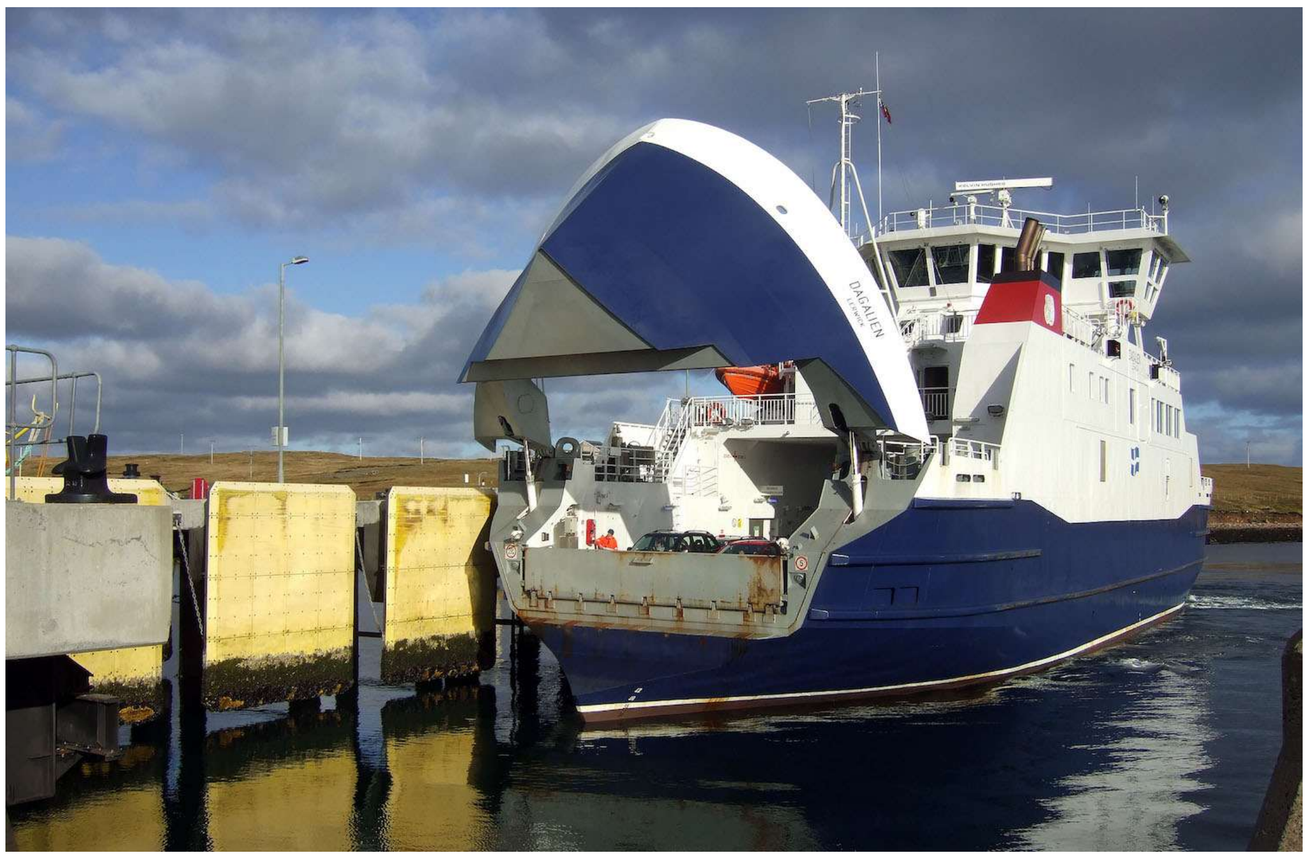
# Shetland Inter-Island Transport Connectivity Programme

Yell

26th May 2026




# Shetland Inter-Island Transport Connectivity Programme (1)

The Shetland Inter-Island Transport Connectivity Programme (IITCP) will set out a programme for **enhancing the connectivity of eight of Shetland's island communities**. It will explore:

**The case for fixed links**

**The future of ferry services**

These elements will combine into a **Network Strategy and Implementation Route Map**, providing a sequenced and costed programme for inter-island transport investments. The Network Strategy is being developed in two stages:

1

**Strategic Outline Case**

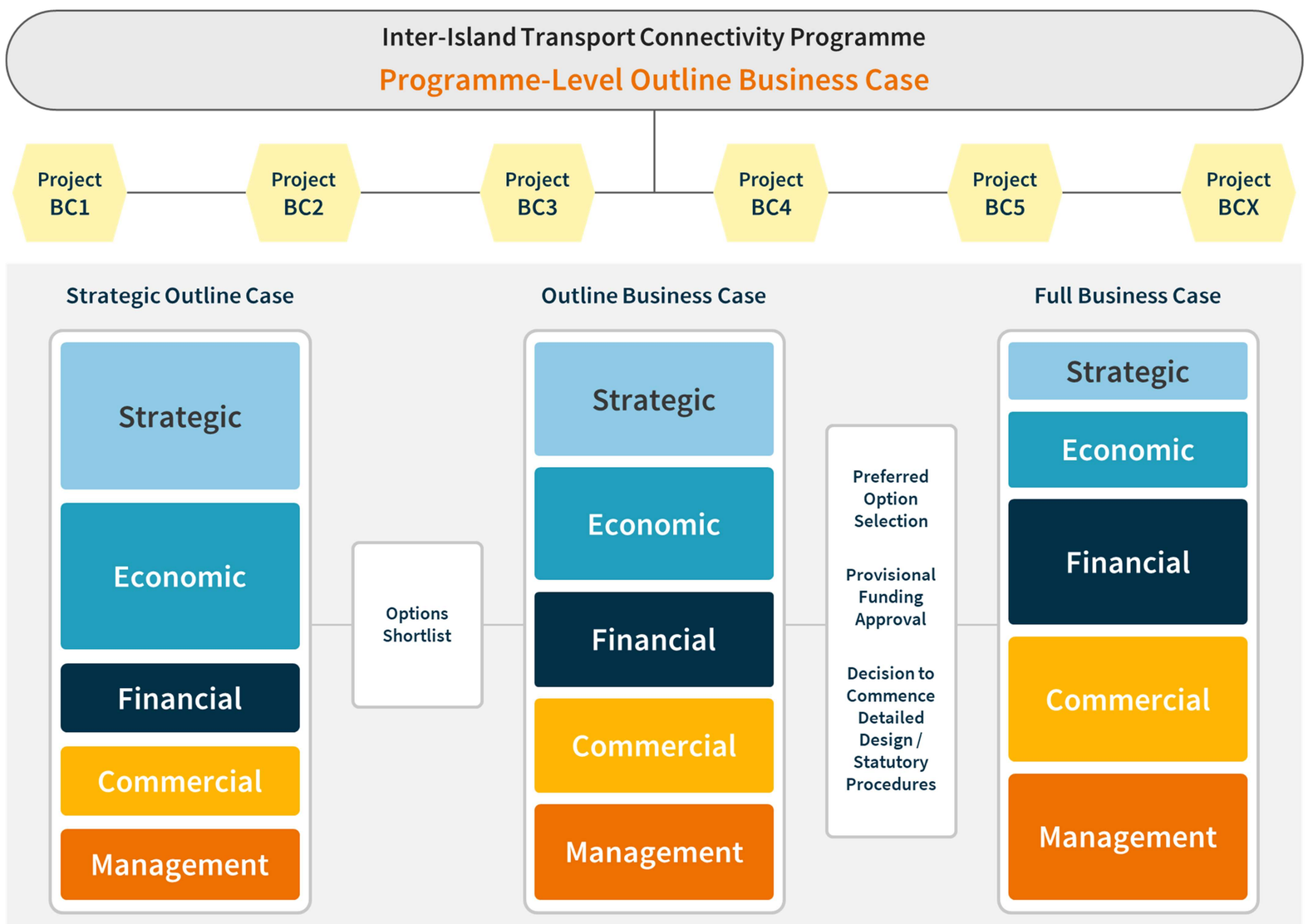
Approved in June 2025, the SOC established the case for investment, the spending objectives and the ferry, harbour and, where appropriate, fixed link options at an island level

