

Reinstatement of Branch Lines on the Isle of Wight

Strategic Outline Business Case

Submission to Department for Transport

Restoring your Railways Fund

June 2021





House of Commons
London SW1A 0AA
020 7219 1840 / bob.seely.mp@parliament.uk
Bob Seely MBE MP

30th June 2021

Foreword from Bob Seely MBE MP

The Prime Minister has committed to levelling up across the whole of the UK. This agenda will consist of holistic investment in skills, infrastructure and regeneration to tackle the deep-seated and structural inequalities faced by the left behind and forgotten areas across the UK.

As the largest English island by population separated by sea, and not served by a fixed link or regulated public transport service, the Island has been uniquely disadvantaged in terms of transportation to the wider UK. As this report finds, the Isle of Wight's annual output would be £800m higher each year if its economy had the average productivity of its wider region.

The Island has also been hampered by the gaps in its rail and road network, which have too often hindered access to jobs, reduced our attractiveness to business investment, fuelled unsustainable greenfield development, and contributed to congestion and a 'left-behind' image. In the last sixty years, the Island's population has increased by almost fifty percent. Residents and visitors now make around 135 million trips per annum. But of the 53-mile rail network with 36 stations that once connected the Island, just 8.5 miles is left today.

Local connectivity shouldn't hold back our levelling up agenda. We believe there is much that improving the Island's 'domestic' railway system can do to support our regional development, especially by linking rail with our major population centres and Portsmouth, our key mainland higher education and NHS partner.

This report makes clear that rail can significantly contribute to a strategic levelling up agenda for the Island that encourages significant economic and social improvement.

Restoring branch lines between our towns on the Isle of Wight will enable greater integration with cross-Solent transport providers, encourage low-carbon travel, bring people closer to town centres, and encourage a holistic approach to active and public transport. We are proposing an innovative transport model which contributes to a unique and exceptional tourism offer. This is key to the regeneration agenda. By breaking the cycle of unsustainable, car dependent greenfield development, new transport links into town centres will support a recycling culture of housing, within our towns and villages. It is a vision that sees transport connecting people to businesses, jobs, and education.

This report consists of a list of modelled options which address the Island's unique transport needs. We have the evidence base and expert advice needed to realise this vision. It is clear how these services can be restored to our socioeconomic benefit, and as this report shows, there is a strategic, financial and

commercial case for investment. We are calling for initial funding for a rail study that will allow us to create the Outline Business Case for the first phase of this rail vision.

An 'incremental approach', as this report finds, will perpetuate negative social, economic and environmental outcomes for Islanders. We are calling for a radically new one. This report sets out a plan to transform the Island's links with the wider South East, improve speed and reliability, and challenge the cycle of car dependency. It is a strategic vision, using rail to realise the Island's regeneration. I urge you to support this vision.

A handwritten signature in black ink, appearing to read 'Bob Seely', with a horizontal line underneath.

Bob Seely MBE MP
Member of Parliament, Isle of Wight

Contents

Executive Summary	1
Strategic Case	1
Economic Case	4
Financial Case	6
Management Case	7
Commercial Case	7
Conclusion	7
1 Introduction	8
1.1 Purpose and aims	8
1.2 Structure	8
2 The Strategic Case	9
2.1 Introduction	9
2.2 Case for change	10
Geographic Context	10
Economic, social, and demographic context	10
Transport context	13
Drivers of change	15
2.3 Investment Aims	21
2.4 Transport outcomes and scheme objectives	23
2.5 Option Development process	24
Introduction	24
Option generation and sifting	24
2.6 Option 1 - Extend railway to Newport via Wootton	29

	Route description	29
	Corridor constraints and opportunities	29
2.7	Option 2 - Extend railway to Newport via Blackwater	30
	Route description	30
	Corridor constraints and opportunities	30
	Rail systems	31
	Service specification	37
2.8	Option 3 - Bus Rapid Transit in A3054 corridor	38
	Route description	38
	Corridor constraints and opportunities	39
	Route sub-options	39
	Service specification	40
2.9	Option 4 - Reinstate railway to Wroxall and Ventnor	40
	Route description	40
	Corridor constraints and opportunities	41
	Route sub-options	41
	Service Specification	41
2.10	Option 5 – Extend Active travel corridor from Wroxall to Ventnor	41
	Route description	41
	Corridor constraints and opportunities	42
2.11	Strategic Assessment of Options	43
	Option 1: Extend railway to Newport via Wootton	43
	Option 2: Extend railway to Newport via Blackwater	43
	Option 3: Bus Rapid Transit in A3054 corridor	44
	Option 4: Reinstate railway to Wroxall and Ventnor	44
	Option 5: Extend active travel route from Wroxall to Ventnor	45

Phasing strategy	45
Other sub-options	48
2.12 Risks	48
Engineering risks	48
Demand and revenue	49
Wider policy context	49
3 The Economic Case	51
3.1 Introduction	51
3.2 Overview of approach	51
Indicative costs	51
Demand, revenue and user benefits	51
Phasing and discounting	53
Value for money	54
3.3 Option 2 – Extend railway to Newport via Blackwater	54
3.4 Option 4: Reinstate former railway to Wroxall and Ventnor	58
3.5 Longer term: Phase 3 investment package	59
4 The Financial Case	63
4.1 Introduction	63
4.2 Scheme costs	63
4.3 Cost risk and uncertainties	64
4.4 Funding opportunities	64
Other funding sources	65
5 The Commercial Case	67
5.1 Introduction	67
5.2 Procurement Strategy	67
6 The Management Case	69

6.1	Introduction	69
6.2	Governance and Oversight	69
6.3	Programme	70
6.4	Project Dependencies	71
6.5	Communications and Stakeholder Engagement Plan	71
6.6	Risk Management	71
6.7	Monitoring and Evaluation	72
7	Conclusions	75
7.1	Isle of Wight's 'Ask'	75
8	Appendix A: Options for Old Station Road, Ventnor	76

List of Tables

Table 1: Strategic assessment against transport objectives, standalone options and phased package of options	3
Table 2: Indicative costs, 2018 prices.....	5
Table 3: benefit to cost ratios for BAU and alternative scenarios; build of benefit to cost ratio elements for BAU case.....	5
Table 4: Indicative costs, 2018 prices.....	5
Table 5: Indicative infrastructure cost profile for Phase 1 scheme (Option 2 - Ryde to Newport railway), 2021 prices	6
Table 6: Strategic assessment against transport objectives, standalone options and phased package of options	28
Table 7: Outcomes of Strategic Assessment of Options.....	43
Table 8: Strategic connectivity benefits in alternative phasing scenarios - Option 2 then Option 4	45
Table 9: Strategic connectivity benefits in alternative phasing scenarios - Option 4 then Option 2	46
Table 10: Summary of transport benefits by corridor against investment aims.....	46
Table 11: Indicative costs for heavy rail operation, 2018 prices.....	54
Table 12: Indicative benefit to cost ratio for Option 2 – Extend Railway to Newport via Blackwater	56
Table 13: Indicative costs for heavy rail operation, 2018 prices.....	58
Table 14: Indicative costs for heavy rail operation, 2018 prices.....	60
Table 15: Indicative infrastructure cost profile for Phase 1 scheme (Option 2 - Ryde to Newport railway), 2021 prices	63
Table 16: Anticipated scheme outcomes	72

List of Figures and Maps

Figure 1: Strategic connectivity gaps in the IW transport system.....	1
Figure 2: Strategic case logic map process	9

Figure 3: Real economic output index, Isle of Wight, Hampshire, South East and UK, 1998 = 100	11
Figure 4: Changing occupational demand in Solent, 1981 to 2036.....	11
Figure 5: Annual net migration to the Island as a share of existing population, 2011	12
Figure 6: Island deprivation in the sub-regional context: Map of indices of multiple deprivation, 2019.....	12
Figure 7: Strategic connectivity gaps in the IW transport system.....	13
Figure 8: Key features of the Isle of Wight's transport system.....	14
Figure 9: DfT Reference Case assumptions about future Island trip patterns: Index of trips by mode originating on IW, 2011=100	15
Figure 10: Key linkages between the Isle of Wight's transport system and its wider strategic challenges and opportunities	16
Figure 11: Strategic development opportunities in Newport.....	18
Figure 12: Role of transport and other infrastructure investment in shifting IW's development path.....	21
Figure 13: Drivers of change and transport investment aims.....	22
Figure 14: Investment aims, transport system and behaviour outcomes and transport objectives.....	23
Figure 15: Overview of option development process	25
Figure 16: Option 1 - Ryde to Newport railway via Wootton	29
Figure 17: Option 2 – Ryde to Newport railway via Blackwater	31
Figure 18: Option for junction north of Sandown.....	34
Figure 19: Options for a southerly approach to Sandown.....	35
Figure 20: Possible alignment and terminus in central Newport.....	36
Figure 21: Future Route Alignment Options to link with a possible later extension towards Cowes	36
Figure 22: Option 3 - Bus Rapid Transit route in A3054 corridor.....	38
Figure 23: Option for guided busway route on northern approach to Newport	39
Figure 24: Possible on-road diversion route for buses to link the guided busway to Newport town centre	40
Figure 25: Option 4 – Ryde to Ventnor railway.....	40
Figure 26: Active travel route on former Shanklin to Ventnor railway line.....	42
Figure 27: Computer generated image of a proposal to convert the Queensbury Tunnel in West Yorkshire into cycle route	42
Figure 28: Indicative service patterns and frequencies, by phase	47
Figure 29: Indicative benefit to cost ratios of Option 2 - Extend railway to Newport via Blackwater, BAU55	
Figure 30: Impact of scenarios on value for money of 3 tph service from Newport via Blackwater with junction south of Sandown.....	57
Figure 31: Indicative benefit to cost ratios of Option 4 - Reinstatement former railway to Wroxall and Ventnor, BAU	59
Figure 32: Indicative benefit to cost ratios of complete Phase 3, BAU	60
Figure 33: Impact of scenarios on value for money of longer term 'Phase 3' transport development options	61
Figure 34: Indicative delivery programme.....	70

Executive Summary

Strategic Case

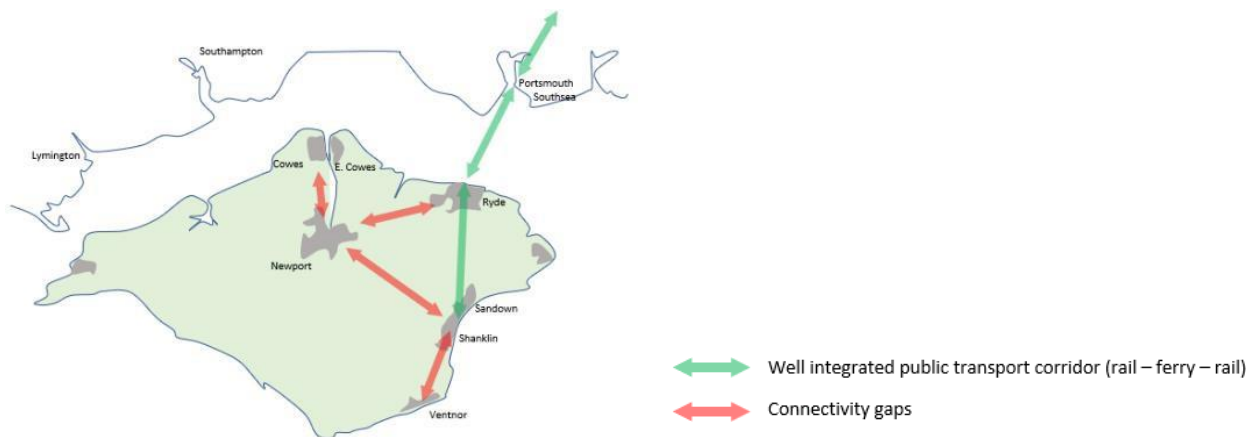
Case for Change

The Isle of Wight (IW) has a population of around 141,500, well over half of whom live within the seven main towns of Newport, Cowes, East Cowes, Ryde, Sandown, Shanklin and Ventnor. The Island's physical separation from the mainland is at the root of some entrenched social and economic challenges:

- Over the 20 years from 1998, the IW's rate of real economic growth (GVA) was substantially below the rates for Hampshire and IW and the South East, and only half that of the UK as a whole;
- Below average wages and a shortage of high quality jobs on the Island have led aspirational young people to seek opportunity elsewhere, contributing to growing demographic pressures as the Island's population ages;
- Relatively high rates of deprivation compared to Hampshire, with pockets of more severe deprivation in and around some of the main towns, including Newport and Ventnor.

The poor connectivity of the Island's own 'inland' transport system itself contributes to the isolation challenges. Strategic connectivity with the mainland is hampered by relatively poor access to cross Solent transport services. An exception is the interchange provided by the Island Line at Ryde Esplanade and Pier, but the strategic benefit is limited by the line's peripherality, in that it doesn't serve the economic heart of the Island in and around Newport. Strategic connectivity gaps in key inter-urban corridors are shown in Figure 1.

Figure 1: Strategic connectivity gaps in the IW transport system



The IW Council recognises that a 'business as usual' or 'incremental' approach to the planning of the Island's future is unsustainable and would lead to unacceptable demographic, economic and environmental outcomes. Newport will play an increasingly important role in enabling IW's vision by providing a focus for:

- sustainable development patterns that reduce car dependency and enable a more urban lifestyle that will appeal to a range of people including younger, aspirational workers;
- higher business investment and the creation of more high quality jobs, helping to retain and attract IW workers;

- improved education, skills and training opportunities, helping raise the aspirations of younger Islanders.

Newport Harbour represents a substantial opportunity to develop a new, high-quality urban location and a masterplan was approved in November 2020. There are, however, substantial further opportunities for redevelopment and intensification in the town. To realise these successfully will require a transformation in the nature and quality of transport provision.

Ventnor has the potential to provide a very high quality visitor offer that could support a more diverse and sustainable IW visitor economy and also to make a greater contribution to people seeking to take advantage of opportunities for home working and the digitisation of services.

In addition to contributing towards the Levelling Up agenda, the plans set out in this SOBC contribute toward a range of wider policy objectives, including:

- Achieving the UK's legally-binding 2050 net zero target;
- Delivering sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs; and
- Providing access to opportunities for lifelong learning which respond to and meet local needs.

With improved access to its wider region, IW is also well placed to benefit from the Solent Freeport, including higher inward investment and job creation.

Investment aims and transport objectives

A set of investment aims reflecting the Island's ambitions for a more prosperous and sustainable future were identified. The required changes in the transport system 'supply side' and transport behaviour necessary to realising these aims were identified through team and stakeholder workshops and a set of SMART strategic transport objectives were then derived – see Table 1.

.

Option Development

Following an option generation and sifting process, a shortlist of five options was identified, as summarised below:

- Option 1 – Extend railway to Newport via Wootton -
 - shares the Island Line between Ryde Pierhead and Smallbrook Junction;
 - joins the route of the existing Isle of Wight Steam Railway (IWSR) to Wootton;
 - approaches Newport close to the eastern bank of the River Medina;
 - either shares infrastructure with IWSR or IWSR is relocated.
- Option 2 – Extend railway to Newport via Blackwater -
 - shares the Island Line between Ryde Pierhead and new junction in Sandown area;
 - utilises the former Sandown to Newport railway;
 - approaches Newport from the south, serving an area on the edge of the town centre that contains major redevelopment opportunities;
- 'new' section could be built and operated as a 'hybrid light rail' semi segregated railway with less costly infrastructure, simpler signalling and locally controlled simple light/barrier crossings with battery powered tram trains or modified Class 484 vehicles.

Table 1: Strategic assessment against transport objectives, standalone options and phased package of options

Strategic Transport Objectives		Option 1: Extend Railway to Newport via Wootton	Option 2: Extend Railway to Newport via Blackwater	Option 3: Bus Rapid Transit in A3054 corridor	Option 4: Reinstate railway from Shanklin to Ventnor	Option 5: Extend active travel route from Wroxall to Ventnor
Improve non car-based journeys between major population centres and employment hubs on the Isle of Wight, specifically between Ryde, Newport, Ventnor, and The Bay (Sandown and Shanklin) by 2030. In doing so:	Deliver door-to-door journey times that are competitive with the equivalent car journey	✓✓✓	✓✓✓	✗	✓✓✓	✗
	Improve the reliability of journey times, measured by % of journeys arriving within 5 minutes of planned/expected free-flow journey time	✓✓✓	✓✓✓	✓	✓✓	✓
	Make a material contribution to reducing the share of trips made by car to 80% of the 2011 level.	✓✓	✓✓	✓	✓	✓
	Support sustainable development objectives by reducing the car-dependency of new residential and commercial developments as measured by the number of parking spaces per new dwelling.	✓✓✓	✓✓✓	✓	✓	✗
Improve transport links between major population centres and employment hubs on the Isle of Wight, and mainland locations including Portsmouth, London and the wider South East by 2030. In doing so:	Materially improve capacity of sustainable transport modes to serve Ryde ferry terminals in order to support up to 25% cross-Solent journeys in each direction per year.	✓✓✓	✓✓✓	✓	✓✓	✗
	Remove the need to interchange by providing direct access to Ryde Pier Head and, where necessary, integrated though-ticketing to mainland public transport services.	✓✓✓	✓✓✓	✗	✓✓✓	✗
	Reduce the car-dependency of cross-Solent travel by increasing the proportion of foot passengers	✓✓	✓✓	✗	✓	✗
	Materially improve the reliability, speed and convenience of journeys in in-scope transport corridors	✓✓	✓✓	✓	✓✓	✗
Supplementary Transport Objectives						
Preserve the heritage character of the IW Steam Railway		✗	✓	✓	✓	✓
Ensure no detriment to existing provision of active travel modes		✓	✓	✓	✓	✓
Ensure no significant detriment in transport provision for smaller, intermediate settlements		✓	✓	✓	✓	✓

- 3 trains per hour (tph) service with an end to end journey of between 21 and 26 minutes.
- Option 3 – Bus Rapid Transit in A3054 corridor -
 - follows the main road (A3054) between Newport and Ryde;
 - package of measures including a 0.9 km section of guided busway to enable buses to avoid peak period traffic queuing delay westbound on approach to Newport;
- Option 4 – Reinstatement former railway to Wroxall and Ventnor;
 - reinstates the former railway from Shanklin to Wroxall and Ventnor -
 - shares Ventnor Tunnel with existing utility services;
 - first / last mile transport at Ventnor required owing to elevation of station site;
 - 3 trains per hour (tph) service with 6 minute journey from Shanklin to Ventnor;
- Option 5 – Extend active travel corridor from Wroxall to Ventnor -
 - Extends existing walking and cycling route between Shanklin and Wroxall;
 - 1.1 km Ventnor tunnel would be renovated and opened as a new route for public use to Ventnor;
 - provides an active travel feeder link to the Island Line at Shanklin.

