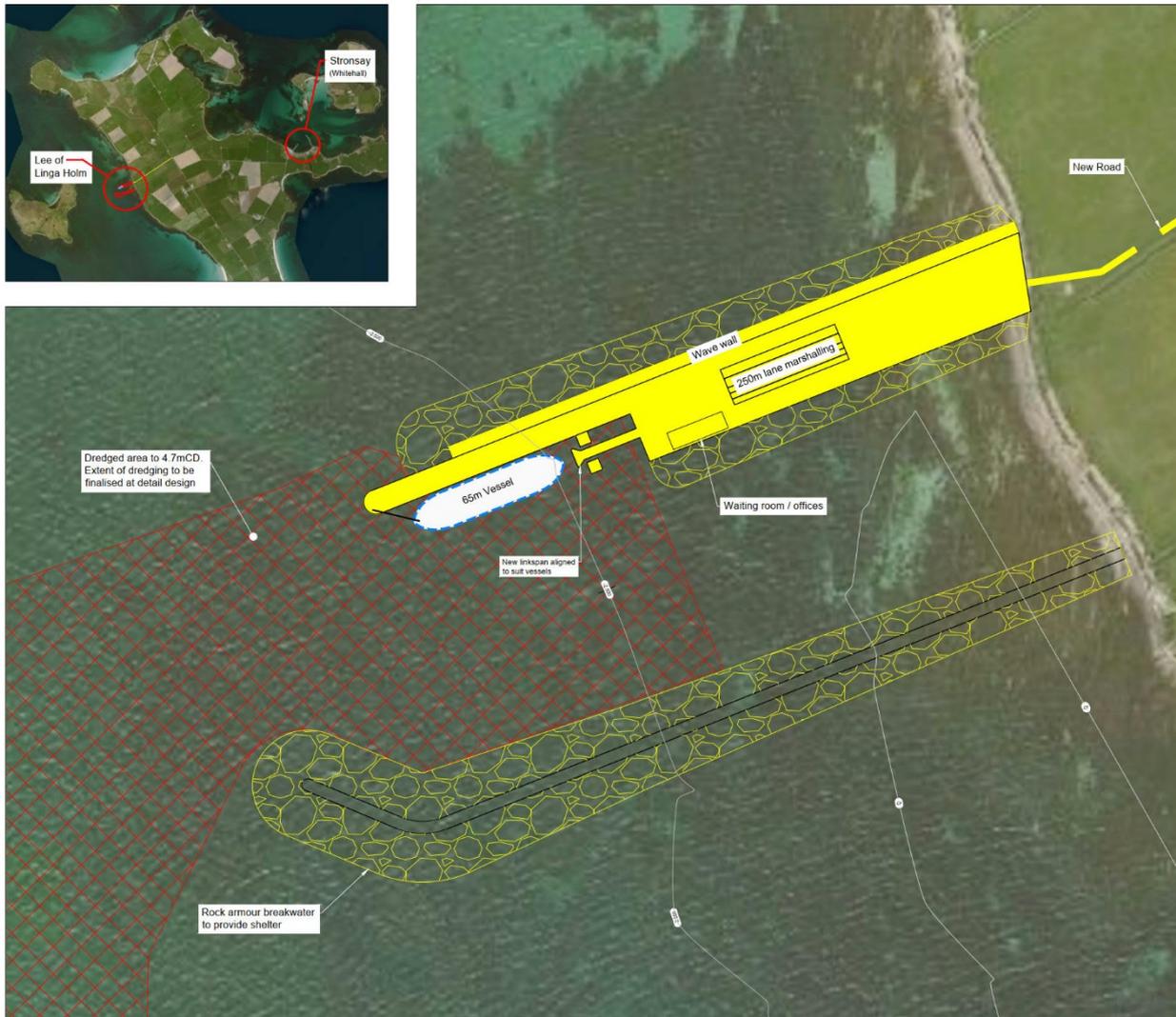
- Exposed from the north.
- Navigation through the dredged channel can be challenging.
- Currently challenging to provide sufficient mooring arrangements for MV Varagen.
- Available water area at LAT and MLWS shown for potential future 65m RoRo vessel, with 1m UKC.

- Extent of available water area at MLWS for 65m Vessel
- Extent of available water area at LAT for 65m Vessel

Note: Bathymetric Survey June 2011
All levels are to Chart Datum



Option 4: New harbour in lee of Linga Holm



Orkney ONI OBC Option Development Stronsay (Lee of Linga Holm)

Potential Future Vessel (Shown)

- 65m RoRo Vessel, 14.3m beam and 3.7m draught, maintaining capacity of current fleet
- Double ended vessel should may help with manoeuvrability.

Potential Solution (Shown)

- New ferry terminal facility to accommodate 65m RoRo vessel
- Infrastructure includes:
 - Linkspan
 - Berthing Structure
 - Reclaimed Area for Marshalling & Parking etc
 - Terminal Building
 - Local Road Upgrades (2 lane)
 - Breakwater
 - Dredging of Harbour and approach
 - Utilities

Notes

- Relocation of Stronsay Ferry Terminal to this location is considered to be preferred with the pier perpendicular or at an angle to the coast.
- The landform is more favourable and is more sheltered in comparison to those suggested at SBC stage.
- Common seal colony breeds on Linga Holm but this is not currently a designated site.
- Land ownership to be confirmed.
- Wave modelling required to confirm location of new terminal and extent / orientation of breakwater

Note: Bathymetric Survey 2005
All levels are to Chart Datum



Benefits & Costs

| | Cost (£m) | Cost including Optimism Bias (£m) |
|----------------------------------|-----------|-----------------------------------|
| Retain terminal in Whitehall | £2.7 | £3.8 |
| New harbour in lee of Linga Holm | £27.1 | £39.0 |