2

**Outline Business Case**

Determines the preferred option for each island / route, providing a list of options for inclusion in the Implementation Route Map

- The IITCP study is a **programme-level business case** – i.e., it is focused on developing a network plan for the eight in-scope islands
- Any individual project emerging from the study – for example, a fixed link – would then be **subject to an individual project-level business case**
- A **programme-level business case** is higher-level and strategic, **setting out why coordinated change is needed**, providing the basis for a future project-level business case to work through how a specific solution is delivered



# Shetland Inter-Island Transport Connectivity Programme (2)

The first set of IITCP public drop-in sessions took place in **March 2025**. At these events, we presented a **route and island profile for each community**, feedback from the **resident survey** and our understanding of the **transport problems faced on the route**

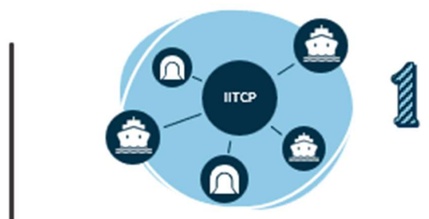
We used the information from this engagement to help inform:

1) The **'case for change'** (i.e., why investment is needed)
2) The **Transport Planning Objectives (TPOs) for the IITCP** – these are a statement of what the Council wants to achieve through any investment and reflect the problems identified by communities
3) The **generation of options** for each route

In the year since these events, the team has been **developing, appraising and costing the ferry and fixed link options**. The purpose of this set of drop-in sessions is to update communities on this work ahead of Shetland Islands Council Members being asked to select a preferred option for each route in June 2026. This will form the **Network Strategy Outline Business Case**

Members of the community are invited to view the material and discuss / ask questions of our team

Following the selection of a preferred option for each route, these options will be aggregated into a timed and prioritised **Implementation Route Map (IRM)**. The IRM will set out the sequencing of proposed investments over the short, medium and long-term




1

**'Case for Change'**

The first step in the process was to set out the 'Case for Change' (CfC). This established the rationale for intervention – i.e., **why is investment required?**

The CfC was **informed by extensive analytical work and engagement** with communities, businesses and other stakeholders.

2

**Route-Level Option Generation and Development**

Ferry, harbour and, where appropriate, fixed link options were developed for each island. At this stage, all potential options were included for consideration.

3

**Preliminary Option Appraisal (POA)**

POA is primarily a qualitative process designed to generate a shortlist of options for the Detailed Options Appraisal in the OBC.

This appraisal was **undertaken on a route-by-route basis.** A clear rationale for selection or rejection was provided for all options.

Fixed link proposals for Bressay, Fetlar, Unst, Whalsay and Yell were retained for SIC Decision Point 1.

4

**Programme-Level Network Strategy SOC**

**Council Decision Point 1**
*25th June 2025*

**'Sign-off' of the options to be taken forward for Detailed Options Appraisal** in the Programme-Level Network Strategy OBC.

Fixed link proposals for Bressay, Unst, Whalsay and Yell were retained.

5

**Detailed Options Appraisal**

This part of the business case contains the key quantitative analysis and appraisal, undertaken in accordance with appraisal and business case guidance.

It includes (but is not limited to) the development of Benefit-to-Cost Ratios (BCRs), multi-criteria appraisal, affordability and consideration of public feedback.

6

**Programme-Level Network Strategy OBC**

**Council Decision Point 2**
*30th June 2026*

Elected Members select the **preferred island option** to be progressed into the **Implementation Route Map**.

7

**Implementation Route Map**

The emerging preferred options from the Programme-Level Network Strategy OBC will be incorporated into a **phased Implementation Route Map for the network.**

8

**Preferred Network Option**

**Council Decision Point 3**

Elected Members' **'sign-off'** on the **Implementation Route Map for the network.**

Shetland Islands Council

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# Strategic Outline Case


# The Strategic Outline Case

Any appraisal or business case is founded on developing a **Case for Change** – i.e., what is the rationale for investment?

**The Case for Change is focused on evidencing the transport problems that need to be resolved**

**What is a transport problem?** Transport problems can be thought of as one or more of:

- Something that **negatively affects a journey which is still made**
- Something that **stops people or goods travelling by (generally) more sustainable and policy friendly modes**
- Something that **stops people making the journeys they would like to make or goods being moved**

There are two components to this:

1

**Network / operational problems**, which in this context are the problems that the Council experiences in delivering the ferry and wider public transport services – i.e., the **supply-side** problems which, as of June 2025 were:

**Cost**

Operating costs have increased significantly in the last decade (**£15m** in 2015/16 and increasing to **£25m** for 2024/25)

**Fleet Age**

Average vessel age **31.5** years, with **six** vessels over **30**

**Crewing**

Attraction and retention is a challenge, with growing requirement for agency crew

**Succession Planning**

Crew are ageing - **50%** aged 46+ and only **9%** aged 16-25 – long-term succession planning risk, particularly for **island-based vessels**

**Fleet Resilience**

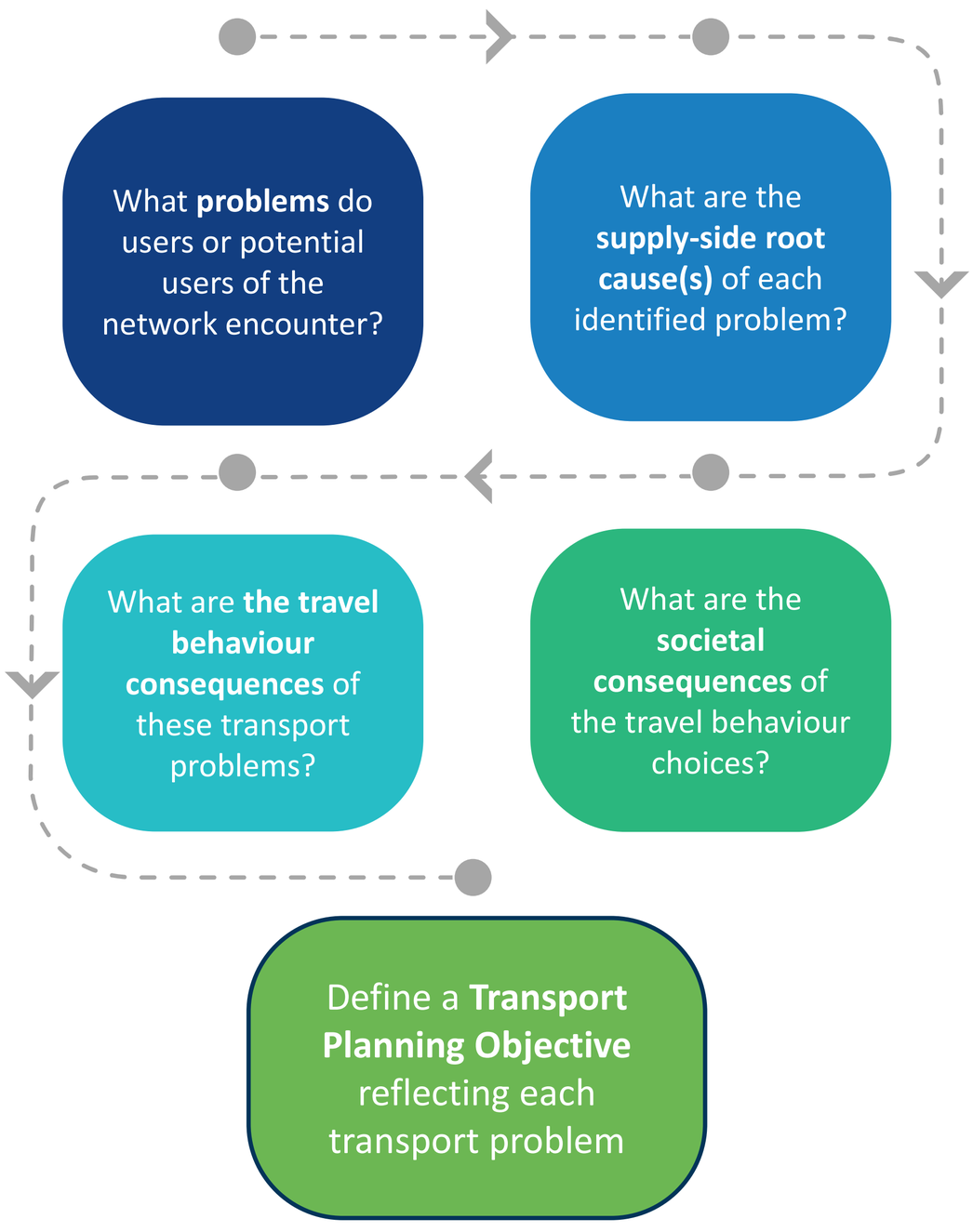
Ageing fleet with only one small spare vessel and certain vessels restricted to certain routes