Strategic Assessment

A summary of the five options' performance against the transport objectives is shown in Table 1.

Option 1 was ruled out on cost and feasibility grounds; Options 3 and 5 didn't adequately address the strategic objectives and were ruled out.

Extending the railway to Newport via Blackwater (Option 2) is expected to have a dynamic set of impacts that goes to the heart of the strategic objectives and benefits a wide range of people and places across IW and on the mainland. By contrast, while reinstating the railway to Wroxall and Ventnor performs well, it would play a more localised role and is less central to the strategic vision of a more prosperous, inclusive, and sustainable Island. As a result, the rail extension to Newport provides more opportunities for a rollout of benefits that build on one another, i.e. the case for the Ventnor line is likely to be strengthened if the railway to Newport is in place and has started generating dynamic economic benefits that will themselves boost prospective demand on the Ventnor line.

The following options were taken forward for quantitative assessment in the Economic Case:

- Option 2 - Extend railway to Newport via Blackwater;
- Option 4 - Reinstatement railway to Wroxall and Ventnor; and
- A longer term vision incorporating both Option 2 and Option 4 and a third rail service between Newport and Shanklin / Ventnor.

Economic Case

Introduction

A high-level financial and non-financial appraisal was undertaken for the options that were taken forward. Each was tested using three alternative scenarios ('Business as Usual', 'Economic Catch Up' and 'Sustainable Transformation'), which were constructed to reflect alternative assumptions about the various strategic drivers of demand, including:

- Population growth, ageing and demographics;
- The scale, location, and nature of development;

- Strategic markets, including cross-Solent markets and the visitor economy;
- Modal policies such as car parking charges and public transport fares; and
- Post-Covid transport and economic behaviours.

Option 2: Extend railway to Newport via Blackwater

The indicative costs of this option are shown in Table 2.

Table 2: Indicative costs, 2018 prices

	Cost excluding optimism bias	Optimism bias	Total cost
Capital costs			
Extension of railway to Newport via Blackwater with north facing junction South of Sandown Station	■	■	■
Operating costs			
3 tph Newport to Ryde via Sandown	■	■	■

The indicative benefit to cost ratio is based on the building blocks shown in Table 3.

Table 3: benefit to cost ratios for BAU and alternative scenarios; build of benefit to cost ratio elements for BAU case.

	Newport via Blackwater (jcn south of Sandown)	
	No savings in bus opex	Savings in bus opex
Business as Usual	0.8	1.3
Economic Catch-Up		1.6
Sustainable Transformation		2.3
Economic Catch-Up & Sustainable Transformation		3.6

Changes in the value for money case through the various combinations of the 'Economic Catch-Up' and 'Sustainable Transformation' scenarios show that the benefit cost case is strongly affected by the future nature of Island development and policy.

Assumptions about potential long term negative impacts of Covid-19 significantly hamper the economic case. For comparison, the 3tph Newport via Blackwater scheme with a junction to the south of Sandown sees the BCR fall from between 0.8 and 1.3 under Business as Usual to between 0.4 and 0.6 as future transport markets – and public transport markets in particular – contract.

Option 4: Reinstate former railway to Wroxall and Ventnor

The indicative costs of this option are shown in Table 4.

Table 4: Indicative costs, 2018 prices

Option	Indicative cost (including optimism bias)
Capital costs	
Reinstatement of former railway to Wroxall and Ventnor including Ventnor tunnel and new station	■
Operating cost	
3 tph Shanklin to Ventnor	■

An access penalty over and above the usual station access/egress penalties was applied in the model, to reflect the elevated location of Ventnor station. This reduced demand and revenue by around 15%.

Overall, it appears that the economic case for reopening the Ventnor line offers a benefit to cost ratio of greater than one whether or not there are associated changes in bus operating costs. If no bus cost savings are possible, then the BCR is around 1.2 while if reduced bus revenues can be translated into lower bus operating costs, then the BCR under Business as Usual assumptions is around 1.6. This option appears to offer a good prospect for delivering medium value for money and may be able to achieve high value for money in some scenarios.

Longer term vision

In a longer term vision for the Island’s rail system, the Ryde to Newport via Blackwater and the Ventnor extension would combine to offer a three route service pattern covering Ryde, The Bay, Newport, and Ventnor. This longer term vision meets most of the strategic requirements for the transport corridors examined and could be further extended with future extensions from Newport to Cowes (Phase 4).

Adding a 3 trains per hour service from Newport to Shanklin would not require significant new infrastructure but would incur additional operating cost of around £1.8m. The value for money is between 0.6 and 0.9, with and without bus operating cost savings, and excluding other impacts such as wider economic benefits, decongestion, safety, and carbon emissions.

As modelled, the overall programme delivers lower value for money than either Option 2 or Option 4 alone. This is because the additional third service provides modest benefits as the link between Sandown and Newport is already served in Phase 1, so the marginal benefits do not cover the marginal costs of the service.

When considered against the Island’s development ambitions however, the longer term vision shows that it could provide medium value for money – or potentially greater once cost synergies and other benefits are calculated. The BCR of 0.9 with BAU increases to 1.0 under the Economic Catch Up scenario, 1.5 under the Sustainable Transformation scenario and 1.9 with both of these scenarios applied.

Financial Case

An indicative cost profile for a first phase of work to provide a railway service between Ryde and Newport is shown in Table 5.

Table 5: Indicative infrastructure cost profile for Phase 1 scheme (Option 2 - Ryde to Newport railway), 2021 prices

	Total	2023	2024	2025	2026	2027	2028
Infrastructure costs							



The cost estimates shown here are consistent with, albeit presented differently to, the equivalent cost figures presented within the Economic Case. In line with Department for Transport (DfT) Transport Appraisal Guidance (Unit A5.3, Section 2.5), no adjustment for either upside or downside risk has been included within the cost estimates presented.

Additional development funding to progress the scheme is anticipated to be provided via the Restoring Your Railway Fund, subject to agreement of the business case. A range of potential funding sources for the capital works has been identified, both from Government sources and third parties. The latter include a number of innovative options, such as:

- Vehicle testing fees - testing of battery powered vehicles in a segregated environment;
- Improving grid stability – the railway would provide a ready on-Island market for excess renewable energy;
- Testing alternative standards – the railway could be a testbed for innovation in the application of infrastructure and rolling stock standards;
- Dependent development – capturing a share of Land Value Uplift at key development sites in Newport.

Management Case

The Management Case outlines how the proposed scheme, and its intended outcomes will be delivered successfully. It gives assurances that the scheme content, programme, resources, impacts, problems, affected groups and decision makers, will all be handled appropriately, to ensure that the scheme is ultimately successful.

Commercial Case

Subject to agreement of the business case, further funding to develop the business case may be available from the Restoring Your Railways Ideas Fund, together with a contribution towards the capital costs of the scheme. It is expected that a preferred strategy for procurement for capital works would be identified by Network Rail (NR) or its successor Great British Railways (GBR) during the Outline Business Case development stage. In line with NR processes, the preferred strategy would be selected in order to ensure that value for money is achieved, and that all procurement is compliant with all relevant processes and standards.

Conclusion

The 'ask' is for development funding to proceed to an Outline Business Case for Phase 1 of the Island's transformational rail vision – the implementation of a frequent, fast, and reliable railway service between Ryde Pierhead and Newport.

1 Introduction

1.1 Purpose and aims

The Strategic Outline Business Case (SOBC) represents the first stage in the business case cycle and is also known as the 'scoping stage'. Its purpose is to:

- confirm the strategic context (considering a range of socioeconomic, transport, and policy factors) in which investment would take place;
- explain the case for change;
- evaluate options for investment;
- provide stakeholders with an early indication of the proposed way forward and options for investment, but not with a preferred option.

This SOBC examines the costs and benefits of a range of rail and non-rail investments in a set of transport corridors linking the Isle of Wight's main towns. A varied programme of activities, including the project team's own research, various previous studies, a site visit, and an extensive programme of stakeholder engagement, informed the development and assessment of the options.

1.2 Structure

The business case consists of five cases, although at SOBC stage the main focus is on the Strategic and Economic Cases, with the remaining cases provided at a high level. The rest of this document is structured with that in mind:

- The Strategic Case: setting out the Isle of Wight context in which investment would take place and demonstrating the case for change, including compatibility with national, regional, and local policy objectives (including Levelling Up).
- The Economic Case: assessing the costs and benefits / disbenefits of options to identify their impacts and value for money.
- The Financial Case, examining affordability, funding arrangements, and technical accounting issues,
- the Commercial Case, providing evidence on commercial viability and procurement strategies,
- The Management Case, assessing the deliverability of a proposal.
- Conclusions.

A series of annexes with supporting information are also provided:

- Annex 1: Situational Analysis Report;
- Annex 2: Route Assessment Framework;
- Annex 3: GIS maps of current and former rail corridors, land use, land ownership, and environmental constraints;
- Annex 4: Option Development Report;
- Annex 5: Stakeholder workshop outputs;
- Annex 6: Summary of timetable modelling.

For an external link to a Google Earth Project providing a set of GIS linked photos from the project team's site visit, see [here](#).

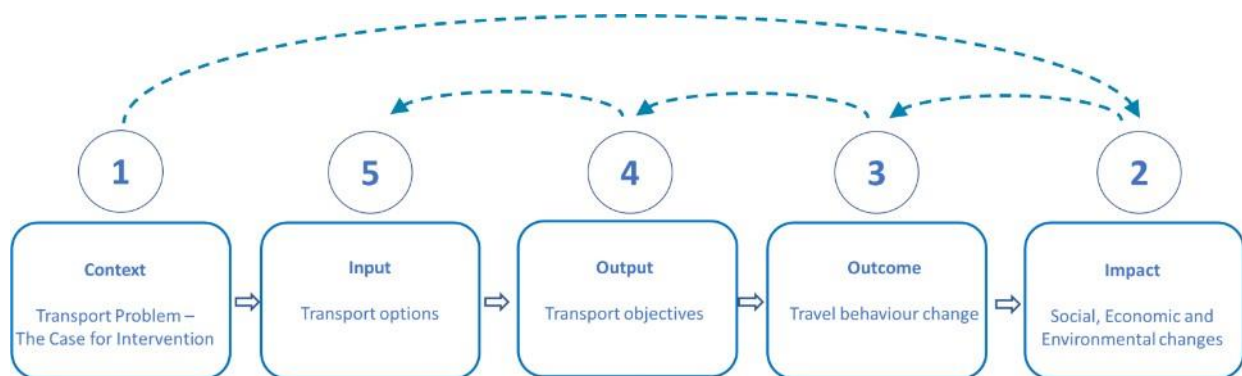
2 The Strategic Case

2.1 Introduction

The aims of the strategic case are to:

- explain the rationale for the proposed investment, clearly identifying the transport problem that it will address, as part of a robust case for change;
- set out the scope of the proposed intervention, including a set of SMART objectives and the process by which they were developed;
- demonstrate that an appropriate range of options, including various transport modes, was considered; and
- explain the benefits and disbenefits of the options, including how they will address the ‘levelling-up’ agenda and reconnect communities, and tie into local or regional plans.

Figure 2: Strategic case logic map process



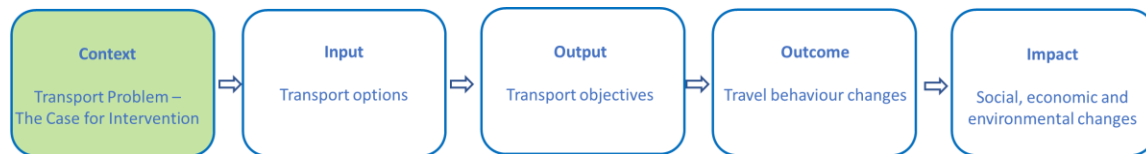
To meet the objectives as effectively as possible, a ‘logic map’ approach has been adopted. This is designed to provide clarity about the mechanisms by which the proposed intervention is expected to generate its ultimate impacts. It does so by describing a ‘theory of change’ that specifies a series of causal links, starting with the context for the intervention, and moving progressively through inputs, outputs, and outcomes to impacts.

After defining the problem to be addressed, the strategic case is constructed by following these steps in reverse chronological order, from impacts, through outcomes and outputs to inputs, as shown in Figure 2. This provides a firm basis for defining a set of transport options that have logical pathways towards achieving a clear set of aims.

The strategic case is structured as follows:

- the **case for change**, in which the transport problem to be addressed is described;
- the **investment aims**, which describe the desired impacts the investment will have on economic, social, and environmental performance;
- the **transport objectives**, which specify the changes in the ‘supply’ of transport needed to bring about the shifts in travel behaviour on which the impacts are predicated;
- the **transport options**, which represent the different ways in which the transport objectives might be addressed;
- **strategic assessment** of the options, including evidence about impacts on the levelling up agenda and **phasing**.

2.2 Case for change



Geographic Context

The Isle of Wight (IW), with a population of around 141,500 (2018 ONS mid-population estimates) lies a few miles off the south coast of mainland England and covers an area of 147 square miles. It is part of the Solent Region, the largest population and economic centre in southern England outside London, which contains 1.25 million people and 42,000 businesses, including the cities of Portsmouth and Southampton.

Well over half of the IW's population live within the seven main towns of Newport, Cowes, East Cowes, Ryde, Sandown, Shanklin and Ventnor. The western half of the Island is much less developed than the eastern half. The three largest centres of population and economic activity are Ryde, Newport, and the Bay area, which encompasses Sandown and Shanklin in East Wight. Newport, the county town, is the only inland town of any size and is the main retail, employment, education, and administrative centre. Newport Harbour is a key regeneration opportunity and plans for more extensive regeneration and development in the town have recently emerged.

The other main settlements are on the coast and are all historic resort towns. With the exception of Cowes, they have been affected by the decline of traditional forms of domestic tourism over the past fifty years or so. For example, Ventnor has lost much of its visitor accommodation. The IW nevertheless remains a popular destination. Well in excess of 2m visits to the Island are made each year, which includes trips by growing numbers of second home owners. The towns contain much attractive period architecture and have significant regeneration potential, including opportunities for intensification and brownfield development.

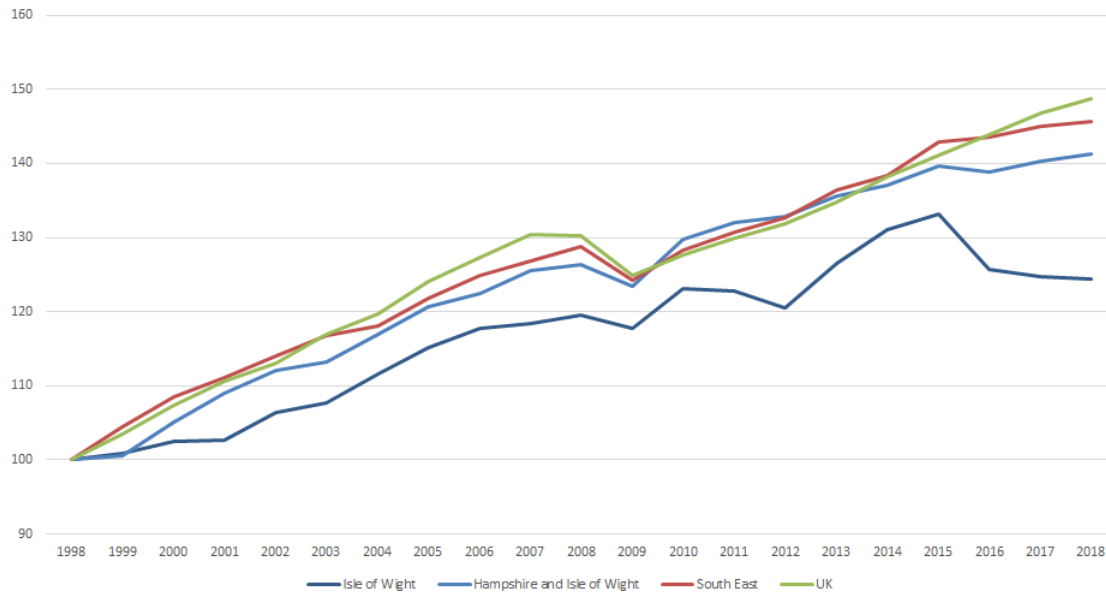
The IW is well known for the quality of its environment and 84% of its area is rural. Its landscapes and coastlines enjoy a high level of special designation and protection, with over 50% of the Island designated as an Area of Outstanding Natural Beauty (AONB) and a high number of important sites for nature conservation.

Economic, social, and demographic context

While its physical separation is an essential aspect of the IW's unique character and, for many people, a key aspect of its attractiveness, it is also at the root of some entrenched challenges. As the Island Plan Core Strategy states, "[it] impacts on the ease of extending markets, interacting with customers and suppliers, access to centres of higher education and wider industry, educational, community and social networks generally. All these factors can collectively impact negatively upon aspiration."

A long-standing economic performance gap exists between the IW and the wider South East (SE) region of which it is a constituent part. Over the 20 years from 1998, The IW's rate of real economic growth (GVA) was substantially below the rates for Hampshire and IW and the SE, and only half that of the UK, as Figure 3 shows. While the local economy has some strengths, including in advanced manufacturing, it has seen structural decline in traditional sectors such as seaside tourism and agriculture and there has been insufficient investment and a loss of the skills needed to reinvigorate the economy.