- Cost of a new harbour would significantly outweigh the marginal costs associated with improving the current harbour
- Relocating the ferry terminal would generate monetised travel time savings – known as Transport Economic Efficiency (TEE) benefits
 - However, given the low travel volumes, these benefits only amount to around **£1.9m** over 60 years
 - The equivalent cost value for appraisal would be **£23.9m**
 - This equates to a benefit to cost ratio of **0.1**
 - There would also be broader social and economic benefits to the island
- Based on the current vessel & crewing mix, approximately **415 hours** would be released back into the timetable, or **8 hours** per week
 - The same boat does not generally call at Stronsay twice on the same day, limiting the saving on any ‘single vessel day’
 - On certain days, this could potentially permit additional rotations to be operated

Preferred Option

- Whilst there would be benefits for the Stronsay community, as well as those living on and travelling to Eday & Sanday, the cost of relocating the ferry terminal from Whitehall to the west of the island would significantly outweigh the quantifiable and broader benefits which could be gained
- There would also be local impacts in Whitehall in the short term at least
- There are no precedents of relocating a functioning Ro-Ro ferry terminal in Scotland, unless the infrastructure is life expired
- Highly unlikely that external funding for such an option would be obtained and this option is therefore **ruled out** as a core option at this stage
 - *It will however be retained as a 'sensitivity test' within the wider network planning process*
- Relocation of the harbour should also be considered as a **long-term option** when substantial expenditure is required at the current facility in Whitehall
- It should also be noted that
 - The proposed four vessel solution for the ONI would reduce the impact of the longer steaming times to Stronsay through a reduction in indirect connections (and at least maintaining the current summer timetable during refit)
 - New vessels would be more powerful and potentially faster, reducing crossing times

Eday & Westray Overnight Berths

Overview

- The ability to berth overnight in the isles facilitates a timetable which offers a mix of the first connection being to the island or from the island. Of the Outer North Isles harbours:
 - Only **Sanday & Stronsay** offer operational year-round overnight sheltered berths
 - Overnighting in **Westray** is possible during the summer months and in calm conditions only
 - The pier at **Eday** is exposed and vessels cannot overnight there at any time. Also no power on the berth
- The flexibility to overnight in the isles is currently limited – due to crew accommodation being below the waterline – each vessel is only permitted to lie in the islands a **maximum of two nights per week**
- Longstanding ambition in both Eday & Westray for the development of year-round overnight berths
 - In ‘Phase 1’ of this study, a preferred option is not selected – the costs & benefits of these options are worked up at this stage to assist in:
 - Consideration of vessel specification in ‘Phase 2’ (and in particular whether the vessels should have an accommodation block)
 - Developing and testing potential timetable combinations for the ONI

Overnight Berth Option Costs

| | Cost (£m) | Cost including Optimism Bias (£m) |
|--|-----------|-----------------------------------|
| Eday overnight berth | £2.8 | £4.0 |
| - With optional 10m further extension | £3.6 | £5.1 |
| Westray overnight berth | £2.0 | £3.0 |
| - <i>With optional 30m dog-leg extension</i> | £4.3 | £6.2 |

- Note the optional extensions at both ports would likely be required to provide a reliable overnight berth
 - With the shorter extensions only, overnight berthing would be possible but may require diversion to Kirkwall when the weather forecast is poor

Preferred Option

- At this stage, a preferred option is not required as it does not fundamentally shape the network
- The key questions & issues which arise are:
 - Do these options represent value for money?
 - If the preferred revenue option for the ONI was progressed – i.e. extending the service to a 16-18 hour day, the case for both overnight berths may be diminished to some extent
 - If taken forward, this implies:
 - Vessels with onboard accommodation (which will make them larger for a given carrying capacity and more expensive to build)
 - Crew would spend more nights away from home which may require discussions / negotiations with the relevant trade unions
- However, there are significant benefits in terms of resident and business travel to / from both islands
- Options in relation to overnight berths will be considered as part of the vessel and timetable development process in 'Phase 2' of this study

Summary & Next Steps

Summary

- The recommended preferred options from '**Phase 1**' of the ONI OBC are as follows:
 - Papa Westray is served by a new Ro-Ro service operating between Moclett and Kirkwall, initially at least on the current timetable
 - A Papa Westray to Westray Ro-Ro service is not taken forward
 - New ferry berths are constructed at North Ronaldsay and Papa Westray to accommodate a small Ro-Pax ferry (circa 45m) operating from linkspans
 - The harbour in Stronsay remains in Whitehall in the medium term
 - The options for overnight berths in Westray and Eday are taken forward for further consideration in Phase 2 of the OBC

Phase 2: Autumn 2019 – Spring 2020

- Phase 2 will:
 - Develop the capacity and connectivity requirements (air & ferry) of all six islands
 - This will be done on the basis of (i) the current length of ferry crew day and (ii) an extended crew day, which could be provided if additional revenue funding is secured
 - Establish the appropriate vessel mix and required capacity
 - Further develop the infrastructure requirements at all ONI harbours to reflect the emerging preferred vessel solution
 - Consider the requirement for a third aircraft and, if progressed, how it should best be used
 - Develop a set of outline illustrative timetables
 - Further develop capital and operating costs
 - Establish the preferred ONI Network Plan
 - Engage with all affected communities on the outcome

What to do next

- The boards you have just read provide some areas you may wish to discuss but we would be happy to hear any views that you have
- Please also take the time to fill out a short questionnaire on the options

<https://www.surveymonkey.co.uk/r/StronsayOutlineBusinessCaseFeedback>

Thank you for taking the time to read this material