**Vehicle Deck Capacity**

Problem on several routes, particularly Bluemull and Whalsay

2

Problems experienced by a **user or potential user of the transport network** – i.e., the **demand side**. These were defined using a systematic **Transport Problems Framework** (and are presented in the next board for **Yell**):



# What are the transport problems in Yell?

| Problem Theme | Step 1: Problem(s) | Step 2: Supply-side cause(s) |
|---|---|---|
| **Concern over environmental impact of travel** | ❖ Greenhouse gas emissions from vessels | ❖ MV *Dagalien* and MV *Daggri* are both conventional diesel vessels |
| **Cost of travel and affordability** | ❖ The level of fares was a source of dissatisfaction in the resident survey | ❖ High-frequency of travel means that the cost of travel can account for a high proportion of income |
| **Integration of travel between modes – ferry-to-bus** | ❖ Majority of ferries to / from Toft / Ulsta do not connect with a bus | ❖ Limited and fragmented bus network<br>❖ High cost of bus service provision relative to demand |
| **Booking and journey planning** | ❖ Most Yell residents must book sailings both ways when taking the car – there are occasions on which they are not able to get a booking on their preferred sailing and there is also a general 'hassle' factor associated with this | ❖ High vehicle deck utilisation on peak sailings, including at the weekend, means that a booking is often required to guarantee travel<br>❖ Single vessel service at the weekend and, more recently, during refit |
| **Capacity** | ❖ Inability to secure a place on the ferry, either unable to get a booking or travel on demand when unbooked | ❖ Insufficient vehicle deck capacity on some sailings, but a particular problem on a Saturday<br>❖ Little alternative to taking the car given the limited bus service |
| **Service reliability (cancellations and punctuality)** | ❖ **63%** of Yell residents are unhappy with advance cancellations and **75%** with short notice cancellations | ❖ It is understood that recent problems in this respect have been more to do with crew availability and breakdowns rather than weather |
| **Timetables** | ❖ One vessel service all day on a Saturday and Sunday delivers a lower frequency<br>❖ Connections with the first and last flights from Sumburgh<br>❖ One vessel service during refit | ❖ Limited resilience in the fleet to cover refit<br>❖ Cost and crewing implications of operating the second vessel at the weekend |

# Setting the Transport Planning Objectives

## What is a Transport Planning Objective (TPO)?

» The Scottish Transport Appraisal Guidance (STAG) states that: *"The objective must express the change sought in the study area without indicating potential solutions"*

» The TPOs are focused on **addressing the transport problems identified in the Case for Change**

» Problems were identified at a route level and aggregated at the basis of setting network-wide TPOs

This was primarily done using the **resident survey**, supported by **wider community inputs and secondary data**

Survey respondents were asked about their **level of satisfaction / dissatisfaction with 38 aspects of the ferry service**

Around **one-third of island residents** and **38% of mainland residents** said ferry service issues limited their travel. They were then asked how much **20 specific aspects of the service** contributed to this barrier to travel

To provide some sense of scale, survey responses with respect to **dissatisfaction** and **barriers to travel** were **grouped into themes and ranked**, which is shown in the table below

## The themes in the table below were used as the basis of setting the Transport Planning Objectives

| TPO Theme | Dissatisfaction Rank | | Barrier to Travel Rank | |
|---|---|---|---|---|
| | Rank (Island Residents) | Rank (Mainland Residents) | Rank (Island Residents) | Rank (Mainland Residents) |
| Accessibility | 7 | 7 | 6 | 4 |
| Capacity | 3 | 3 | 1= | 2 |
| Cost | 2 | 5 | 5 | 4 |
| Journey times | 9 | 9 | NA | NA |
| Limited, fixed times of travel, within operating day | 6 | 2 | 3 | 3 |
| Operating day restriction | 5 | 8 | 4 | 7 |
| Other | 8 | 6 | 8 | 8 |
| Poor non-car travel options | 4 | 4 | 7 | 6 |
| Resilience | 1 | 1 | 1= | 1 |

*A rank of 1 shows the highest level of dissatisfaction / barrier to travel against any given TPO theme*

# IITCP Transport Planning Objectives

**The Transport Planning Objectives are ordered in terms of their significance as a barrier to travel and have been used to appraise the options**

**TPO1**

Reduce or remove **variances from the regular published timetable**

**TPO2**

Reduce or remove the **capacity** barrier associated with ferry travel

**TPO3**

Improve the **flexibility of travel** within the operating day

**TPO4**

Reduce or remove the **cost** barrier associated with ferry travel

**TPO5**

Make inter-island travel fully **accessible** to all

**TPO6**

Improve travel options beyond the current **operating day**

**TPO7**

Improve provision for those **not** travelling or who would **prefer not to travel by car**

# Option Development and Packaging

For each route, there are **multiple potential capital and revenue options**:

» The options are **intended to reflect the problems identified** and thus contribute towards delivering the TPOs

» As this is a **programme-level business case** and, to ensure a **manageable and distinguishable set of options** for appraisal purposes, **individual options were combined into option packages in the Strategic Outline Case**. **It is these packages that have been developed and assessed in the Network Strategy OBC**

» Option packages provide increments in service **from the 'business-as-usual' through to a 'Ferry Do Max' and fixed link**, as defined in the table below

» Further **option development and disaggregation** will be required in any subsequent **project-level business case**

» The SOC concluded with the retention of all option packages for **Yell Sound**

| Option Package | In-Scope Islands | Description |
|---|---|---|
| **Business-as-usual** | **All** | The Business as Usual is focused on **operating services as per the published timetable**, addressing recent resilience issues and the **disruption caused by refit periods**.<br>It assumes **replacement of vessels at the point of life expiry** with vessels of a broadly like-for-like vehicle carrying capacity (although such vessels will be physically larger, reflecting modern design requirements). |
| **Ferry 'Do Something'** | **All** | This option package involves **addressing current route priorities using the current assets, supplemented by revenue measures**. It does however include asset replacement ahead of life expiry where there is a clear justification for this, capacity problems for example. |
| **Ferry 'Do Maximum' (Do Max)** | **Bressay, Fetlar, Unst, Whalsay and Yell** | The 'Do Max' represents a **realistic maximum level of connectivity that can be achieved through significant increases in revenue and capital funding**. It expands the Ferry Do Something to deliver service levels broadly equivalent to Western Ferries in the Firth of Clyde and would reduce other barriers to travel (e.g., provision for 24-hour sailings, reduced fares etc).<br>This has only been considered for a subset of islands, both as a comparator to a fixed link and also to reflect the high-volume and high-frequency routes on the network at present. |
| **Fixed Link** | **Bressay, Unst, Whalsay and Yell** | Fixed link options have been developed for the four listed islands. Within these options, there are potential variants around tolling and public transport provision through the fixed link. |

## Vessel Typologies

| Typology | Class | Indicative Length Overall | Indicative Car Capacity | Single or Double-Ended |
|---|---|---|---|---|
| **Bespoke** | Workboat | Max. 24m | 1 | Not roll through |
| **Fair Isle Class** | Workboat | Max. 24m | 4 | Not roll through |
| **Type 1** | Euro B | 33m | 14-15 | Single |
| **Type 2** | Euro B | 45m | 22-24 | Double |
| **Type 3** | Euro B | 65m | 31 | Double |