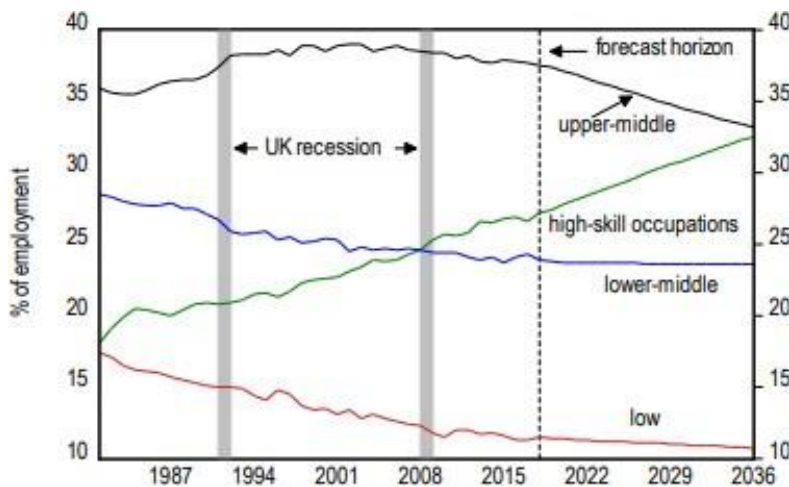
Figure 3: Real economic output index, Isle of Wight, Hampshire, South East and UK, 1998 = 100



Source: ONS

The changes in demand for different occupational skill levels expected by the Solent LEP to 2036 is shown in Figure 4. This shows a strong increase in demand for high skilled labour and decline in the share of all other categories.

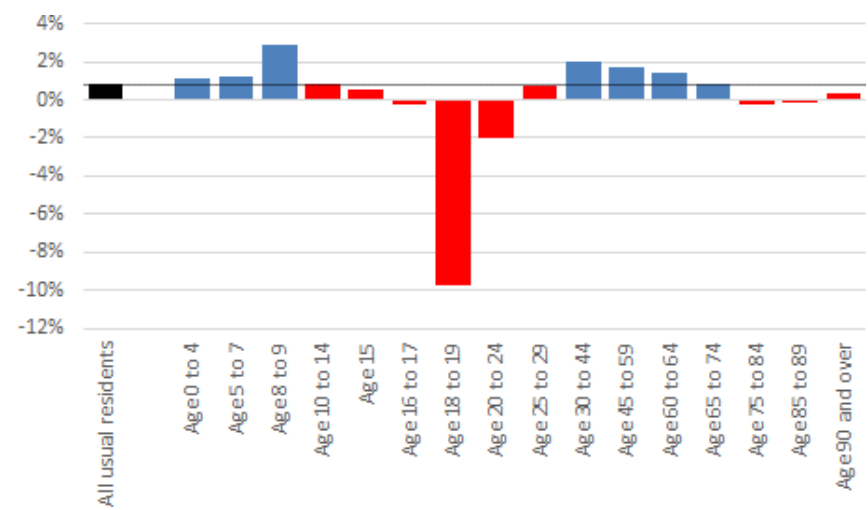
Figure 4: Changing occupational demand in Solent, 1981 to 2036



Source: ONS and CE, 2019 sourced from Solent Skills Advisory Panel Local Skills and Labour Market Analysis, June 2020 (<https://solentlep.org.uk/media/3114/solent-lep-skills-and-local-labour-market-report-june-2020-final.pdf>)

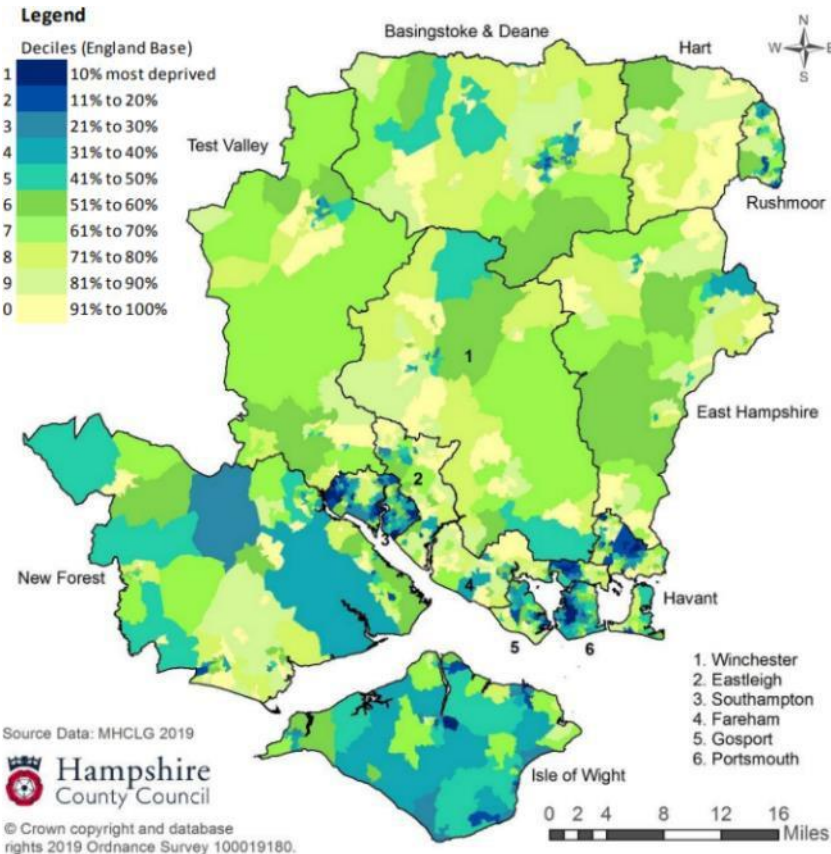
Below average wages and a shortage of high quality jobs on the Island have led aspirational young people to seek opportunity elsewhere, as Figure 5 shows, contributing to growing demographic pressures as the Island's population ages.

Figure 5: Annual net migration to the Island as a share of existing population, 2011



These patterns contribute to relatively high rates of deprivation on the Island compared to Hampshire, and there are pockets of more severe deprivation in and around some of the main towns, including Newport and Ventnor, as Figure 6 shows.

Figure 6: Island deprivation in the sub-regional context: Map of indices of multiple deprivation, 2019



Source: Census 2011

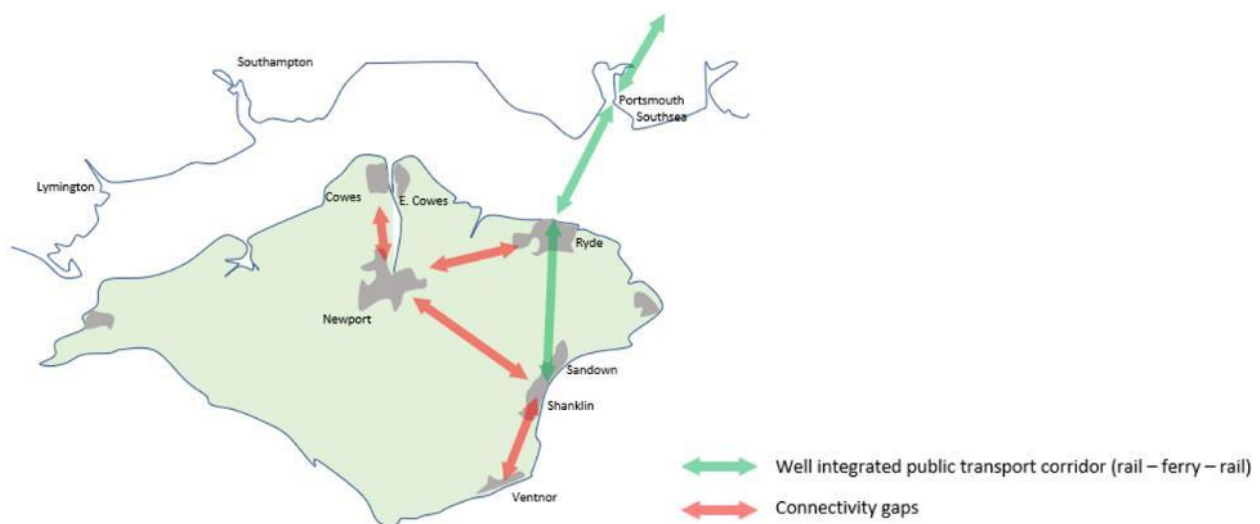
Transport context

The nature of the IW's geography, together with a historic lack of investment, have resulted in the poor connectivity of the 'inland' transport system itself contributing to the isolation challenges. Key features of the Island's transport system are summarised in Figure 8 and further details are provided in Annex 1.

Strategic connectivity with the mainland is hampered by relatively poor access to cross-Solent transport services. An exception is the interchange provided by the Island Line at Ryde Esplanade and Pier, but the strategic benefit is limited by the line's peripherality, in that it doesn't serve the economic heart of the Island in and around Newport. It is worth noting that most Islanders wishing to travel by rail to London, or the rest of the UK, choose the route via Ryde and Portsmouth rather than Cowes and Southampton. Ryde and Portsmouth both offer excellent ferry – rail interchange on foot, while a bus connection is required between the ferry and railway station in Southampton.

Relatively poor road connections mean there are a number of strategic connectivity gaps in key inter-urban corridors, which are highlighted in Figure 7. This includes the Newport – Cowes corridor, which, although it is not in scope, is of strategic importance and relevance to the overall strategy.

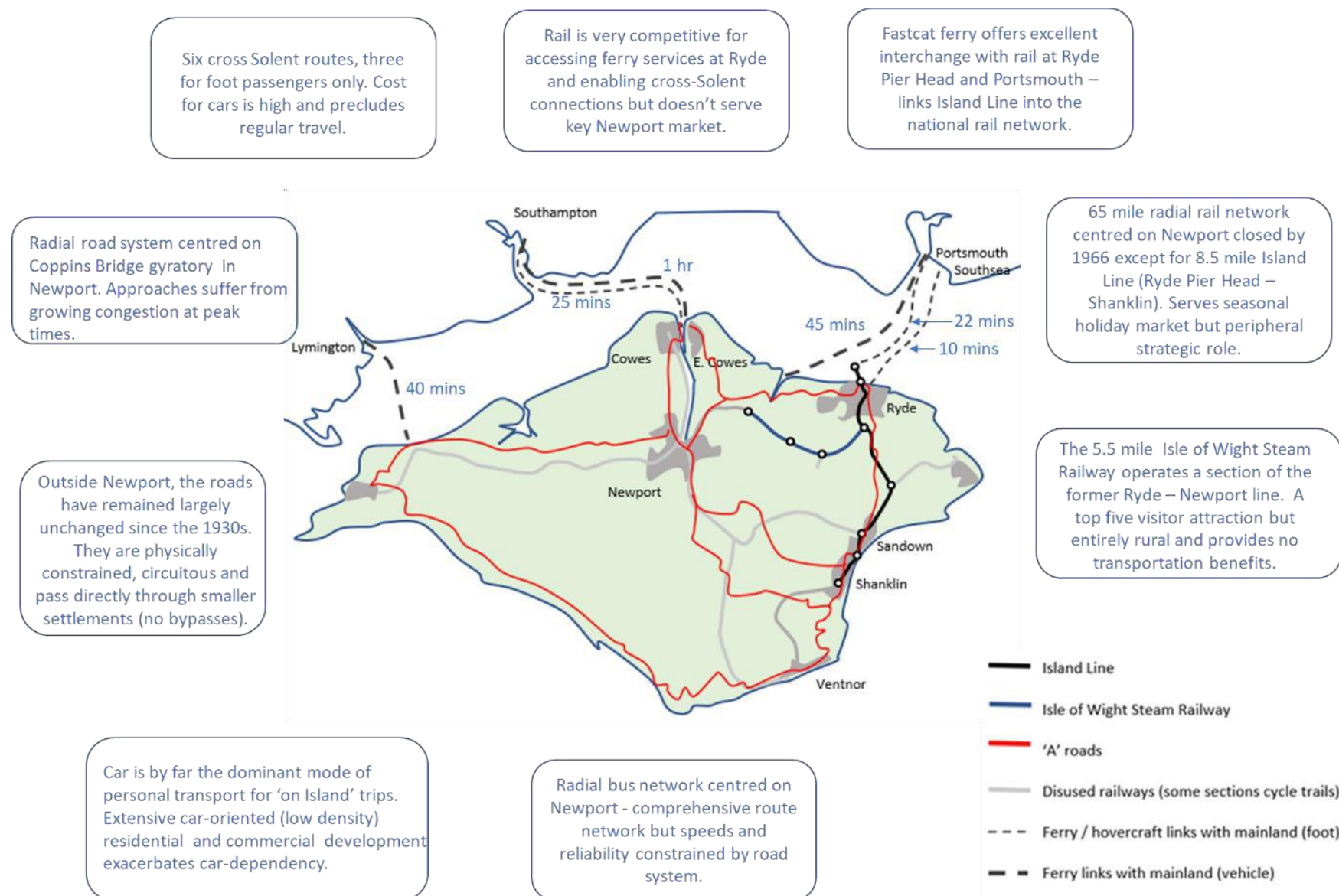
Figure 7: Strategic connectivity gaps in the IW transport system



Residents and visitors make around 135 million trips per annum – or an average of around 365,000 per day. These range from long distance international, national, and regional trips that involve a crossing of the Solent, to more local trips contained within the Island itself. Analysis of these markets, including of trip purposes and modes used, is provided in Annex 1, along with the performance of the various modes in serving key corridors. This shows that car is the dominant mode of personal transport for 'on Island' trips.

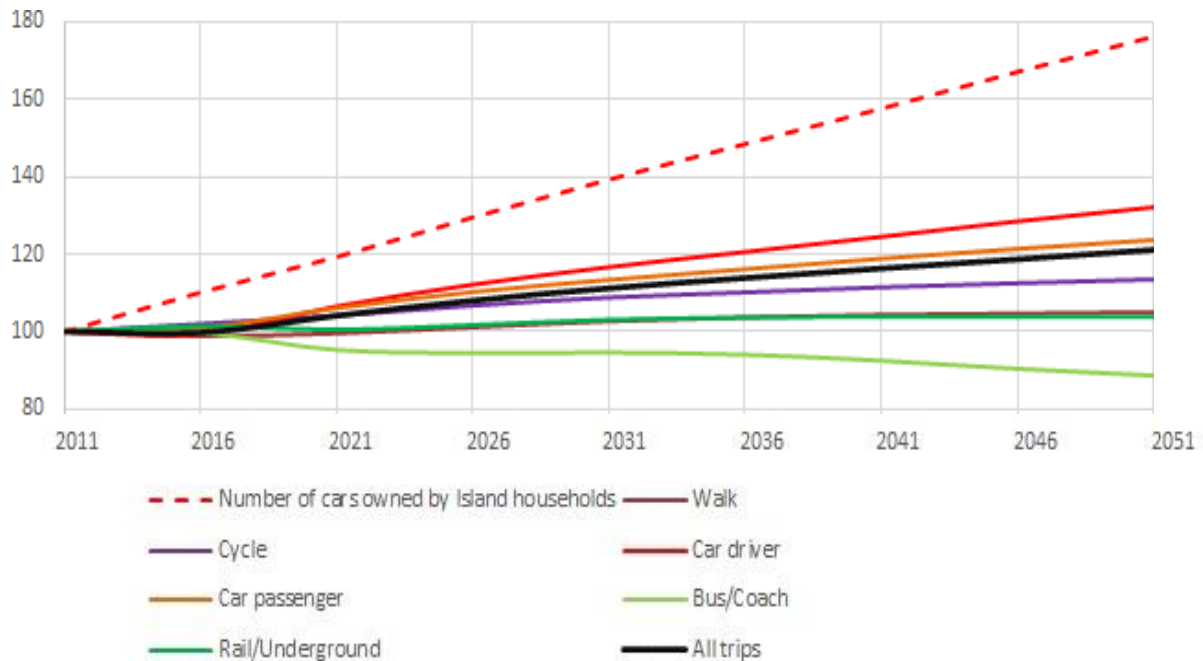
There has been considerable suburban residential development in recent decades on greenfield, edge of towns sites, while in Newport there has been extensive low density, car-centric commercial development on the fringes of the town centre. This has contributed to growing congestion, further reducing traffic speeds and the reliability of the road system. Traffic also detracts from the quality of the urban realm, particularly on the edges of Newport town centre and on the main radial routes that emanate from Coppins Bridge. Low density, extensive patterns of development have exacerbated and embedded car-dependent lifestyles.

Figure 8: Key features of the Isle of Wight's transport system



DfT Central case forecasts show continually rising car ownership and usage. See Figure 9 and further discussion in Annex 1. These forecasts reflect a combination of historic trends and some aspects of local plans, but they are prepared nationally and so do not reflect the full range of drivers of future change or the policy levers and priorities the IW plans in response to these. In fact, interventions delivered in IW over the last decade aimed at travel behaviour show that residents and visitors have a propensity to change travel behaviour (primarily away from private car) to other modes if the offer meets their needs¹.

Figure 9: DfT Reference Case assumptions about future Island trip patterns: Index of trips by mode originating on IW, 2011=100



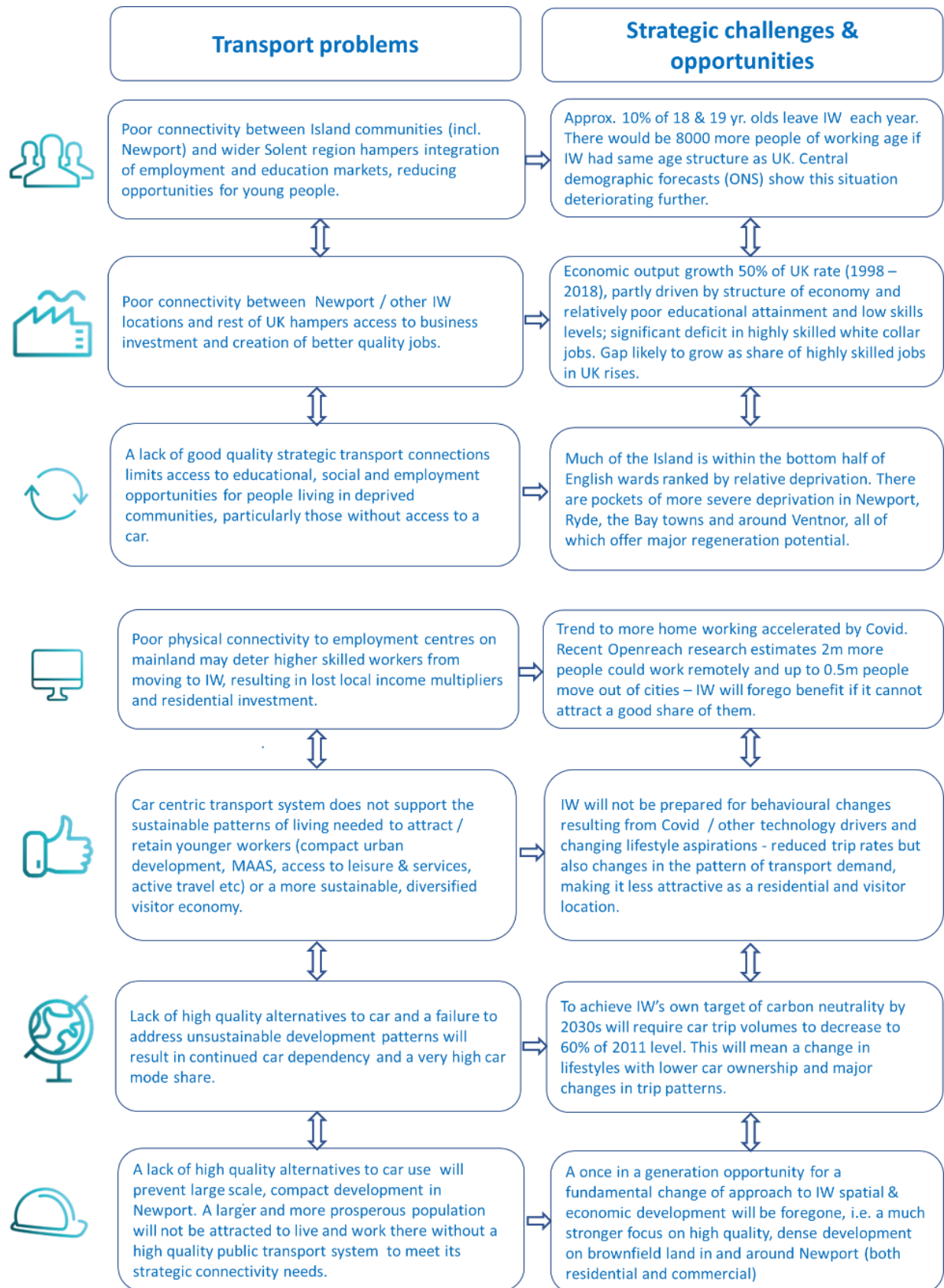
Source: National Trip End Model (NTEM v7.2)

Drivers of change

Aspects of the existing transport system - in particular, the lack of high quality alternatives to car use and poor strategic connectivity both with the mainland and between towns on the Island - are key drivers of the formidable economic, social, demographic, and environmental challenges that the IW faces now and in the future, as set out above. They also represent constraints on IW's ability to take full advantage of some emerging strategic opportunities associated with expected post-Covid changes in living and working patterns, wider technological developments and changing lifestyle aspirations. Key linkages between the Island's transport system characteristics and its wider strategic challenges and opportunities are summarised in Figure 10. This effectively summarises the "context" element of the strategic case logic map.

¹ <http://www.iow.gov.uk/documentlibrary/view/isle-of-wight-access-fund-for-sustainable-transport-report-year-3-report>

Figure 10: Key linkages between the Isle of Wight's transport system and its wider strategic challenges and opportunities



Local Policy Drivers and Wider Opportunities

The IW Council recognises that a 'business as usual' or 'incremental' approach to the planning of the Island's future is unsustainable and would lead to unacceptable demographic, economic and environmental outcomes. In order to tackle the strategic challenges that are driving these, and respond to emerging opportunities, it is committed to implementing an integrated and visionary approach across a range of policy areas. The intention is to transform not only future transport provision on the Island, but the nature and pattern of spatial development, and the quality of economic opportunities available to Islanders. Key aspects of this approach include:

- more integrated economic development, spatial development, and transport;
- regeneration of existing towns, including through attracting more 'part time commuters';
- strongly focussing IW development on brownfield sites in and around Newport, with the town becoming a more modern, attractive, and prosperous growth hub that supports low impact lifestyles, with development characterised by compactness, density and high quality design..
- By focussing most of the economic and population growth on Newport, it will be possible to protect precious green space from further development.

This agenda represents a major opportunity for setting Newport onto a more prosperous and sustainable development path, in which it plays a pivotal role in enabling IW's vision for:

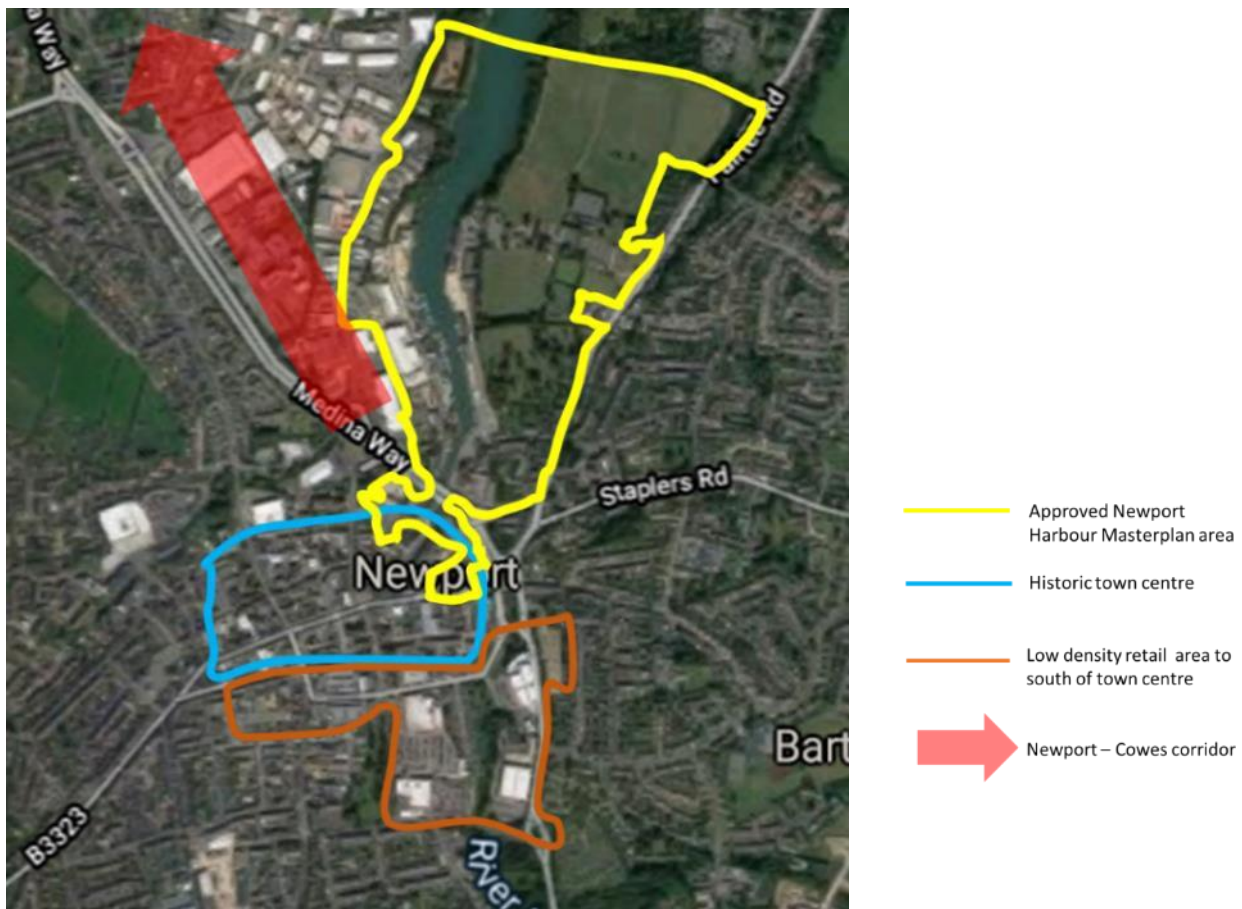
- sustainable development patterns that reduce car dependency and low density development on greenfield land and enable a more urban lifestyle that will appeal to a range of people including younger, aspirational workers (both from IW and elsewhere) in particular;
- higher business investment and the creation of more high quality jobs, helping to retain and attract IW workers;
- improved education, skills and training opportunities, helping raise the aspirations of younger Islanders.

Current regeneration plans in Newport are focussed on the Harbour, for which a Masterplan was approved in November 2020. This represents a substantial opportunity to develop a new, high-quality urban location. There are, however, further areas of land outside the Harbour Masterplan area that provide a major opportunity for additional redevelopment and intensification, including:

- numerous commercial single-use "1980s type" commercial developments on the edge of the town centre that could be redeveloped for higher density mixed uses and provide important opportunities for re-consideration of layout and design of the public realm;
- large sites on the Newport – Cowes corridor, around St Mary's Hospital and the prison estates that could accommodate substantial residential and commercial development;
- Newport town centre, the future role of which requires a rethink in response to the decline of traditional modes of retailing.

The town centre could play an expanded role both as a residential and business location, supporting local services for a greater population in the town centre itself and the areas surrounding it. It could form the heart of an exciting and dynamic '20 minute neighbourhood', offering an appealing lifestyle to a wide range of people, including younger and older Island residents and incomers from the mainland. If these opportunities are to be realised in a way that meets the overall scale of the IW's challenges, they will need to be incorporated into a wider and more ambitious spatial vision, with enhanced and extended masterplanning that covers more areas, as illustrated in Figure 11.

Figure 11: Strategic development opportunities in Newport



Such an approach will be critically dependent on a transformation in the nature and quality of transport provision, with a revised approach to public transport, car and other vehicle transport, car parking strategies, pedestrian, and cycle movement patterns and so on. The design approach and layout to the public realm will transform the perception and enjoyment of the whole of Newport town centre and the area that surrounds it.

Many of the economic and social challenges and opportunities set out above in relation to the IW as a whole apply to Ventnor and Wroxall, two communities in the SE corner of the IW:

- Ventnor has a wealth of attractive period architecture and a highly distinctive character. Prior to the closure of its rail connection in 1966, it was a popular seaside holiday destination, but there has been a steep decline in overnight visitor numbers over the following decades and it continues to suffer from challenges associated with its poor transport connectivity;
- The town, however, has the potential to provide a very high quality visitor offer and could make an important contribution towards a more diverse and sustainable IW visitor economy, focussed on more active and cultural tourism as well as family seaside holidays. There are aspirations to develop facilities capable of hosting regular arts and culture festivals in the town that would be aimed at national and international audiences;

- Ventnor and its surroundings could make a greater contribution to the Island's residential offer to increasingly footloose workers who are seeking to leave congested and relatively unaffordable cities and take advantage of opportunities for home working and the digitisation of services;
- There are pockets of significant deprivation in and around the town, and access to employment and education opportunities are limited for many people in these communities;
- Wroxall is a smaller, inland community that also contains pockets of deprivation, with poor access to opportunities for some residents, and some regeneration opportunities, including around the site of the former railway station at the former 'Bacon Factory' site.

In order to unlock change that responds to the above challenges and opportunities, the towns' highly constrained **strategic transport connectivity** will need to be addressed.

National policy drivers

Build Back Better: our plan for growth (HM Treasury, March 2021) sets out some of the Government's thinking about 'Levelling Up'. The White Paper recognises that:

"High quality infrastructure is crucial for economic growth, boosting productivity and competitiveness. More than this, it is at the centre of our communities. Infrastructure helps connect people to each other, people to businesses, and businesses to markets, forming a foundation for economic activity and community prosperity. Well-developed transport networks allow businesses to grow and expand, enabling them to extend supply chains, deepen labour and product markets, collaborate, innovate and attract inward investment."

Within this context and recognising that the UK has a smaller capital stock than many of its international competitors, the Government has committed to delivering over █████ of gross public sector investment over the next five years. This will require annual spending to increase by more than █████ from █████ in 2019-20 to █████ in 2020-21.

Further details regarding the likely beneficiaries of this additional funding are described in the *National Infrastructure Strategy* (HM Treasury, November 2020). The NIS committed to:

- Boosting growth and productivity across the whole of the UK, levelling up and strengthening the Union through investment in rural areas, towns and cities, from major national projects to local priorities.
- Putting the UK on the path to meeting its net zero emissions target by 2050 by taking steps to decarbonise the UK's power, heat and transport networks.
- Launching new UK-wide funds including the £4.8bn Levelling Up Fund, and the £150m Community Ownership Fund (over four years from 2020-21) that will invest in local infrastructure.

The Levelling Up Fund prospectus was published alongside *Build Back Better* and describes how:

"the most impactful infrastructure projects – those that help bring pride to a local area – are often smaller in scale and geography: regenerating a town centre, local investment in cultural facilities or upgrading local transport infrastructure."

While transport investment is one of three themes for the first round of funding, this is predominantly aimed at smaller transport projects (less than £20m) including (but not limited to) public transport, active travel, bridge repairs, bus priority lanes, local road improvements and major structural maintenance, and accessibility improvements.

In addition to being closely aligned with both the levelling-up agenda, and the government's plans for securing economic growth in places that traditionally have performed less well, the plans set out in this SOBC also contribute toward a range of wider policy objectives, including:

- Achieving the UK’s legally-binding 2050 net zero target²;
- Delivering sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs³; and
- Providing access to opportunities for lifelong learning which respond to and meet local needs⁴.

Regional policy fit

The Isle of Wight, alongside the two cities of Southampton and Portsmouth and the Solent waterway itself sit at the heart of the Solent Local Enterprise Partnership (LEP) area. This geography creates unique circumstances, with the Solent a natural barrier to competition and trade between Island and mainland businesses. Moreover, both Southampton and Portsmouth have become increasingly decentralised over the past 40 years, with the relocation of employment to edge of city business parks along the M27 corridor making mainland jobs harder to access for Island residents.

The Solent LEP’s *Growth Strategy* (2015) set out a plan to create jobs and growth for the Solent, focused on six priority areas for investment. In its subsequent productivity and growth strategy update *Transforming the Solent* (2017), it reinforced the need for better infrastructure on the Isle of Wight. In addition to bringing forward new housing and employment floorspace in the Medina Valley, Ryde and The Bay regeneration areas, it is recognised that infrastructure investment is needed to “unlock and accelerate their potential and improve viability for private sector investment, recognising that construction projects on the Island attract a premium.” This aligns closely with the proposal to reinstate railway services between Ryde, Newport, Ventnor and The Bay.

Following the abandonment of the national Industrial Strategy, the future for Local Industrial Strategies (LIS) is uncertain. The draft Solent LIS was anticipated to focus on the Solent’s strategic position as a global gateway through its ports and air connections. Reliable and efficient transport infrastructure and connectivity, such as enhanced public transport provision on the Isle of Wight, formed a vital component of that approach to create a better performing Solent economy.

The importance of the Solent’s competitive advantage in the maritime sector to driving growth was emphasised in March 2021 when, alongside publication of its Plan for Growth, the government announced the Solent as one of eight designated Freeports, which followed a competitive bidding process. Freeports are secure zones based around regional sea, air and rail ports where business can be carried out inside a country’s land border, but where different customs rules and other favourable arrangements apply.

Freeports have been established with the objectives of promoting regeneration and job creation in deprived areas, creating new national hubs for global trade and investment, and creating hotbeds for innovation. The Isle of Wight is therefore well placed to benefit from many of the competitive advantages provided by Freeport status, and from the knock-on opportunities presented. such as inward investment and job creation.

Finally, Transport for the South East (TfSE), the shadow sub-national body for South East England, published a Regional Transport Strategy in 2020. This identifies the need for economic growth, but not at any cost. The strategy supports sustainable economic growth that delivers positive social and environmental outcomes. This would be achieved by investment in sustainable alternatives to the car, cleaner freight and included the possibility of demand management.

² The Climate Change Act 2008 (2050 Target Amendment) Order 2019

³ National Planning Policy Framework, Ministry of Housing Communities and Local Government (February 2019)

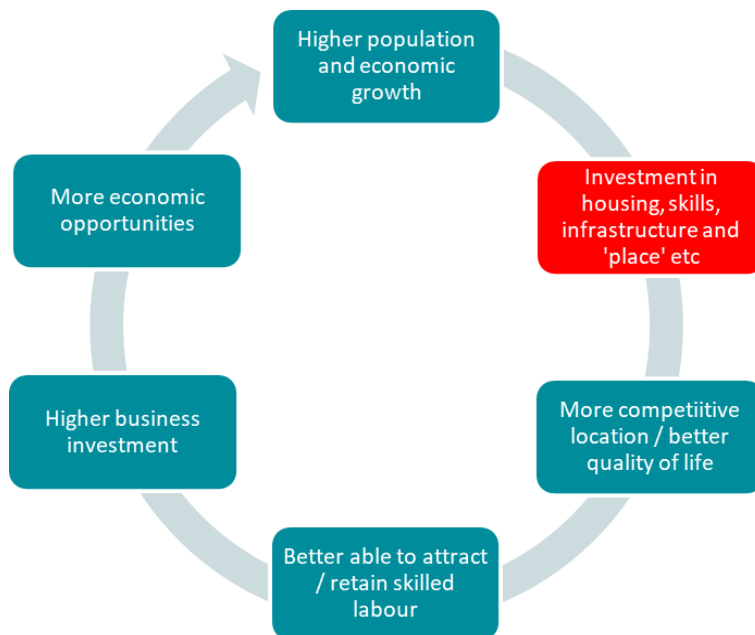
⁴ Skills for Jobs: Lifelong Learning for Opportunity and Growth, Department for Education (January 2021)