While vessel design is only being considered at a high level in the IITCP, it is essential in network planning that there is **a clear strategy with respect to vessel replacement**

» IITCP supports **greater standardisation of the fleet**, while recognising that certain islands will always require bespoke solutions that meet their needs (or slight adaptations of standard vessel types)

» A working typology consisting of **five indicative vessel types** has been developed and applied in the option packages

# Network Strategy Outline Business Case - Yell


# Outline Business Case: Approach to Option Development

**What is the purpose of the Detailed Options Appraisal process in the Outline Business Case (OBC)?**

» The purpose of this exercise is to take the options emerging from the SOC, develop them, appraise them and provide the evidence for Council Members to select **a preferred option package for each route / island**

» The options are a **proof of concept**, but have been subject to an **assessment of deliverability** with respect to e.g., crewing etc. Detailed work on this would be required in a **subsequent project-level business case**

» The **Ferry Do Something** and **Ferry Do Max** include options to **reduce fares for residents and make them free, respectively**. Fares are however a complex network-wide issue for which any significant change would merit a study in its own right, covering: the basis of the tariff; the level at which it is set; discounts; surcharges; and implications for capacity based on the demand response. **The reduction in fares is therefore treated as an in-principle option only and is not explicitly costed or modelled**

» The **Ferry Do Something, Ferry Do Max and Fixed Link** options all include proposed improvements to **bus services**. These options are described in narrative only at this stage. There are however a range of cost and deliverability considerations (e.g., vehicle and driver availability) which would need to be worked through in any project level business case

» The arrangements for booking sailings, including request sailings, as well as arrangements when services are cancelled was identified as a barrier to travel in the resident survey. **Whilst there was value in highlighting this, it is a network-wide operational matter and thus has not been considered in detail in this study**

» The Business-as-Usual harbour drawings are not shown on the following boards as it is largely a continuation of the present-day situation

## Option Costing

### Vessels

- Indicative costs have been developed for each vessel type based on **recent procurement experience and engagement with a naval architect**
- A relatively short-term replacement of the fleet is assumed
- Vessels are thereafter **assumed to be replaced every 30-years**
- Maintenance costs are assumed to be covered in day-to-day spending, but an allocation has been made for **major refit costs**, including **for conversion to zero emission fuels**

### Ferry Terminals

- Assumed that **wholesale replacement of every terminal** will be **required at least once in a 60-year period**
- Costs included for **cyclical maintenance over terminal lifespan**
- Ferry Do Something and Ferry Do Max include incremental costs to reflect option requirements

### Revenue Measures

- Based on increments in crew requirements and additional sailings in each of the Do Something and Do Max

### Fixed Links

- **Capital costs** have been developed based on the **Fixed Link Model (described later in these boards) developed for Yell, pro rated for the other candidate islands**
- A **benchmark value for operations and maintenance** has been developed based on an indicative rate per metre and pro rated based on tunnel length
- **Cyclical maintenance** for tunnels **has not been included** as it is understood to be modest compared to ferry terminals

In accordance with H.M. Treasury and Transport Scotland guidance, a **60-year appraisal horizon** is being used – that is, the costs and benefits are considered over a 60-year period

Recognising the long-life of tunnels, a sensitivity based on a **100-year appraisal horizon** has also been undertaken:

» This seeks to understand **whether considering costs and benefits over a longer period would change the respective value for money of options**

# Outline Business Case: Yell Options

## Ferry Do Something

| | |
|---|---|
| **Vessels** | Two Type 3 vessels, equivalent to MV *Dagalien* and MV *Daggri* |
| **Required infrastructure** | New waiting rooms at Toft and Ulsta |
| **Service** | ▪ Two vessel timetable 05:15 to 23:40 **Monday to Sunday**<br>▪ Drills and maintenance on a **Sunday** subject to contractor availability |

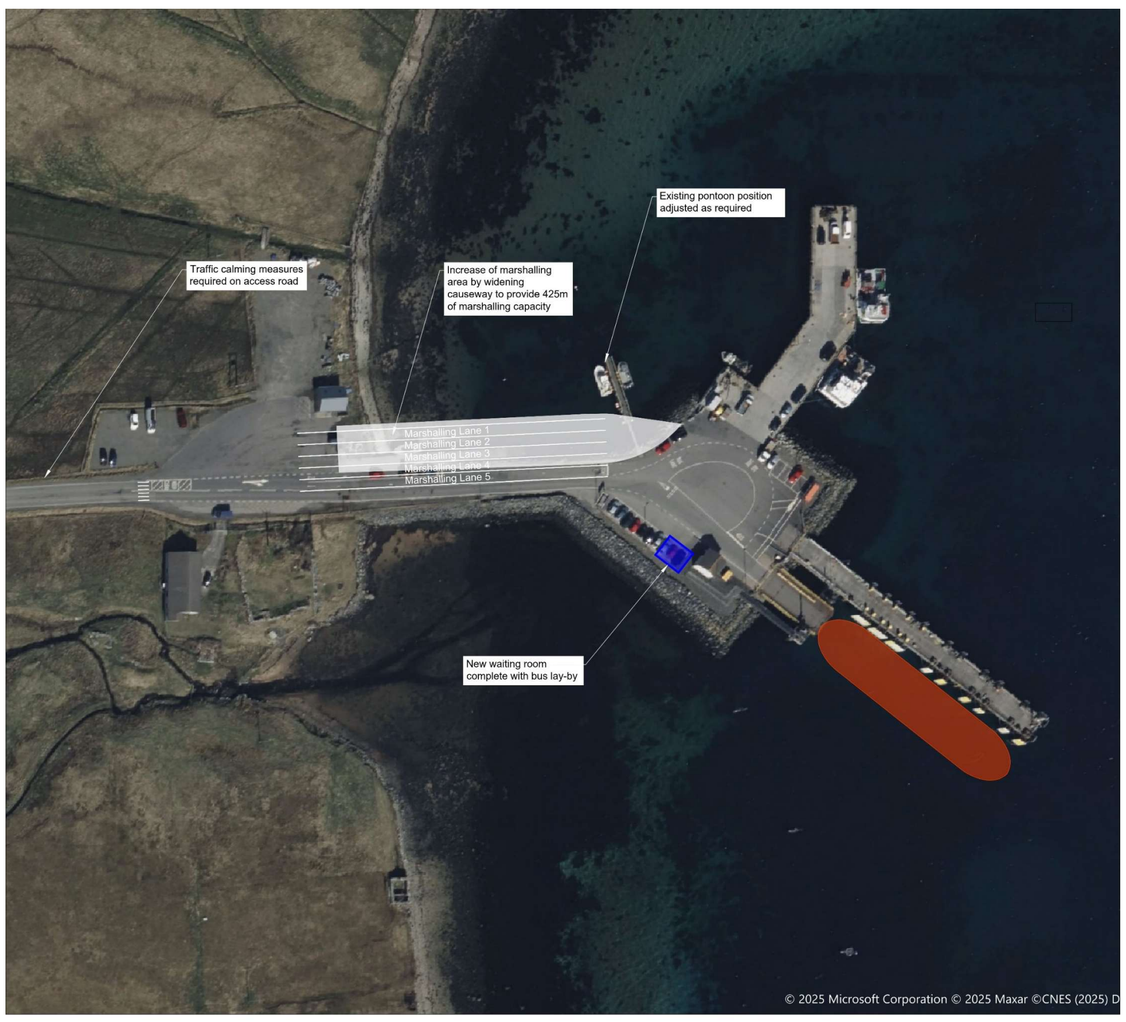
» Vessels and infrastructure on Yell Sound are in relatively good condition

» Focus is primarily on expanding the service to a **two-vessel operation seven-days a week**, with drills and maintenance moved to a Sunday, subject to contractor availability