2.3 Investment Aims



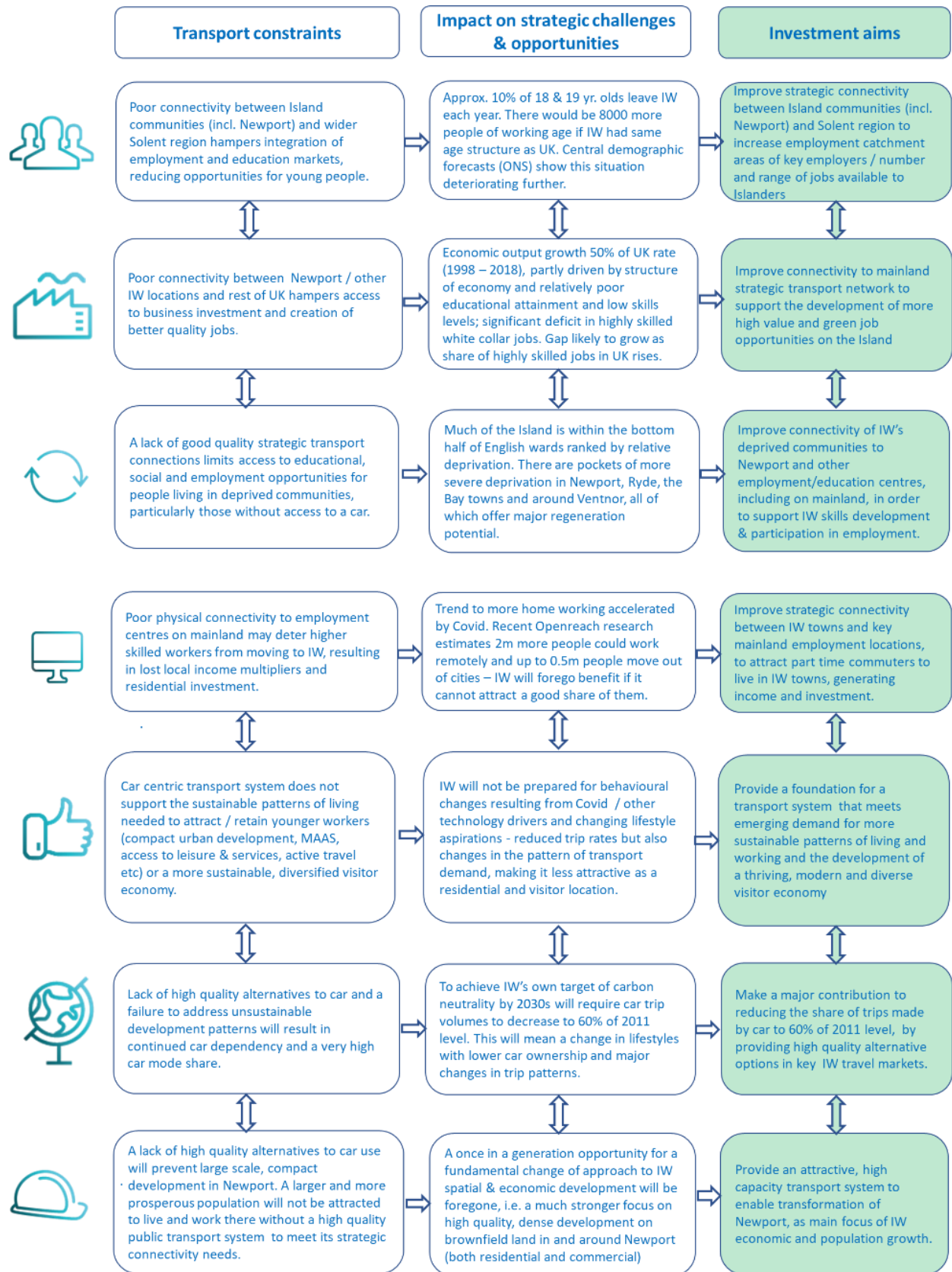
The key aims of the proposed investment are to address the challenges and opportunities resulting from the transport system constraints in the case for change.

Figure 12: Role of transport and other infrastructure investment in shifting IW's development path

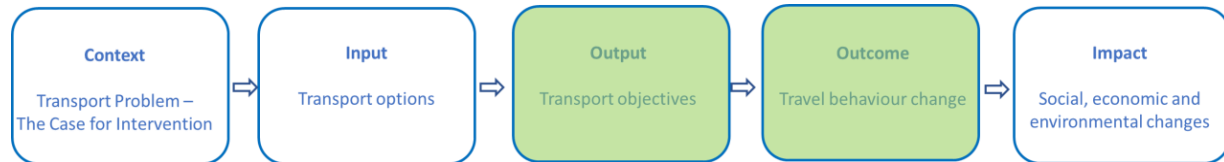


The 'drivers of change' and resulting investment aims are summarised in Figure 13 and discussed in detail in Annex 1. The aims involve helping bring about a fundamental change in the nature and performance of the IW's transport system as part of a broad, ambitious, and fresh vision for the IW's future. It is clear that transport investment alone will not achieve this. Rather, it needs to be part of an integrated and coordinated set of policies and plans.

Figure 13: Drivers of change and transport investment aims

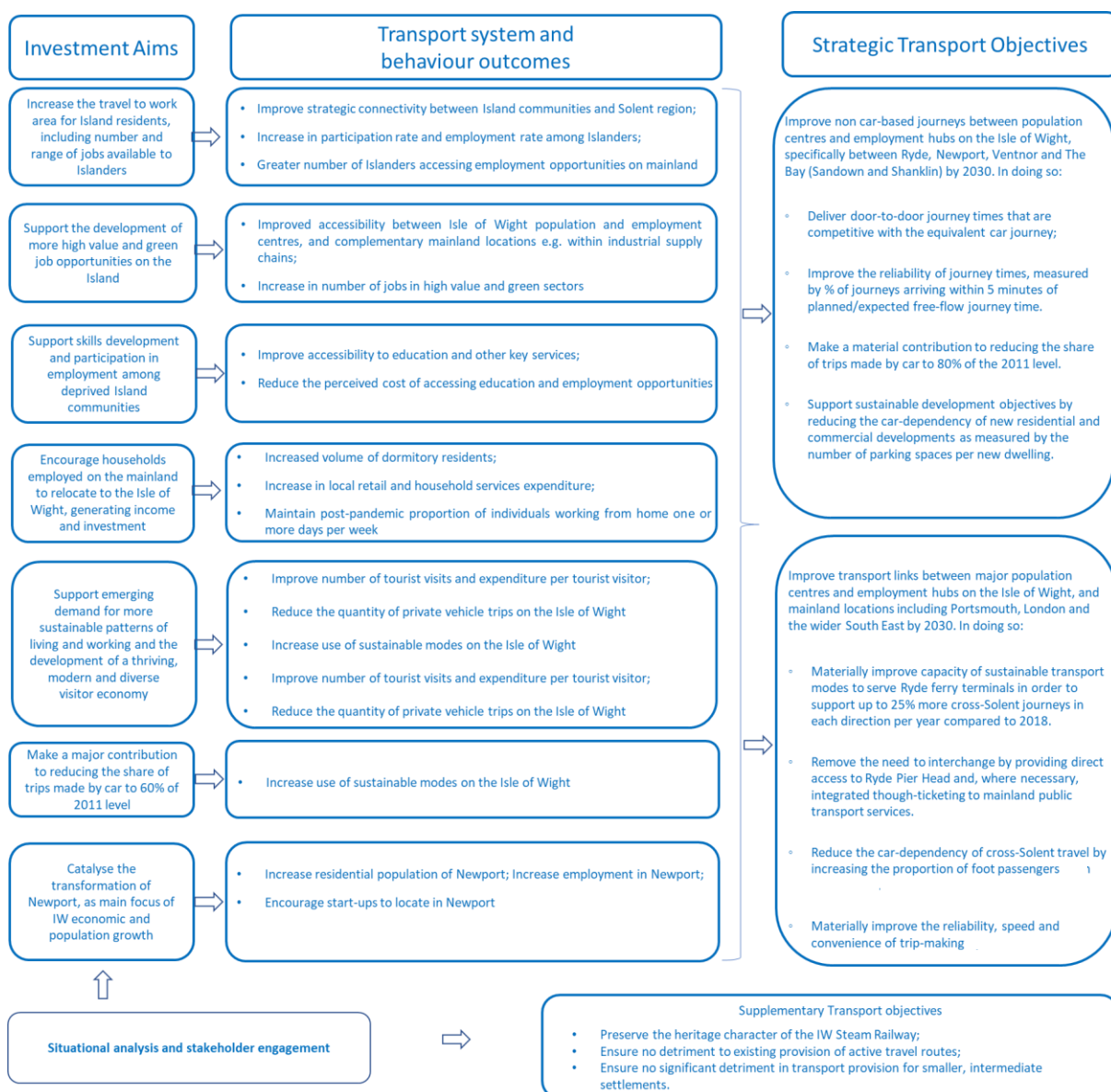


2.4 Transport outcomes and scheme objectives

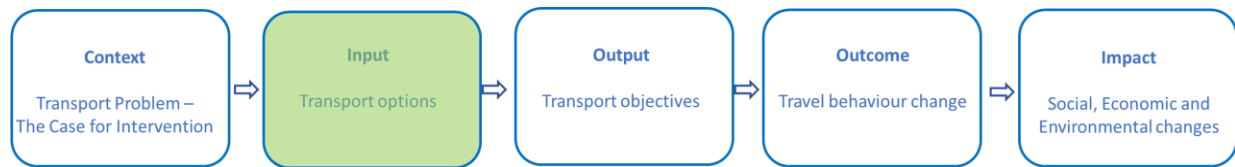


The required changes in the transport system ‘supply side’ and transport behaviour necessary to realising the investment aims were identified through a project team workshop and also drew on the outputs of the two stakeholder workshops. A set of SMART strategic transport objectives were then derived, which reflect corridor specific challenges, as well as overall transport system requirements. These drew on the situational analysis summarised in the case for change section above and reported in full in Annex 1. A further set of supplementary transport objectives was defined, reflecting feedback from stakeholders. The transport objectives are shown in Figure 14.

Figure 14: Investment aims, transport system and behaviour outcomes and transport objectives



2.5 Option Development process



Introduction

The following activities were undertaken to build an evidence base about the in-scope road and rail corridors, in order to inform the development of options:

- desktop research, including inspection of in-scope corridors using satellite mapping tools, assessment of previous studies and plans;
- a 3 day site visit during February 2021 to inspect in-scope corridors;
- discussions with stakeholders, including socially distanced meetings with the Isle of Wight Steam Railway (IWSR), IW based rail experts and two stakeholder engagement workshops; and
- discussions within the client group, technical experts in NR's Light Rail Knowledge Centre, UK Trams and ORR.

Outputs from this were:

- a route assessment framework – see Annex 2;
- high quality mapping of land ownership, land uses and environmental features – see Annex 3;
- GIS linked photography of key locations on the in-scope corridors – For an external link to a Google Earth Project providing a set of GIS linked photos from the project team's site visit, see [here](#).

This information was used to carry out a systematic option generation and sifting process, in order to derive a shortlist of options for taking forward to more detailed development and assessment. These steps are summarised in Figure 15. The alternatives shown in green boxes were identified as worthy of further consideration while those in red boxes represent alternatives that should be ruled out. This diagram represents an overview of the material covered in the remainder of this section, which is structured as follows:

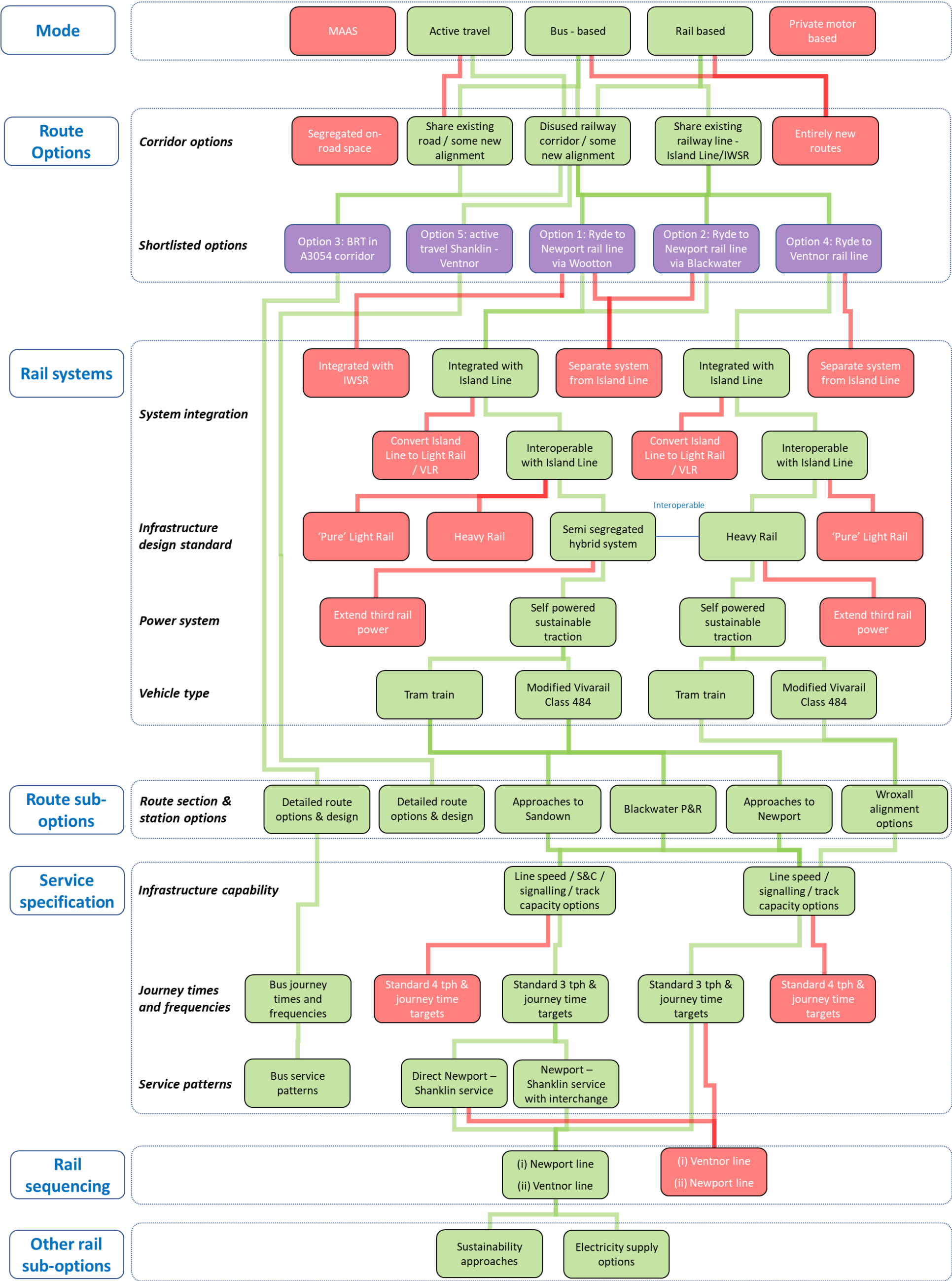
- Option generation and sifting process;
- Shortlisting process;
- Detailed consideration of each shortlisted option;
- Strategic assessment of shortlisted options;
- Phasing considerations.

The option generation and sifting, together with the shortlisting stages are reported in full in an Option Development Report provided in Annex 4.

Option generation and sifting

A long list of options was generated using the evidence base set out above. The project team set out an initial long list, which was supplemented by participants at the two stakeholder workshops. A note of the outputs from these is provided in Annex 5. A broad range of intervention types and modes were considered. A total of 36 potential interventions were identified in relation to the Newport - Ryde corridor and 16 for the Ryde – Ventnor corridor.

Figure 15: Overview of option development process



The longlist was sifted using gateway criteria that followed DfT Transport Analysis Guidance, in order to narrow the range of interventions down to those that:

- were aligned with the strategic objectives for intervention;
- fitted with local regional and national policy;
- had limited technical risk;
- could be affordable;
- Supported positive environmental impacts; and
- were considered potentially acceptable to key stakeholders.

The process took full account of opportunities and constraints associated with the existing transport system and the Island's geography and considered a range of public transport and active travel modes.

Key issues influencing the consideration of corridors and modes included:

- **The physical constraints of the Island's roads:** outside Newport there has been no significant road building in the post-WWII period. Various old roads across the Island have been widened since WWII but remain 'two-way' (not dual-carriageway). While some junctions have been improved, many roads have restricted and varying widths (commonly, smaller roads have passing places). There are no bypasses, and while there are opportunities for relieving some specific bottlenecks, there is insufficient space to accommodate fully dedicated infrastructure for a new or specific mode, such as segregated busways or cycleways on existing in-scope road corridors;
- **The Island's wealth of precious habitats and landscapes:** the acceptability of impacting these sensitive environments was an important consideration. New alignments were considered to be feasible only where no other option exists and for limited sections of options that otherwise use previously established corridors. For example, any new alignments in the Newport – Ryde corridor crossing the AONB to the south of Wootton bridge, were considered unlikely to be acceptable;
- **A number of disused rail corridors** on which the track bed remains largely intact. These represent major opportunities, as they:
 - link the key locations that are in-scope, with established alignments on which some former railway structures have survived that could be reinstated;
 - provide relatively unobstructed access to the centre of Newport, either parallel to the A3054 Fairlee Road, on the east bank of the River Medina, or from the south along the River Medina, parallel to the A3020 Blackwater Road, on or near the former alignment of the Newport – Sandown railway;
 - are largely in local authority ownership, reducing land acquisition costs compared to establishing new transport alignments. Some of the former lines, however, have been converted into popular leisure routes for walkers and cyclists (The Red Squirrel Trail) and these would need to be retained or re-provided as part of any scheme.
- **The scope for making fuller use of current and planned Island Line infrastructure and operating assets:** this line plays a strategic role in linking the Island with the mainland. Its fixed (mainly sunk) cost assets, including the current investment programmes to upgrade the line, replace its rolling stock fleet and renovate the rail infrastructure on Ryde Pier, could, in principle, be 'leveraged' to support additional services that run onto extensions / branches.

Shortlisting and further option development

The sifted options entered a shortlisting process, as set out in Annex 4, in which they were qualitatively assessed in more detail, against the following criteria:

- expected transport outputs (frequency, journey times and reliability);
- strategic development impacts;
- engineering complexity / feasibility and costs risk;
- deliverability, e.g. impacts on key stakeholders, environmental impacts etc.

A shortlist of five standalone route and mode-specific options was identified:

- Extend railway to Newport via Wootton (Option 1);
- Extend railway to Newport via Blackwater (Option 2);
- Bus Rapid Transit in the A3054 corridor (Option 3);
- Reinstatement railway to Wroxall and Ventnor (Option 4);
- Extend active travel route from Wroxall to Ventnor (Option 5).

A summary of their performance against the transport objectives is shown in Table 6.

In addition, corridor specific options were combined into packages in order to assess their expected interactions, i.e. Newport and Ventnor rail schemes together, and to investigate options for a phased investment programme.

Further development work took place, including review and discussion with the Project Board, and a range of stakeholders, including IWSR. Innovative ways of reducing the costs of shortlisted rail schemes were considered, either through new technical innovation or customised approaches that reflect the specific context of the Isle of Wight. This also informed consideration of potential third party funding sources, which are discussed in the Financial Case. This element of the work has benefitted considerably from engagement and input from experts in Network Rail's Light Rail Knowledge Centre and UK Trams.

A strategic level timetabling exercise was also undertaken in order to model high level infrastructure capacity requirements for to be assessed for a range of service scenarios and operating cases, i.e. alternative assumptions about operational performance such as maximum line speeds, train acceleration and braking, dwell times etc. – see Annex 6.

The results of the timetabling exercise informed both the cost estimates and the demand and revenue modelling and analysis, which together formed the basis for the quantitative assessment of rail options set out in the economic case.

Table 6: Strategic assessment against transport objectives, standalone options and phased package of options

Strategic Transport Objectives		Option 1: Extend Railway to Newport via Wootton	Option 2: Extend Railway to Newport via Blackwater	Option 3: Bus Rapid Transit in A3054 corridor	Option 4: Reinstate railway from Shanklin to Ventnor	Option 5: Extend active travel route from Wroxall to Ventnor
Improve non car-based journeys between major population centres and employment hubs on the Isle of Wight, specifically between Ryde, Newport, Ventnor, and The Bay (Sandown and Shanklin) by 2030. In doing so:	Deliver door-to-door journey times that are competitive with the equivalent car journey	✓✓✓	✓✓✓	✗	✓✓✓	✗
	Improve the reliability of journey times, measured by % of journeys arriving within 5 minutes of planned/expected free-flow journey time	✓✓✓	✓✓✓	✓	✓✓	✓
	Make a material contribution to reducing the share of trips made by car to 80% of the 2011 level.	✓✓	✓✓	✓	✓	✓
	Support sustainable development objectives by reducing the car-dependency of new residential and commercial developments as measured by the number of parking spaces per new dwelling.	✓✓✓	✓✓✓	✓	✓	✗
Improve transport links between major population centres and employment hubs on the Isle of Wight, and mainland locations including Portsmouth, London and the wider South East by 2030. In doing so:	Materially improve capacity of sustainable transport modes to serve Ryde ferry terminals in order to support up to 25% cross-Solent journeys in each direction per year.	✓✓✓	✓✓✓	✓	✓✓	✗
	Remove the need to interchange by providing direct access to Ryde Pier Head and, where necessary, integrated through-ticketing to mainland public transport services.	✓✓✓	✓✓✓	✗	✓✓✓	✗
	Reduce the car-dependency of cross-Solent travel by increasing the proportion of foot passengers	✓✓	✓✓	✗	✓	✗
	Materially improve the reliability, speed and convenience of journeys in in-scope transport corridors	✓✓	✓✓	✓	✓✓	✗
Supplementary Transport Objectives						
Preserve the heritage character of the IW Steam Railway		✗	✓	✓	✓	✓
Ensure no detriment to existing provision of active travel modes		✓	✓	✓	✓	✓
Ensure no significant detriment in transport provision for smaller, intermediate settlements		✓	✓	✓	✓	✓

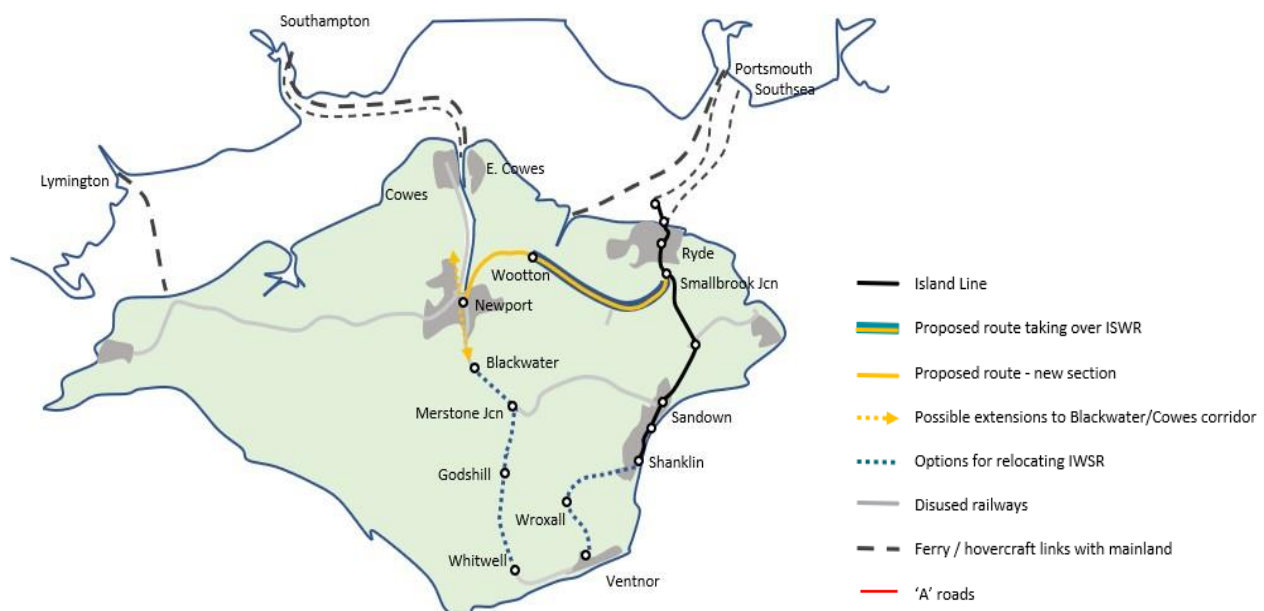
2.6 Option 1 - Extend railway to Newport via Wootton

Route description

This option would broadly take over the alignment of the former 9.9 mile Ryde to Newport line, as shown in Figure 16. The service would share the Island Line between Ryde Pierhead and Smallbrook Junction, from where it would join the route of the existing Isle of Wight Steam Railway (IWSR), the eastern terminus of which is an interchange station on the Island Line at this location. It would continue on this alignment as far as Wootton, the current western terminus of the IWSR.

From here, track would continue on a section of the former line that is currently used as a walking and cycling route, before diverging close to Fairlee Road in order to approach Newport on a more westerly alignment than that taken by the former railway, which is no longer available owing to residential development. A new alignment close to the eastern bank of the River Medina appears feasible and potential station locations serving Newport Harbour and the town centre were identified. To accommodate this section of the route and a station, the existing Newport Harbour Masterplan would need to be modified.

Figure 16: Option 1 - Ryde to Newport railway via Wootton



Source: Cebr

Corridor constraints and opportunities

This option represents the shortest and most direct railway route available between the Newport and Ryde and other than on the northerly approach to Newport, the track bed is intact.

The IWSR occupies a 5.5 mile section of the route between Smallbrook Junction and Wootton. This is a popular and successful attraction that generates over 200,000 annual visits. Up to nine services per day operate in each direction, with end to end journey times in excess of 40 minutes. The infrastructure comprises a single line with a passing loop at Haven Street and run-around loops at the termini. There are a number of unprotected crossings, and a traditional, manually operated level crossing at Haven Street.

The IWSR considers itself to be a museum of the island's railway system and exclusively operates locomotives and rolling stock types with a history of usage on the Island. Haven Street station has been developed as a faithful representation of a historic IW country station. Maintaining the heritage character of the railway is considered essential to its success.

Options for sharing the infrastructure with the IWSR were considered. There would be a range of challenges, relating to operations and maintenance standards, operational rules, signalling control and traffic separation. While it is considered possible that these could be addressed through deployment of appropriate rolling stock and innovative approaches to standards and risk management, the IWSR's service pattern leaves insufficient spare capacity to provide a regular and frequent passenger service. For this reason, the option of sharing infrastructure with the IWSR was ruled out.

Options for relocating the IWSR were also considered. Clearly any relocation would need to be fully funded as part of a scheme. Two options were identified, as shown in Figure 16:

- a route using sections of the former Newport – Sandown and Merstone Junction - Ventnor West lines, between Blackwater and Whitwell;
- reinstating the Shanklin to Ventnor railway as a combined heritage / passenger route (peak times only).

Consultation with IWSR highlighted a number of challenges and costs estimates for moving IWSR operations proved considerable, so this option was ruled out on the grounds of cost and delivery risk.

2.7 Option 2 - Extend railway to Newport via Blackwater

Route description

This option would utilise the former Sandown to Newport railway, the track bed of which remains very largely intact, to link the existing Island Line to Newport, as shown in Figure 17. The rail service would share the Island Line between Ryde Pierhead and a new junction between Brading and Sandown – a number of sub-options for the exact location and orientation of this were identified and are outlined below.

The route is 15.4 miles in length, which is 5.5 miles longer than the route via Wootton. It is likely, nevertheless, to be able to offer competitive journey times between Newport and Ryde, partly as there are no intermediate settlements of any size between Newport and Sandown that would need to be served.

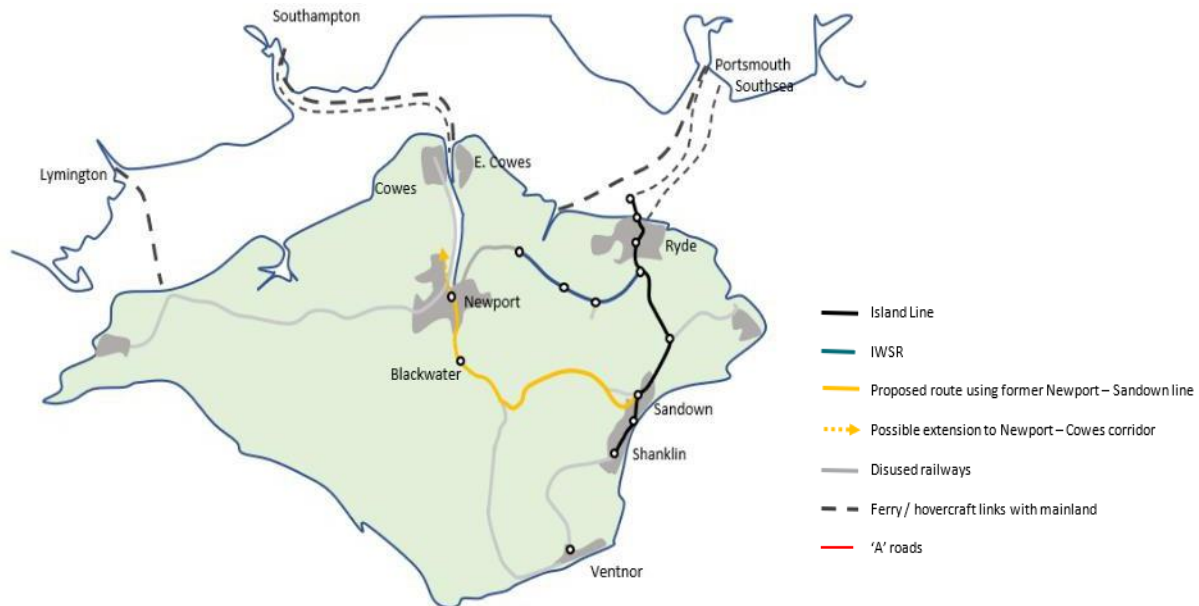
The route would approach Newport from the south, close to the alignment of the former railway until reaching the edge of the current retail park that borders the southern edge of the town centre. It is envisaged that a route to a new terminus in this area would be determined as part of a comprehensive masterplanning exercise for this area enabled by the improved connectivity that the new railway would provide).

Corridor constraints and opportunities

There has been some residential and commercial encroachment on the original alignment close to Sandown station. Alternative alignments for this section are considered in the route sub-options section below. Much of the route is currently in use as part of the popular Red Squirrel cycling and walking trail, which would need to be either retained or re-provided on a parallel alignment. There are some civil engineering challenges associated with the route's interaction with various water courses and the route passes through or close to some sensitive environmental locations

The route has some challenging track curvature in places, and these interact with a range of rail systems considerations. Similarly, rail systems choices will need to take account of the various risks posed by the highway and track crossings along the route and public rights of way alongside it. Public safety risk factors are therefore expected to be at the heart of the route development process, if this option is pursued, and consideration of these will need to reflect its rural context, where appropriate. Some of the route sub-options around Sandown also have neighbouring uses that will require special consideration, such as school playing fields.

Figure 17: Option 2 – Ryde to Newport railway via Blackwater



Source: Cebr

Rail systems

System Integration

It is considered essential to meeting the connectivity objectives that options provide direct services in the travel market they are designed to serve. Approaches involving interchange were therefore discarded.

In addition, the current investment programme in the Island Line represents a considerable commitment and it was considered unlikely that approaches requiring further total shutdown of the Island Line for extended periods or changeover to a fundamentally different railway system would be acceptable on cost or feasibility grounds.

Physical constraints on the Island Line, in particular the limited clearances in Ryde Tunnel, will need to be accommodated or addressed if any such system change is to be implemented in the longer term. The implication is therefore that the route option needs to be developed in a way that allows interoperability with existing (or already committed) Island Line infrastructure, assets, and operations.

At the same time, it was considered important to develop the route option in a way that is consistent with the longer term development options for the IW rail system as a whole. This might include further extensions with on-street sections, such as a link from the Ryde to Newport line to the Cowes corridor. This would necessitate a switch to light rail or 'Very Light Rail' (VLR) at some point in the future.

Infrastructure Design Standard

The Island Line's current status as a completely segregated rail system could define a geographical split between a 'core network' operated under signalised operation, and a 'new' section designed to operate as a 'hybrid light rail' semi segregated alignment. This approach was considered likely to unlock significant cost savings compared to a 'standard' heavy rail approach. This could include:

- a reduced need for costly infrastructure capacity, such as fewer / shorter passing loops, owing to superior operating performance of rolling stock (acceleration, braking, etc);
- a simplified signalling system that would potentially support efficient operation (as per European examples) without the resource implications of fully signalled heavy rail interlockings⁵;
- a reduced need for grade separation at crossings and less costly / complex protection systems. For example, simpler road/pedestrian crossing interface⁶ utilising locally controlled simple light/barrier systems could be implemented, along with less onerous lineside fencing requirements.

There are around six highway crossings and some foot crossings along the route, many of which are located 'mid-section', which means high transition speeds are desirable. Tram Train vehicle options could facilitate use of open traffic light signalised crossings, although this would be dependent on visibility Risk Assessment. With limited modification, it may be possible for Class 484 vehicles to operate with low cost locally operated crossings, while signalised open crossings could be acceptable in the Newport area to save cost, where low speeds would be anticipated in any case.

Such a 'tramway +' model of operation could allow implementation of system improvements in smaller steps, permitting progressive network expansion as funds become available. It could also facilitate trialling of innovation in infrastructure design standards. This could make the IW a pioneer in low cost semi segregated rail operation, and permit observation of public interface behaviour for principles development. This could generate wider network benefits by enabling cost savings to be applied to future similar schemes on the mainland.

Power system

5 A simplified signalling overlay could allow 'Dispatcher Control' from Ryde, with local interlockings controlling intermediate passing points. This would increase capacity, junction speed and flexibility of operation, without requiring full railway signalling to be installed (the Aarhus Model). Simplified depot signalling systems already exist for private owner infrastructure, at half the cost of traditional railway installations. These can be controlled from simple VDU workstations in existing operational facilities. A type of 'Rail Traffic Control/Automatic Block Signalling' arrangement (similar to examples in use in USA/Canada) may permit a safe method of operation, without requiring continuous detection of single line sections. Further development work is required to clarify how a simplified signalling control system on the extension would interact with the existing heavy rail signalling (which is being refurbished) and installation of TPWS.

6 Basic tramway crossing arrangements offer the lowest cost solution, utilising simple traffic light junctions and line of sight operation. Such arrangements generally preclude higher speed operation of both light rail and road vehicles, due to the urban nature of the surroundings such crossings are normally constructed in. In rural areas with straight roads and rail alignments, additional interface protection may be required. Precise requirements would vary based on assessment of individual locations, however low cost simple light/barrier overlay systems are currently operating successfully on several heritage rail and tramway networks across the UK and on light rail systems in mainland Europe.

It was considered undesirable to extend the third rail power system beyond the existing Island Line operation and it is unlikely to be acceptable to the ORR. Diesel operation was also considered undesirable and inconsistent with the scheme objectives. It was therefore considered essential that the route is operated with self-powered trains powered by a sustainable energy source. Battery power is likely to be the most appropriate solution and there is an opportunity for providing energy from a local source of sustainable electricity, which could have wider benefits – this is discussed in the financial case.

Vehicle options

The Stadler Class 398 Citylink is currently the only high floor UK approved tram-train vehicle in production, although other manufacturers offer similar development concepts (including dual height options).

The Vivarail Class 484 vehicles currently on order represent a significant investment in the Island and it was considered unlikely that there would be appetite for transitioning to another vehicle fleet in the near term. A key benefit of the vehicles is their flexibility and ready availability for service introduction. Repurposed vehicles are cheaper than new designs, making them a better value option for small networks with customised requirements. It would also be more cost efficient to have one basic vehicle type in operation on the system.⁷

It is considered feasible to modify the Class 484 for Semi-Segregated Light Rail Operation. The vehicles themselves currently straddle the definition of ‘light’ and ‘heavy’ rail by nature of their original design and have been modified extensively to enable flexible use on the national rail network. Light rail modifications would specifically include fitment of track brakes to provide enhanced stopping capability under simplified signalling/line of sight operations.⁸

VivaRail are currently developing a fast charging system for a battery powered variant and it is anticipated that this feature could be retrofitted to Class 484 vehicles once in service. This flexibility would allow phased testing of future operating models on the Island Line, with a phased testing of battery powered vehicles on existing isolated sections of route.

There are, however, some further considerations that will need further investigation before a preferred vehicle type is identified. While the acceleration and braking performance of the Class 484 is superior to most heavy rail vehicles, it will not be able to match a modern tram-train vehicle, even with track brakes.

Tram – based vehicles are also able to negotiate curves at higher speeds and light rail track curvature profiles have considerably lower minimum radii. More detailed timetabling analysis and infrastructure design will be needed to determine whether these differences are likely to materially affect service performance and / or overall value for money, in which case they may be decisive in the choice of vehicle type.

In the context of a longer term light rail vision for the Island, Class 484 vehicles would be less desirable. They are not well suited to formalised street running operation, regardless of modifications made. Despite the refurbishment work currently underway, the vehicle bodies will be around 30 years old on entry into service and are unlikely to be seen as a long term solution to the network’s future growth needs. The age

⁷ The vehicles have full capability for operation in multiple, which would facilitate options involving train splitting / joining.