The table below shows **indicative change in sailings in Ferry Do Something** relative to **Business as Usual**:

| | Monday | Tuesday to Friday | Saturday | Sunday |
|---|---|---|---|---|
| **Business as Usual (BaU)** | 21 | 25 | 16 | 15 |
| **Ferry Do Something** | 33 | 33 | 33 | 21 |
| **Do Something v BaU** | **+12** | **+8** | **+17** | **+6** |

### Ferry Do Something: Toft




### Ferry Do Something: Ulsta

# Outline Business Case: Yell Options

## Ferry Do Max

| | |
|---|---|
| **Vessels** | Three Type 3 vessels, equivalent to MV *Dagalien* and MV *Daggri* |
| **Required infrastructure** | ▪ **Toft:** Significant upgrades, including a new breakwater and land reclamation to expand the marshalling area<br>▪ **Ulsta:** Significant upgrades, including provision of a new linkspan berth to the north of the existing pier |
| **Service** | ▪ **Monday to Saturday:** (i) hourly overnight service; (ii) three vessel service 06:00-18:00; (iii) two vessel service from 18:00-Midnight<br>▪ **Sunday:** Two vessel service 06:15-23:40, with drills and maintenance on a Sunday subject to contractor availability |

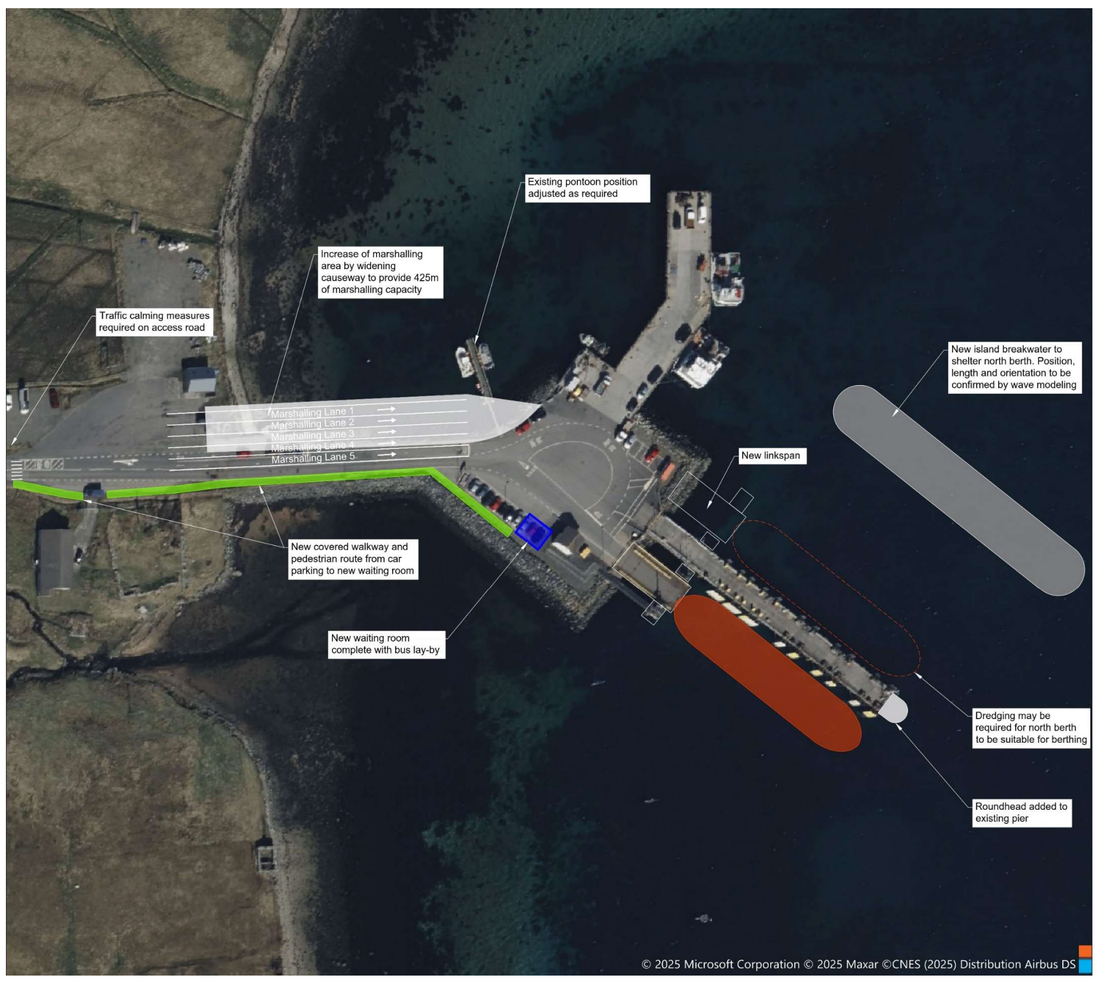
» Expansion of the service to **three vessels with 24-hour provision Monday to Saturday**

» **20-minute frequency** from circa 06:00-18:00

The table below shows **indicative change in sailings in Ferry Do Max** relative to **Business as Usual**:

| | Monday | Tuesday to Friday | Saturday | Sunday |
|---|---|---|---|---|
| **Business as Usual (BaU)** | 21 | 25 | 16 | 15 |
| **Ferry Do Max** | 50 | 50 | 50 | 26 |
| **Do Max v BaU** | **+29** | **+25** | **+34** | **+11** |

### Ferry Do Max: Toft




### Ferry Do Max: Ulsta

# Outline Business Case: Yell Options

## Fixed Link

### Alignment

» Connects Shetland Mainland (Toft) to Yell (Copister)

» 6.5km subsea tunnel

» Shortest feasible crossing avoiding steep gradients and sensitive areas

### Technical Specification

» Bidirectional, single-tube

» Two-lane tunnel enabling safe bi-directional travel

» Compact cross-section supporting efficient construction and operation

» Design speed of 40 mph

### What is the Fixed Link Model (FLM)?

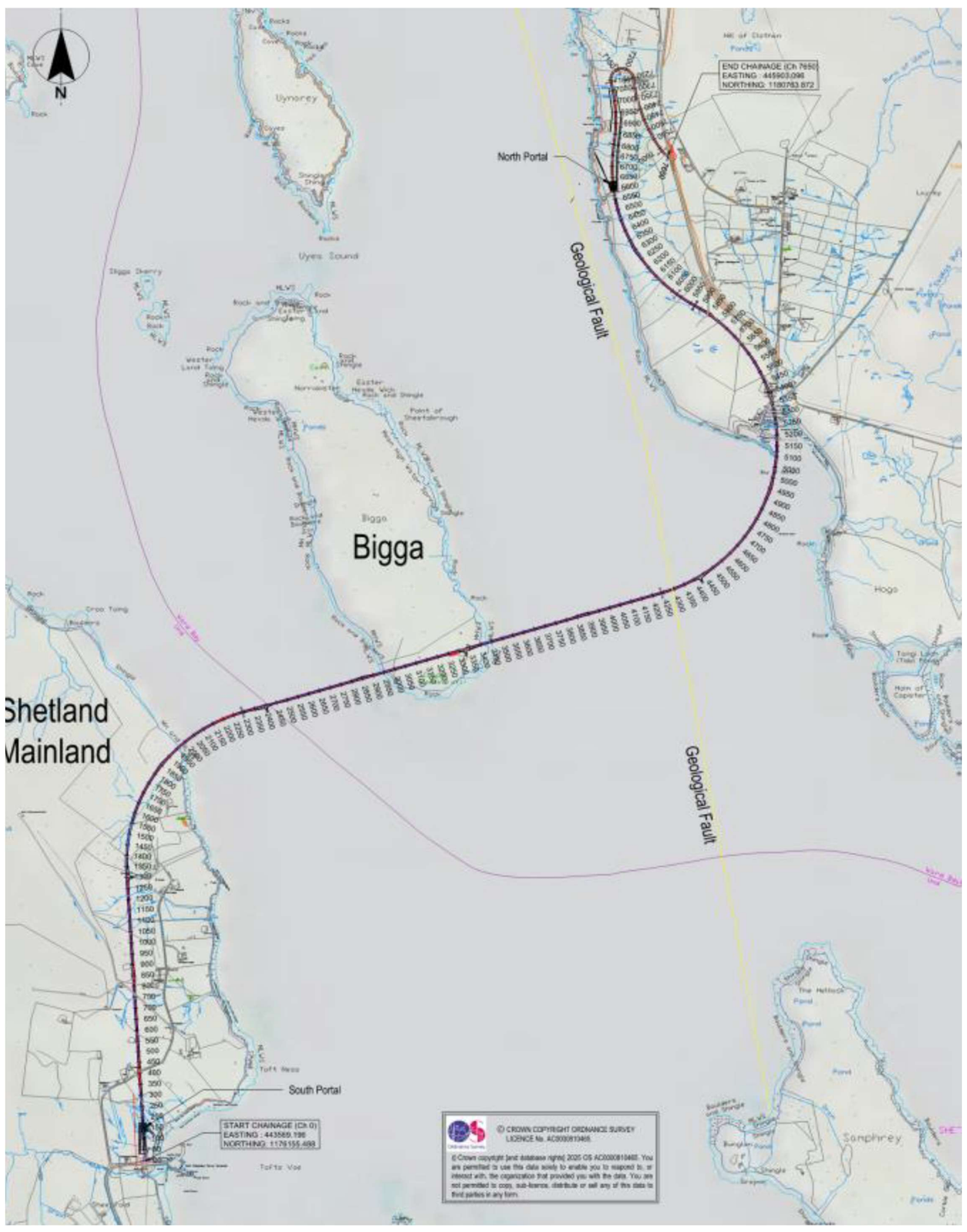
An ongoing challenge in assessing the case for fixed links in Shetland has been a lack of knowledge around:

- What could the design for a subsea tunnel look like?
- Are there **contractors who would be interested** in building a tunnel in Shetland? If yes…
  - ✓ *What **delivery models** could the Council adopt?*
  - ✓ *What is the **price** and **risk level**?*
  - ✓ *How would it be **paid for**?*

This lack of knowledge has historically made it difficult to compare tunnels and ferries on a like-for-like basis in appraisal exercises

The FLM sought to answer these questions through contractor and financial market engagement, using a tunnel between **mainland Shetland and Yell** as a **test case**

This **does not imply that a tunnel to Yell should be the preferred option**, nor that it would be the first priority if multiple tunnel options are selected. However, the study provided essential insights into how one or more tunnels could be delivered in Shetland, and this knowledge has been applied across all candidate fixed link islands




***Yell Options: Fixed Link Potential Alignment***

The FLM concluded that a Mainland-Yell subsea tunnel is **technically feasible** using established drill-and-blast methods

**Engineering feasibility is not the primary barrier to delivery**. The **key constraint is funding**, not technical capability or contractors' interest

# How is the best option for society defined?

**Transport appraisal** is the process by which the best value for money option for society overall is defined. There is variant appraisal guidance throughout the world and indeed in the UK – e.g., **Scottish Transport Appraisal Guidance (STAG)**, UK Transport Analysis Guidance (TAG), Welsh Transport Appraisal Guidance (WelTAG) etc

There are however several principles of appraisal that hold across most guidance documents:

» It is **multi-criteria** – i.e., it considers an option from a range of different perspectives – in **STAG**, these are:

- **Physical Environment**
- **Climate Change**
- **Health, Safety and Wellbeing**
- **Economy**
- **Equality and Accessibility**
- **Fit with Policy**
- **Feasibility, Affordability and Public Acceptability**

» It should be **applied proportionately**, focusing on the main areas of differentiation between options

- ❖ No criterion is more important than another and scores should not be weighted

» It should combine **quantitative and qualitative approaches**

» Crucially, **appraisal is not intended to formulaically define the 'answer'**, rather its purpose is to objectively define the advantages and disadvantages of different options

- ❖ It is predicated on the maxim that *"Advisors advise, Ministers [Members] decide"*

The boards that follow show the **appraisal of the Yell options** with respect to the **Transport Planning Objectives for the IITCP** and the **STAG criteria** listed above

This is preceded by a description of the **option economics**, which are an H.M. Treasury and Transport Scotland **required standard part of any business case** and are presented as a cost-benefit analysis

# Option economics - Presentation of costs in a business case

***"Would it not be cheaper in the long-term to pay the upfront costs of a tunnel rather than the ongoing costs of ferry operations, including the replacement of vessels and infrastructure?"***

This is the **most frequently asked question** when comparing ferries and fixed links:

» The underpinning logic is based on an **arithmetical approach of summing costs over time**, without adjusting for **when these costs occur**

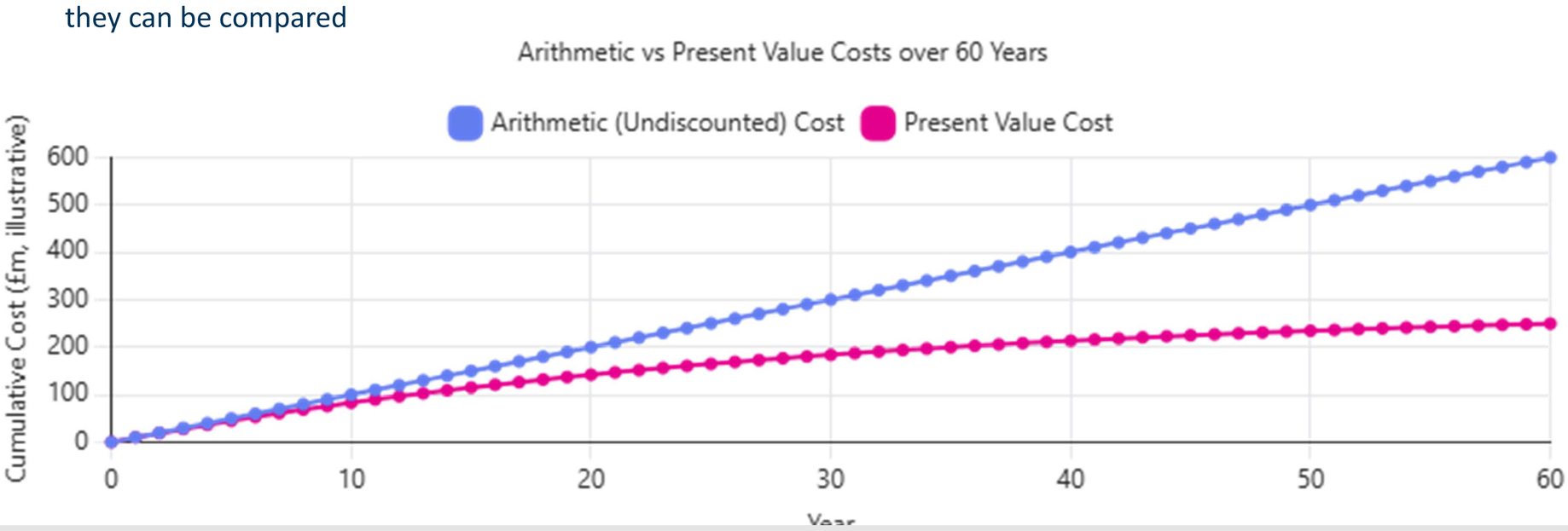
» However, in a business case, transport infrastructure schemes are **long-term and inter-generational investments** for which benefits and costs accrue over different time periods – for example, the **cost of a tunnel would be up-front** and, once spent, would not be required again whereas **ferries would need to be replaced every 30-years and harbour infrastructure every 60-years**

» Appraisal addresses this temporal issue through converting all future costs and benefits **into today's value (known as present value)** so that they can be compared

» The principle here is that **the further into the future a benefit or cost occurs, the less weight it carries today (i.e., the lower its present value)**. In the context of IITCP, the cost of future ferry replacements at e.g., year-30, year-60 etc will be progressively discounted as they are future costs – i.e., their present value will be less

» **The figure below provides an illustration of the difference between arithmetic (undiscounted) costs and present value (discounted) costs and why this matters.** Example is based on a spend of £10 million per annum over 60-years and a discount rate of 3.5%

» The adoption of this approach is **mandated in the guidance**




**Arithmetic (undiscounted) cost =** £600 million (i.e., £10 million x 60 years)

**Present value (discounted) cost =** £250 million

## Ferry Option Costs

Mott MacDonald generated capital cost estimates for all ferry options for 2026 to 2095. These include refurbishment and replacement of infrastructure at end of life.