⁸ Additional modifications would include bogie modifications, shoe gear isolation under battery power, modified obstacle deflectors (replacement of the as built snow plough with a flat deflector plate, coupling cover and modified lifeguards, to improve safe operation over highway/footway interfaces). Further modifications could extend to fitting side skirts and bogie valancing, however the benefit of this would be questionable, as it is unlikely these vehicles would ever be approved for formalised street running.

of the vehicles is also likely to influence the level of investment made in future modifications to accommodate any further network extensions.

As patterns and operational requirements develop (and the case for further investment in the ageing Class 484 vehicles diminishes) a transition to more customised light rail / VLR / metro style vehicles may be appropriate. Such a strategy would provide flexibility to adapt plans for network development in response to emerging transport requirements, particularly given the uncertainties surrounding future economic scenarios.

Route sub-options

A number of sub-options are outlined below for:

- the route section approaching the Sandown area and the location of the junction with the Island Line;
- the route section approaching a terminus in Newport and a terminus location; and
- a potential park and ride station at Blackwater.

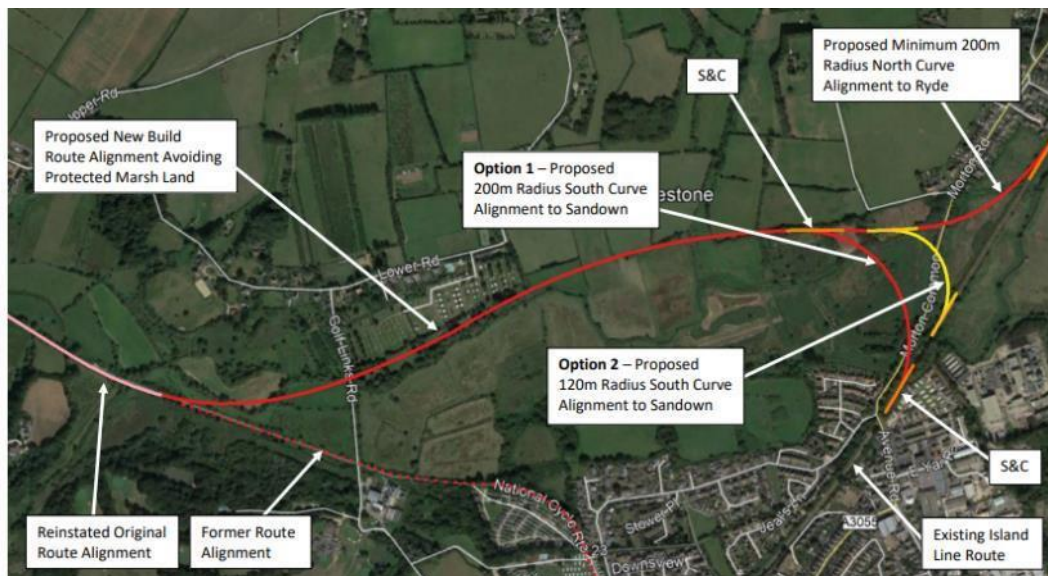
Key factors likely to inform future decisions about these are discussed but it is not considered possible to make recommendations about a preferred way forward for each at this stage.

Junction locations with the Island Line

A range of alternative alignments were considered. One alternative is to construct a junction north of Sandown, and a route close to the edge of Moreton Marsh was identified, as shown in

Figure 18. This option provides a shorter route between Newport and Ryde and the journey time would also be reduced through the avoidance of a stop at Sandown. Further analysis, however, showed that this benefit is outweighed by the loss of user benefits and revenue in the Newport – Sandown market, while the option of creating a delta junction to enable a separate Newport to Sandown service appears unattractive on cost grounds, at least in the near term – see Economic Case.

Figure 18: Option for junction north of Sandown



Source: Alexander Dodds, Network Rail

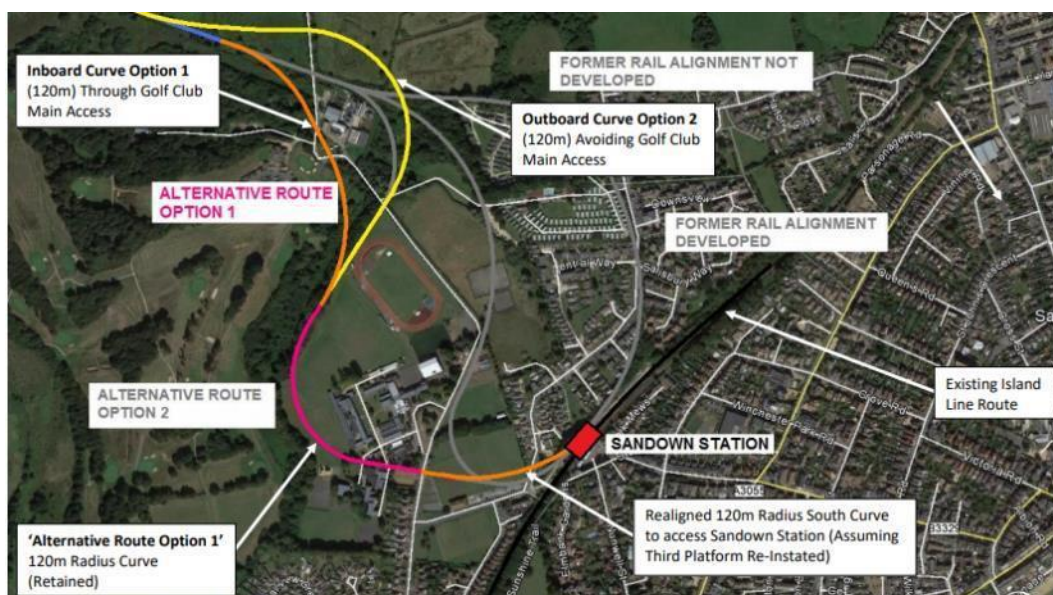
Alternative routes via Sandown station are shown in Figure 19. These would approach from the south, obviating the need for Newport – Ryde services to reverse. These options, however, present greater physical challenges than the northerly junction:

- Given the geography of the terrain and adjacent residential/service properties, it is unlikely that bridging of either road or rail alignments would be feasible in this area. If using Class 484 vehicles, consideration would need to be given to simplified locally controlled barrier crossing infrastructure;
- 'Route Option 1' Alignment runs through the grounds of Sandown Bay and South Schools sites (and the local Rugby Football Club). Careful consideration would need to be given to how these would be physically separated from the rail alignment (the RFC may require relocation);
- The proximity of a school site to potential 'new' level crossing interventions would require careful consideration of possible risk mitigations and how interaction with school traffic would be managed. Given the low speeds involved a simplified skirted full barrier crossing arrangement may be practicable.

Both northerly and southerly routes would require acquisition of land not on a former rail alignment and the physical engineering required for route preparation would require significant cost expenditure.

Chords and curves of varying radii are shown for both the above sub-options. Use of light rail-based track curvature profiles could significantly reduce cost and land take but it should be noted that physical infrastructure constraints may have an impact on vehicle options (specifically the use of a Class 484 derivative). A range of factors will need to be considered in conjunction to determine a preferred solution, including vehicle type, required / desired transitioning speeds, land acquisition / construction costs and so on.

Figure 19: Options for a southerly approach to Sandown



Source: Alexander Dodds, Network Rail

Approach to Newport

The route would approach Newport from the south, utilising the former rail alignment, which is now known as Connie's Way, as far as St Georges Approach where a new at-grade road crossing would be required – see Figure 20. The choice of a station site and final approach route would depend on decisions

about the future of the retail park that occupies the area between here and the edge of the historic town centre. It is envisaged that a masterplan would be produced to support major mixed-use development in a more sustainable and compact form than currently exists, which the enhanced public transport connectivity would unlock.

Figure 20: Possible alignment and terminus in central Newport



Source: Alexander Dodds, Network Rail

In any event, it appears feasible to construct an approach and a terminus station while current land uses remain in place. Modification of the car park layouts could permit a semi-segregated light rail operation, with rail movements prioritised over vehicle traffic at level grade interfaces. This would enable the use of modified Class 484 units, i.e. rail vehicles with a heavy rail wheel profile, as it avoids on-street operation.

Figure 21: Future Route Alignment Options to link with a possible later extension towards Cowes



Source: Alexander Dodds, Network Rail

A potential on-street alignment for a later extension across the southern edge of Newport town centre to serve the Newport – Cowes corridor is shown in Figure 21. As this would require on-street running in

Newport, it is only likely to be implemented as part of a later phase to convert the entire system to light rail or VLR operation.

Blackwater Park & Ride

Additional benefits could be realised through the construction of a park and ride facility to the south east of Newport, at Blackwater. This has been identified as a suitable location for a passing loop to facilitate an attractive service on the route (see service specification section below). Moreover, the main roads from Shanklin and Sandown to Newport converge at Blackwater, making it an ideal site for a park and ride serving locations to the south and south east of Newport. It would be possible to construct a passing loop with passive provision for a future station within a first phase of investment and this could be an attractive option if there is pressure to trim costs to meet funding constraints.

Service specification

As discussed above, a range of factors will need to be investigated in greater detail in order to inform detailed scheme development. In order to provide a robust basis for appraisal, a set of mutually consistent assumptions about different potential service specifications and the relative costs of providing them was made. This was informed by a high level timetable modelling exercise. Using a series of 'pessimistic', 'realistic' and 'optimistic' railway operating scenarios (in which different train acceleration / braking performance, dwell times etc were assumed), a range of potential running times on the route were modelled. Notional timetables were then constructed with alternative service frequencies. By analysing where trains cross each other on the timetable, it was possible to identify a range of compatible combinations of 'inputs' and 'outputs' in terms of:

- Infrastructure capability and capacity;
- Journey times / frequencies;
- Service patterns.

In summary it was found that:

- A service frequency of 3 trains per hour (tph) with an end to end journey of between 21 and 26 minutes is likely to be feasible on the basis of a single track extension with a passing loop at Blackwater,
- If a junction is provided north of Sandown, the section between there and Sandown station would need to be doubled (the route had double track in the past as can be seen on images of the Avenue Rd bridge – see GIS photograph);
- Operating a 4 tph service would require considerably more complex and costly infrastructure provision, and it is unlikely that such a service could be operated as reliably as a 3 tph service. Journey times could also be longer to accommodate passing loops not located at stations.

A low cost way of providing a direct Newport – Shanklin service that could be extended to Ventnor in a later phase could be to split and join the Newport – Ryde service at Sandown. The Ryde portion would depart and the Ryde to Shanklin / Ventnor could then join the remaining unit at Sandown. This would require an efficient method of coupling / decoupling to be identified and there may be a requirement for some additional infrastructure north of Sandown to facilitate the associated timetable requirements. Additional rolling stock units may also be required. It should be possible to manage reliability risks as the network is contained and the branches are relatively short. This sub-option could be implemented as a separate phase.

A number of contextual factors are worthy of consideration:

- The IW railway system's independence from the mainland network allows it to operate with a high degree of reliability and resilience. This means systems can be designed with less redundant capacity than would be required on the mainland and its self-contained nature makes it a good environment for testing new ideas. Also, as the infrastructure is used by a single type of traffic, it can, in principle, be more tailored to specific local requirements.
- The modelling made high level assumptions about maximum line speeds and did not take into account the in-situ physical characteristics of the route. For example, the route includes some fairly tight track curvature, particularly to the east. This could have a significant impact on average speeds and therefore journey times, but this is less of an issue where vehicles have greater acceleration/braking performance. Managing the track cant can help to raise speeds on tight radius curves and other maintenance measures such as tamping can also influence line speed as well as maintain ride quality for passengers.
- Given the relatively high number of at grade crossings, if it is not possible to find a solution that enables transition of mid-section crossings at speed, journey times and therefore the strategic benefits of the option are likely to be compromised.

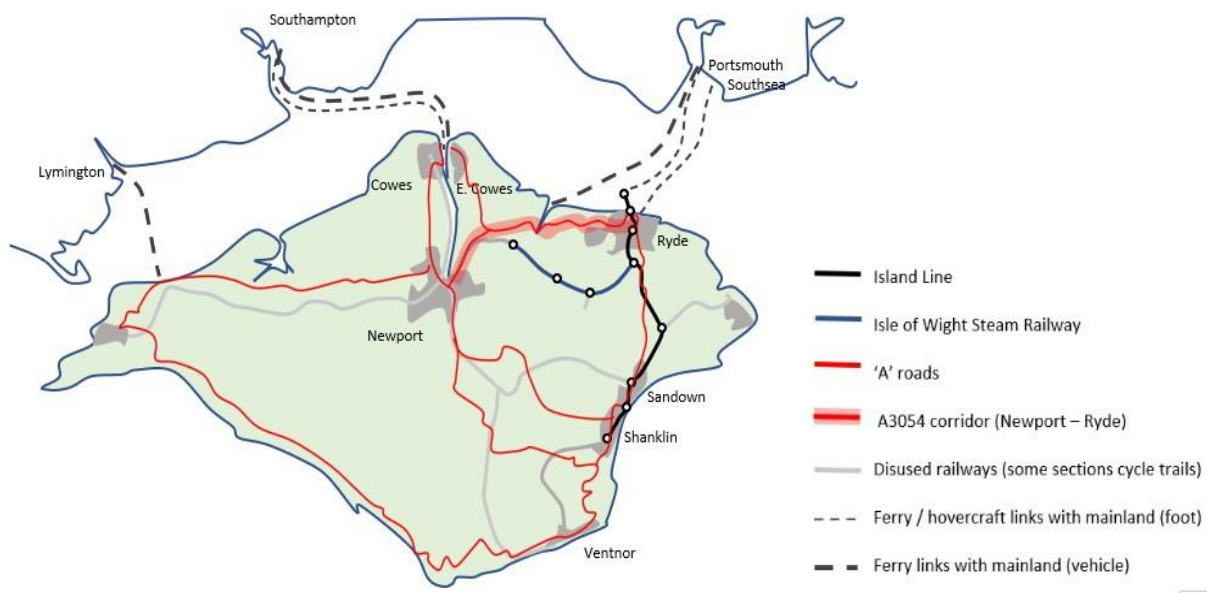
2.8 Option 3 - Bus Rapid Transit in A3054 corridor

Route description

This route option follows the main road (A3054) between Newport and Ryde, as shown in Figure 22.

The most serious issue affecting journey times and reliability in this corridor is the traffic queuing delay westbound on Fairlee Road and Staplers approaching Coppins Bridge junction. There is no possibility of incorporating segregated infrastructure on this section of the road. It does, however, appear feasible to implement a section of guided busway on part of the old Ryde – Newport railway alignment, parallel to Fairlee Road from the solar energy panels to Halberry Lane, as shown in Figure 23. This would enable westbound buses to by-pass 0.9km of road on which there is often a queue of traffic, particularly during the morning peak period.

Figure 22: Option 3 - Bus Rapid Transit route in A3054 corridor



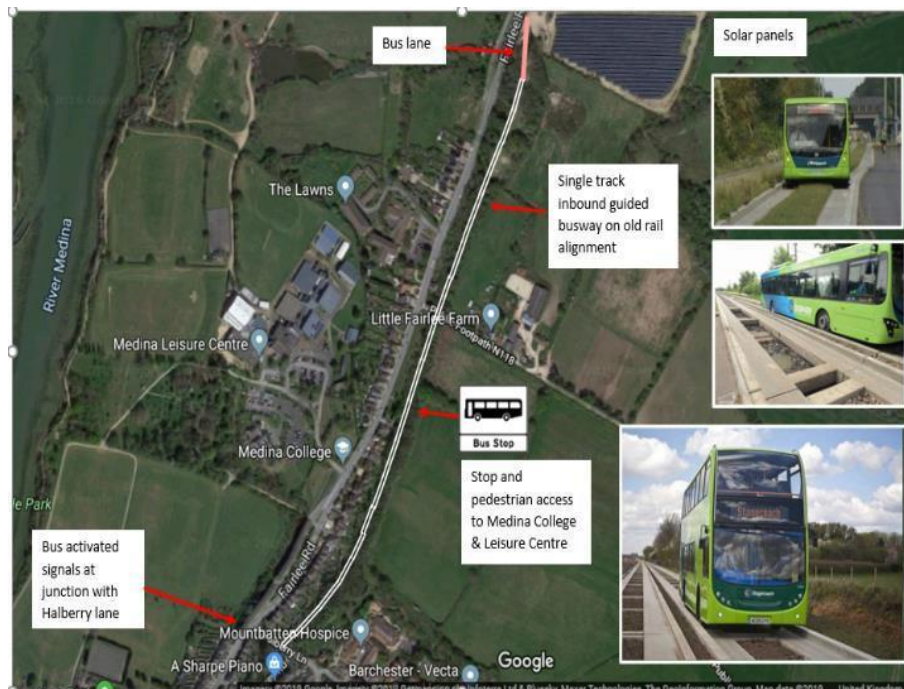
Corridor constraints and opportunities

As the original railway line had single track, there is only likely to be sufficient space available for one lane of busway, together with a parallel cycle route. However, eastbound buses are much less delayed on this section and could therefore continue to use Fairlee Road.

Access for passengers to the Medina College and Leisure Centre, a major trip attraction, is desirable and a stop on the busway with pedestrian access should be provided.

West of Halberry lane the railway alignment has been encroached upon by residential properties, which is likely to rule out its use for a busway.

Figure 23: Option for guided busway route on northern approach to Newport

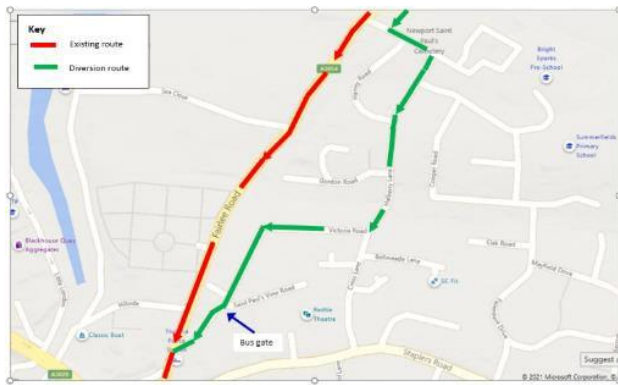


Source: Isle of Wight Bus and Rail Users' Group

Route sub-options

New routes for buses from Halberry Lane into Newport town centre that could avoid queuing delays may be possible. One possibility for diverting westbound buses via Halberry Lane and Victoria Road is shown in Figure 24.