Stantec estimated annual operating costs from SIC accounts.

## Fixed Link Costs

COWI provided an estimate of pre-construction and construction costs for in-scope fixed links, as well as an estimate of day-to-day operating and maintenance costs.

Costs do not include major refurbishment and renewal of infrastructure.

**2025 Costs, summed over 60 years**

*Cash / arithmetic costs summed over 60 years for capital and Operations & Maintenance (O&M)*

| Option | Capital Costs | Gross Operating & Maintenance | Present Value of Costs (60 years) |
|---|---|---|---|
| Yell Business as Usual | £187.3m | £361.6m | £295.6m |
| Yell Ferry Do Something | £280.3m | £469.1m | £333.1m |
| Yell Ferry Do Max | £438.2m | £649.5m | £535.0m |
| Yell Fixed Link | £352.0m | £90.0m | £539.2m |

# Option Economics - Cost Benefit Analysis

**Cost-Benefit Analysis (CBA)** is a framework for assessing whether a public intervention delivers net benefits to society by comparing all monetisable costs and benefits over time

### Origins of CBA

- Traditionally an important metric in decision making
- Origins in transport as it recognises that public investment in infrastructure can deliver a wide range of non-market benefits (i.e., economic and social benefits)

### Uses of CBA

- Justifies public investment where there is a public good that the 'market' may not otherwise pursue
- Important in transport where benefits tend to be user-based (e.g., time, reliability, safety, comfort etc)
- Has formed the basis of large public works schemes

**Key Output of CBA: Benefit-Cost Ratio** – this is a single metric showing how benefits and costs compare, which can be used for transparent comparison and prioritisation between options

**CBA is a tool and a construct designed to support good decision making – it is only one metric and is categorically not a substitute for judgement and, when used in this way, can lead to wrong decisions being made**

» The table below shows the **BCR** for the different **Yell** options. The BCR is the ratio of the **Present Value of Benefits (PVB) to the Present Value of Costs (PVC)**. **NPV** is the **Net Present** Value, i.e., the difference between the PVB and the PVC)

» The PVC shows: the PVC of the in-scope option (i.e., Do Something, Do Max, Fixed Link); minus the PVC of the Business as Usual, as this is spend which would be required regardless without an intervention

» To reflect uncertainty, appraisal **includes sensitivity tests to show how results are affected by different assumptions**. Four sensitivity tests in addition to the core scenario have been included:

**ST1:** Reduced **optimism bias** (an uplift to base costs included to account for uncertainty) for the tunnel option to **23%** for road upgrades (down from **46%**) and **32%** all other works (down from **55%)**

**ST2:** A different weighting has been applied to the value of the **time spent waiting in a car for a ferry**

**ST3: Optimism bias** of **38%** has been **applied to the cost of new ferries** (the guidance recommends it is not applied to ferries)

**ST4:** The options have been **appraised over 100-years rather than 60-years**, to reflect the long-life of a tunnel

| Scenario | Scheme | PVB (£000s) | PVC (£000s) | NPV (£000s) | BCR |
|---|---|---|---|---|---|
| Core | Ferry Do Something | 13,955 | 37,424 | -23,469 | **0.4** |
| | Ferry Do Max | 28,134 | 239,391 | -211,257 | **0.1** |
| | Fixed Link | 109,603 | 243,614 | -134,011 | **0.4** |
| ST1 | Ferry Do Something | | | | |
| | Ferry Do Max | | | | |
| | Fixed Link | 109,603 | 163,019 | -53,416 | **0.7** |
| ST2 | Ferry Do Something | 6,701 | 37,470 | -30,769 | **0.2** |
| | Ferry Do Max | 18,056 | 239,448 | -221,392 | **0.1** |
| | Fixed Link | 79,229 | 243,772 | -164,543 | **0.3** |
| ST3 | Ferry Do Something | 13,955 | 37,424 | -23,469 | **0.4** |
| | Ferry Do Max | 28,134 | 264,890 | -236,756 | **0.1** |
| | Fixed Link | 109,603 | 194,553 | -84,950 | **0.6** |
| ST4 | Ferry Do Something | 19,070 | 42,982 | -23,912 | **0.4** |
| | Ferry Do Max | 38,448 | 281,150 | -242,702 | **0.1** |
| | Fixed Link | 150,631 | 151,006 | -375 | **1.0** |

» With the exception of a fixed link in a 100-year appraisal scenario, **all of the options record a BCR of less than one (i.e., costs exceed benefits)**

» The **Ferry Do Something** and **Fixed Link** perform broadly equivalently in most scenarios in terms of their BCRs, albeit their respective PVBs and PVCs vary considerably

» The **Ferry Do Max** performs very poorly across all scenarios, highlighting that the incremental benefits of the Ferry Do Max are significantly exceeded by the incremental cost

» It implies from a value for money perspective that there is limited scope for and benefit of expanding the ferry service beyond what is laid out in the Ferry Do Something

# Outline Business Case: Options Appraisal

## Options Appraisal: Transport Planning Objectives

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓✓✓ | Major positive | ✓ | Slight positive | XXX | Major negative | X | Slight negative |
| ✓✓ | Moderate positive | 0 | Neutral | XX | Moderate negative | | |

| TPO | Description | Business as Usual | Ferry Do Something | Ferry Do Max | Fixed Link |
|---|---|---|---|---|---|
| 1 | Reduce or remove **variances from the regular published timetable** | ✓ | ✓ | ✓✓ | ✓✓✓ |
| 2 | Reduce or remove the **capacity** barrier associated with ferry travel | 0 | ✓ | ✓✓ | ✓✓✓ |
| 3 | Improve the **flexibility of travel** within the operating day | 0 | ✓✓ | ✓✓ | ✓✓✓ |
| 4 | Reduce of remove the **cost** barrier associated with ferry travel | 0 | ✓ | ✓✓✓ | ✓✓ |
| 5 | Make inter-island travel fully accessible to all | 0 | 0 | 0 | ✓✓✓ |
| 6 | Improve travel options beyond the current **operating day** | 0 | ✓ | ✓✓ | ✓✓✓ |
| 7 | Improve provision for those **not travelling by car** / who would **prefer not to travel by car** | 0 | ✓✓ | ✓✓✓ | 0 |

The nature of the option packages for Yell means that **each increment will deliver progressively larger benefits against the TPOs**. This ultimately culminates in a **fixed link**, which would remove almost all of the identified barriers to travel, except from the cost of travel where tolls are levied. **Key points** are as follows:

- The **Do Max** would deliver a significant resilience benefit through introducing a third vessel to the route, ensuring that an at least two vessel service could be maintained if there was a breakdown and during refit. A **fixed link** would remove reliance on sea-based travel altogether

- **Vehicle deck capacity** is not a major issue on Yell Sound but the **Do Something** would provide an uplift in capacity in the evenings and at the weekend. The **Do Max** would provide plentiful capacity, which could meet almost all foreseeable growth needs of the route, whilst a **fixed link** would remove all capacity related constraints for Yell

- The **Do Something** and **Do Max** would progressively increase **frequency** and, in the **Do Max**, **the length of the operating day**, with a **fixed link** providing 24-hour access between Yell and mainland Shetland

- The impact of the options on **cost to the user** would depend on **the balance between ferry fares and tunnel tolls**

- The impact on those **not travelling by car / who would prefer not to travel by car** for a **fixed link** would be dependent on providing a bus service through the tunnel that at least matches the frequency of the current ferry service (as pedestrians and cyclists could not use the tunnel)

# Outline Business Case: Options Appraisal

## Options Appraisal: STAG Criteria

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓✓✓ | Major positive | ✓ | Slight positive | XXX | Major negative | X | Slight negative |
| ✓✓ | Moderate positive | 0 | Neutral | XX | Moderate negative | | |

| Description | Business as Usual | Ferry Do Something | Ferry Do Max | Fixed Link |
|---|---|---|---|---|
| (Physical) Environment | 0 | 0 | × | ×× |
| Climate Change | ✓ | × | ×× | ×× |
| Health, Safety and Wellbeing | ✓ | ✓ | ✓ | ✓✓ |
| Economy | 0 | ✓ | ✓✓ | ✓✓✓ |
| Equality and Accessibility | 0 | ✓ | ✓✓ | ✓✓ |

**Environment**

The environmental impacts of the Yell options increment relative to the scale of those options. The **BaU** and **Do Something** would have relatively minimal impacts as they are broadly focused on like-for-like asset replacement at life expiry. The **Do Max** would have more significant impacts associated primarily with the provision of a new breakwater at Toft, whilst a **fixed link** would evidently have the most significant impacts given its scale, and a key consideration here would be the approach to the disposal of the spoil.

**Climate Change**

A **fixed link** would have significant embodied carbon, but its carbon intensity would reduce over time as the vehicle fleet became zero emission. The ferry options would have lower embodied carbon but a longer-term vessel emissions profile – **the whole life carbon comparison is therefore very sensitive to when the ferry fleet becomes decarbonised**.

A **fixed link** would significantly **reduce Yell's vulnerability to climate change**, particularly rising sea levels and the ferry service being cancelled due to inclement weather.

**Health, Safety and Wellbeing**

Whilst Yell does have on-island health provision, there is still a dependence on travel to Lerwick and sometimes mainland Scotland for health purposes, including in emergencies. **Each option increment would therefore improve access to health and wellbeing infrastructure**. A **fixed link** would however be genuinely transformative for Yell in this respect. It would also offer potential long-term public health benefits associated with reduced isolation and improved access to health promoting activities.

**Equality and Accessibility**

A **fixed link** offers a potentially transformative change in accessibility for Yell residents and those visiting the island. This in-turn would assist in tackling some of the inequalities faced due to geographic remoteness and low population levels. However, the scale of the benefit would be **dependent on the relative balance of tunnel tolls to ferry fares** and ensuring that **bus services** were provided to a frequency equal to at least that of the current ferry service, without which new inequalities could arise.

# Outline Business Case: Options Appraisal

## The Economic Criterion and the Strategic Narrative

The Economy criterion in STAG consists of two sub-criterion:

- **Transport Economic Efficiency (TEE)**: This is the conventional option economics culminating in the BCR (as previously described)

- **Wider Economic Impacts (WEI)**: Any economic impacts which are additional to the transport user benefits, primarily focused on business productivity and labour market impacts

  - WEI are only generally **experienced in the largest schemes** (e.g., HS2, A9 Dualling), so are **less material here**

However, the guidance allows for a **strategic / economic** narrative, which is a qualitative description of economic benefits in addition to those quantified in the BCR. This is set out below in the context of improved connectivity generally, but it is important to recognise that a **fixed link** would by some distance be the most economically transformative of the options for Yell, and indeed several of the benefits would only emerge with the provision of a fixed connection. There would also be benefits for Fetlar and Unst, so a Yell fixed link could be transformative for the North Isles more generally. **These benefits include**:

- Significant productivity benefits, which could generate a **£30 million to £60 million in additional output per annum** by lifting production constraints, much of this driven by the aquaculture sector

- Supporting the growth of the strategically important **SaxaVord Spaceport**

- Improved **competitive positioning and investment confidence** more generally

- Widening and deepening of the **labour market in Yell**, improving access to labour and improved matching of labour to jobs

- **Reduced cost of doing business in the North Isles**, both direct costs and uncertainty risk premiums:

  - Supporting the **competitive positioning of existing businesses**, and widens the scope **for new businesses** (e.g., tourism) to set-up

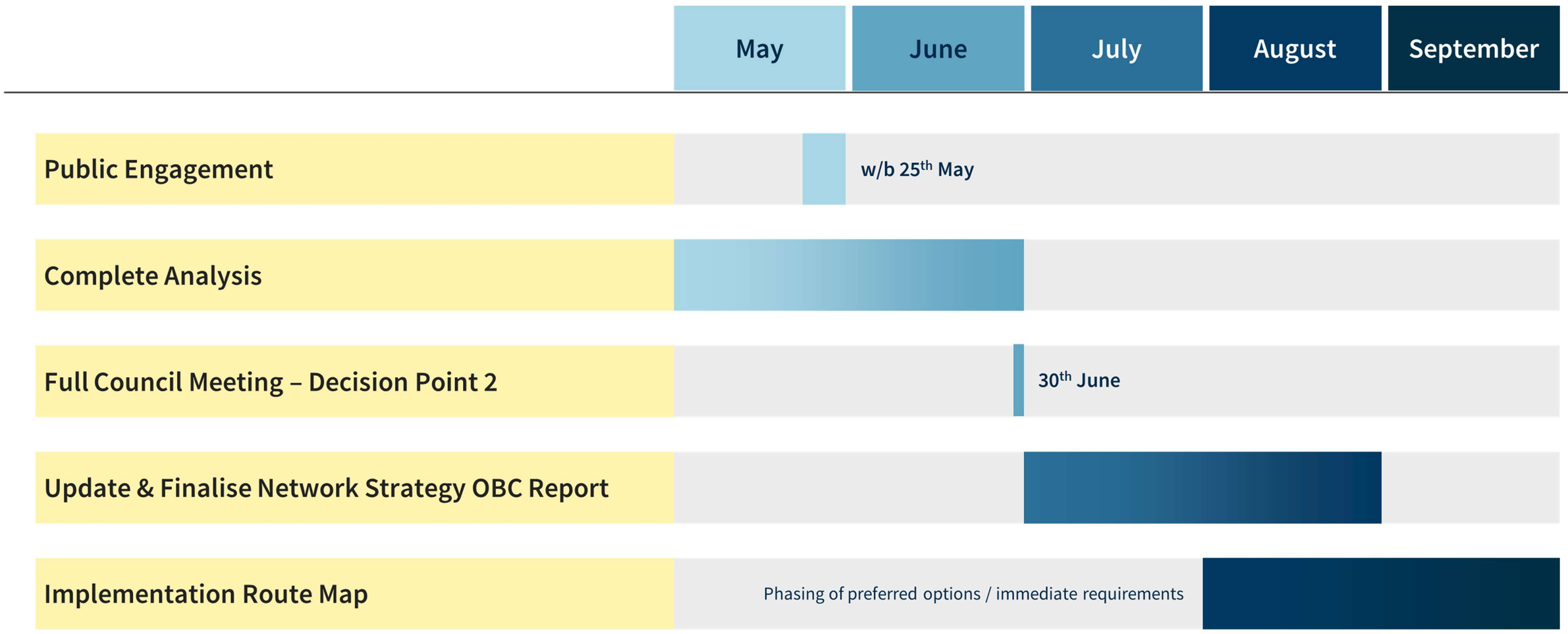
  - Making the refurbishment and development of **housing and commercial property** more affordable

  - More **efficient and cost-effective public service delivery**, for example reducing the cost of utilities firms like Scottish Water working in the islands

- Improved **community resilience**

- All of the above would contribute to supporting the **demographic and economic sustainability of Yell and the North Isles more generally**

# Next Steps




## What To Do Next

**Please take this opportunity to provide your thoughts to the team on the material presented and ask any questions you may have**

The boards that you have just read provide some topics that you may wish to discuss, and we would be happy to hear any views that you may have

The display boards will also be published online at: www.shetland.gov.uk/IITCShetland

Please also take time to fill out the feedback form before you leave. Scan the QR code to link to the survey **or fill out one of the forms provided.**

**Shetland Inter-Island Transport Connectivity Programme – Fill in form**

Shetland Inter-Island Transport Connectivity Programme