Figure 24: Possible on-road diversion route for buses to link the guided busway to Newport town centre



Source: Isle of Wight Bus and Rail Users' Group

Service specification

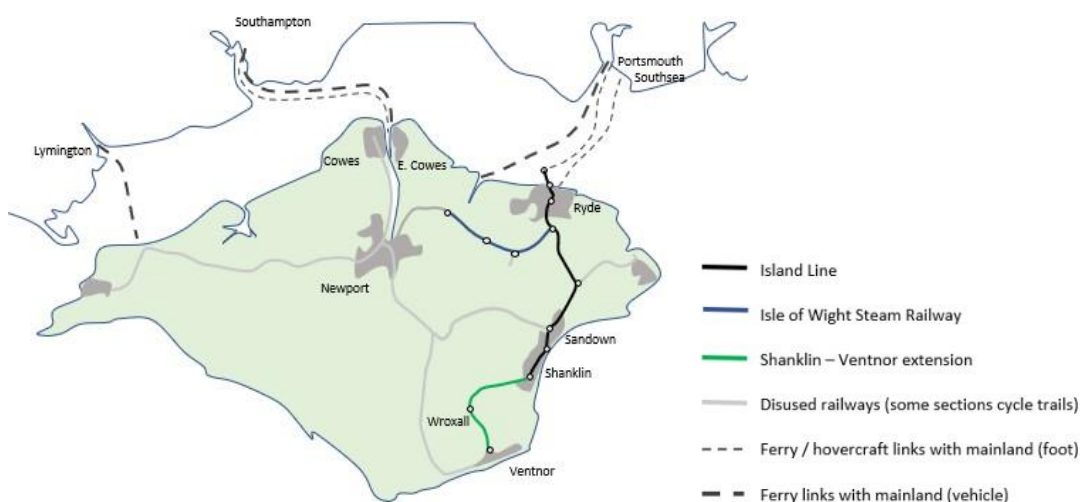
The interventions described above could be supported by higher bus frequencies and product differentiation, such as individual corridor “premium” branding. There may also be a possible role for limited stop buses which don’t serve some minor settlements or stops. These could be overlaid on “stopping” service patterns with a 30 minute or hourly frequency. A wider package of improvements aimed at improving the service offer could include high quality roadside infrastructure and Real Time Information (RTI).

2.9 Option 4 - Reinstate railway to Wroxall and Ventnor

Route description

This option involves reinstating the former railway between Shanklin and Ventnor and extending rail services on the Island Line that currently terminate in Shanklin to Ventnor. The route is approximately 4 miles in length. The section of the route between Shanklin and Wroxall is currently used as a popular walking and cycling route, and this would need to be re-provided in the event that the railway were reinstated.

Figure 25: Option 4 – Ryde to Ventnor railway



Corridor constraints and opportunities

A new overbridge would be required immediately south of Shanklin station, over Landguard Manor Road. Otherwise the route as far as Wroxall is intact. There have been significant incursions, however, at Wroxall – see GIS linked photography in Annex 3. A builders' merchant now occupies the former station site and a local road and some residential development have taken over the alignment just to the south. Further work to identify how best to reinstate an alignment is required. Previous studies have indicated that a short section of box tunnel may be a practical option.

South of Wroxall, the alignment enters Ventnor Tunnel, which is now used for utilities services. It is considered likely that feasible options exist for accommodating utility services within the reinstated tunnel, but it was not possible to confirm this with Southern Water. The tunnel emerges at the site of the former Ventnor station, which is in a disused quarry and now occupied by an industrial estate. Indicative options for re-organising the site are shown in Appendix A. Given its elevation above the town, consideration would need to be given to first / last mile transport provision for users.

Route sub-options

Since the route would be fully provided on a route that has relatively few operational complications, there are few rail systems considerations, in comparison with the Ryde to Newport railway (via Blackwater). The route could be operated using modified Class 484 vehicles, although these would need to be modified in order to enable independent traction (i.e. battery power), since extending the third rail power supply is undesirable. Many of the key challenges relate to the physical engineering issues of reinstating the alignment around Wroxall and through Ventnor Tunnel.

Service Specification

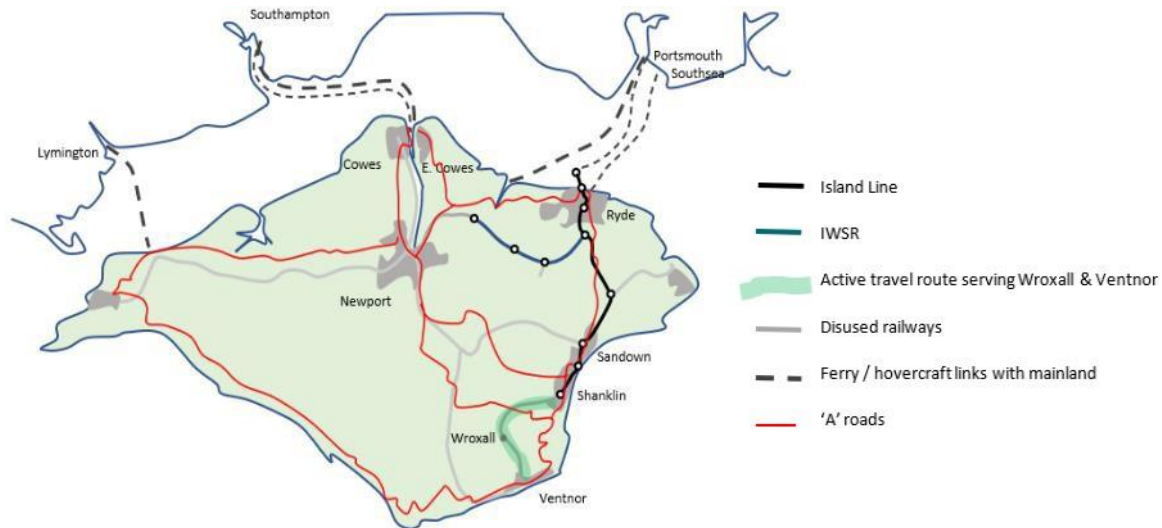
Timetabling analysis indicates that a three trains per hour service could be provided with a passing loop at Wroxall, where an intermediate station would be provided.

2.10 Option 5 – Extend Active travel corridor from Wroxall to Ventnor

Route description

The route utilises the former railway route between Shanklin and Ventnor. This would be an extension of the popular route that already exists between Shanklin and Wroxall. The derelict section of route between Wroxall and Ventnor Tunnel would be returned to use and the tunnel would be renovated and opened as a new route for public use to Ventnor.

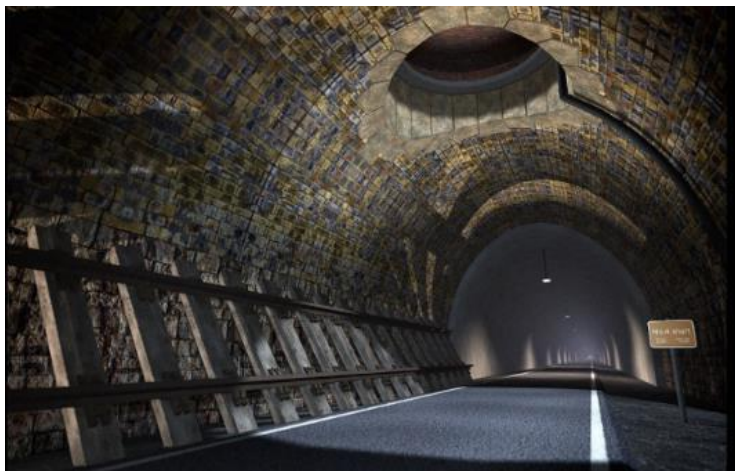
Figure 26: Active travel route on former Shanklin to Ventnor railway line



Corridor constraints and opportunities

The route could provide a feeder link to the Island Line, particularly if a (potentially lightly engineered) bridge across Landguard Manor Road were constructed to provide direct, level access to Shanklin station. Further work would be required to investigate whether acceptable mitigations could be developed that would enable Southern Water and the other utility providers to accept public usage of Ventnor Tunnel. It is unlikely that the industrial estate on the former Ventnor station site would require any significant reorganisation. The prospect of cycling through an 1100 yard former rail tunnel may attract new visitors, offering sustainable tourism benefits. Similar proposals exist elsewhere in the UK – See Figure 27.

Figure 27: Computer generated image of a proposal to convert the Queensbury Tunnel in West Yorkshire into cycle route



2.11 Strategic Assessment of Options

A summary of the performance of the options against the transport objectives is shown in Table 6 (see previous section). The expected benefits and disbenefits of the shortlisted options are discussed in this section. On the basis of this assessment, Options 2 and 4 are progressed for modelling in the Economic Case, as shown in Table 7.

Table 7: Outcomes of Strategic Assessment of Options

Option	Progressed to Economic Case?
Option 1: Extend railway to Newport via Wootton	No
Option 2: Extend railway to Newport via Blackwater	Yes
Option 3: Bus Rapid Transit in A3054 corridor	No
Option 4: Reinstatement railway to Wroxall and Ventnor	Yes
Option 5: Extend active travel route from Wroxall to Ventnor	No
Package of Option 2 followed by Option 4	Yes

Option 1: Extend railway to Newport via Wootton

The strategic transport benefits are broadly similar to those for Option 2. They are not described in detail here because this option has been discarded from further consideration on cost and feasibility grounds. Also, it would not be consistent with maintaining the heritage character of the IWSR.

Option 2: Extend railway to Newport via Blackwater

This option would provide a high quality, frequent and regular travel option between Ryde, Newport, and Sandown, the three largest towns on the Isle of Wight, accounting for over half of its total population. The road corridors between these three towns are the busiest on the Island and are subject to congestion and delay at peak times. The railway would offer fast and reliable journeys between town centres. Reliability will be aided by the limited size of the network - the lack of operational interaction with the wider mainland rail network removes the risk of delays being 'imported'.

The option would transform strategic connectivity between Newport and the mainland, with high quality direct interchange with Fastcat ferry services at Ryde Pierhead for Portsmouth, where excellent interchange with national rail is provided. This should enable employment catchment areas both on IW and the mainland to expand, helping IW to attract new business investment and provide its residents with a wider range of opportunities for employment both on the Island and on the mainland.

The step change in quality, speed and reliability of the transport offer should make a material contribution to addressing the IW's car dependency, through helping people switch away from car use for existing journeys and also encouraging a shift in the nature of development patterns towards those that support more sustainable transport choices, for example, through locating high quality, dense development close to public transport nodes such as railway stations. Evidence from IW initiatives over the last decade shows that where attractive alternatives are provided, residents and visitors have a propensity to switch to alternative modes to car.

The option could play a decisive role in transforming Newport. It would serve the heart of the town where there are major regeneration opportunities, including in the Harbour Masterplan area, the historic town centre and the extensive area of low density retail units where the route would terminate (in the initial phase). The quality of connections it would provide should increase the viability of residential and commercial development in the town. It could provide a powerful catalyst, helping to address investment 'coordination failures'.

The Park and Ride sub-option at Blackwater could offer additional strategic benefits by attracting additional users who would otherwise travel on some of the busiest road corridors. Its strategic location where main roads from Sandown and Shanklin to Newport converge could make it an attractive option for users in a wide area of the south and south east of the Island who are travelling to Newport, the east coast of the Island and Ryde or the mainland.

Some disbenefits would be experienced by existing users of the walking and cycling trail that currently occupies the alignment. While this function would be either retained or replaced, there are likely to be some short term impacts on its availability during construction. Also, it is likely that the railway would have some longer term impacts on the experience of using the route, which currently has a tranquil, largely rural character. It is unclear whether there would be significant short or long term impacts on designated local nature conservation sites.

Option 3: Bus Rapid Transit in A3054 corridor

Bus journey times between Ryde and Newport have increased from 30 minutes in 2005 to 35 minutes in 2020 and up to 42 minutes in the morning peak, according to the IW Bus & Rail Users' Group (IBRUG). The option could help reduce journey times and improve reliability, although this would depend on an adequate solution being identified for the section of the route closest to Newport town centre. It is estimated that the guided busway section of the route could reduce travel times to Newport for passengers from Ryde and East Cowes by up to 7 minutes in the morning peak. This could provide significant benefits for existing bus users, including the majority of users who make journeys with an origin or destination in the intermediate locations on the route. It does not however provide a significant contribution to meeting the strategic objectives. In particular, it would provide only a marginal improvement in connectivity with the mainland, including to rail services at Portsmouth Harbour station as it would not provide a direct connection to the Fastcat ferry from Ryde Pierhead; the scale of speed, reliability and quality improvement is unlikely to bring about a transformational impact on car use. The costs and benefits were not, therefore, modelled in the Economic Case.

Option 4: Reinstate railway to Wroxall and Ventnor

The option would provide a step change in transport connectivity for Wroxall and Ventnor, locations that experience significant isolation related challenges, including pockets of deprivation. The improved connectivity would help residents access a wider range of educational and employment opportunities. These would be increased if the scheme were part of a package also including the extension to Newport.

The route would contribute to the development of a sustainable IW visitor economy. The ability to book a through ticket from the mainland to Ventnor could transform its prospects for attracting investment in its cultural and wider visitor offer, making a material contribution to the Island's overall visitor economy. The scheme could also unlock regeneration in Wroxall, including the redevelopment of the derelict 'Bacon Factory' site, potentially as a visitor attraction or employment hub. The scheme could also encourage an increase in part time commuters choosing to live on IW – Ventnor and its surroundings have a wealth of high quality residential property that would be highly attractive to many such buyers. This could provide a valuable boost to the economy in the area through local expenditure multiplier effects.

As a stand-alone scheme, most of the benefits would accrue to the towns in the extension corridor and their hinterland. Given that they account for a modest proportion of Island residents and workers, it would make a relatively minor contribution towards reducing car dependency. It would play no more than a marginal role in shifting the focus of commercial and residential growth on the Island to Newport.

Option 5: Extend active travel route from Wroxall to Ventnor

Such an initiative could provide significant benefits to some categories of user but given the demographic profile of residents and visitors to the Isle of Wight, many others would not experience any direct benefits. It is also uncertain whether the steep gradients of access roads on the Ventnor side would suppress demand. Moreover it is considered unlikely that the route would generate significant demand in key travel markets of relevance to the SOBC objectives, including commuting journeys to Newport and the mainland. The costs and benefits were not, therefore, modelled in the Economic Case.

Phasing strategy

The strategic transport objectives call for an ambitious, multi-faceted programme of investment. At the same time it is recognised that limited resources are likely to be available from the Restoring Your Railways Fund and that a realistic and deliverable ‘ask’ is needed that can be shown to offer clear benefits within a manageable time horizon.

The approach has therefore been to develop options that will contribute to meeting the overall objectives, but which can be delivered in separate phases, including an initial phase that can form the basis for the ‘ask’. The aim is to show that such investment will both generate worthwhile benefits on its own but also forms a vital building block in the creation of a sustainable transport system that will meet IW’s longer term needs. In this section, Options 2 and 4 are taken forward into a phasing strategy.

The impacts of proceeding first with the Ryde – Newport via Blackwater scheme (Option 2) and, alternatively, with the Ryde – Ventnor scheme (Option 4) were examined, as shown in Table 8 and Table 9, which also provides a breakdown of the corridors in which connectivity benefits would be generated and the impact on overall modal choice.

Table 8: Strategic connectivity benefits in alternative phasing scenarios - Option 2 then Option 4

Stand alone options	Objectives by Corridor					Improve modal choice - high quality alternative to car use
	Ryde - Newport	Ryde - Ventnor	Newport - Ventnor	Newport - Bay Towns	Newport / Ventnor - mainland	
Phase 1: Ryde to Newport via Blackwater railway	✓✓✓✓	✗	✗	✓✓	✓✓	✓✓
Phase 2: Add Newport - Shanklin direct service	✓✓✓✓	✗	✗	✓✓✓✓	✓✓	✓✓
Phase 3: Add Shanklin to Ventnor Railway	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓
Phase 4: Convert system to light rail / VLR and extend into Cowes corridor	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓

Table 9: Strategic connectivity benefits in alternative phasing scenarios - Option 4 then Option 2

Stand alone options	Objectives by Corridor					Improve modal choice - high quality alternative to car use
	Ryde - Newport	Ryde - Ventnor	Newport - Ventnor	Newport - Bay Towns	Newport / Ventnor - mainland	
Phase 1: Shanklin to Ventnor Railway	✗	✓✓✓	✗	✗	✓	✓
Phase 2: Add Ryde to Newport via Blackwater railway	✓✓✓	✓✓✓	✗	✓✓	✓✓✓	✓✓
Phase 3: Add Newport - Ventnor direct service	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓
Phase 4: Convert system to light rail / VLR and extend into Cowes corridor	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓

Improvements in transport connectivity in the various corridors will clearly have different outcomes and impacts and their relevance to each of the investment aims varies. These relationships are summarised in Table 10, where, respectively, green, amber, and red represent high, medium and low relevance of the corridor to the investment aim.

Table 10: Summary of transport benefits by corridor against investment aims

Investment Aims	Improve the reliability, speed and convenience of journeys between:					Improve modal choice
	Ryde – Newport	Ryde – Ventnor	Newport – Ventnor	Newport – Bay Towns	Island – mainland	
Increase the travel to work area for Island residents, including number and range of jobs available to Islanders	Green	Amber	Amber	Amber	Green	Amber
Support the development of more high value and green job opportunities on the Island	Green	Amber	Red	Red	Amber	Amber
Support skills development and participation in employment among deprived Island communities	Green	Green	Green	Green	Green	Amber
Encourage households employed on the mainland to relocate to the Isle of Wight, generating income and investment	Green	Green	Red	Red	Green	Green
Support emerging demand for more sustainable patterns of living and working and the development of a thriving, modern and diverse visitor economy	Green	Green	Amber	Green	Amber	Green
Make a major contribution to reducing the share of trips made by car to 60% of 2011 level	Green	Amber	Amber	Green	Amber	Green
Catalyse the transformation of Newport, as main focus of IW economic and population growth	Green	Red	Amber	Green	Amber	Green

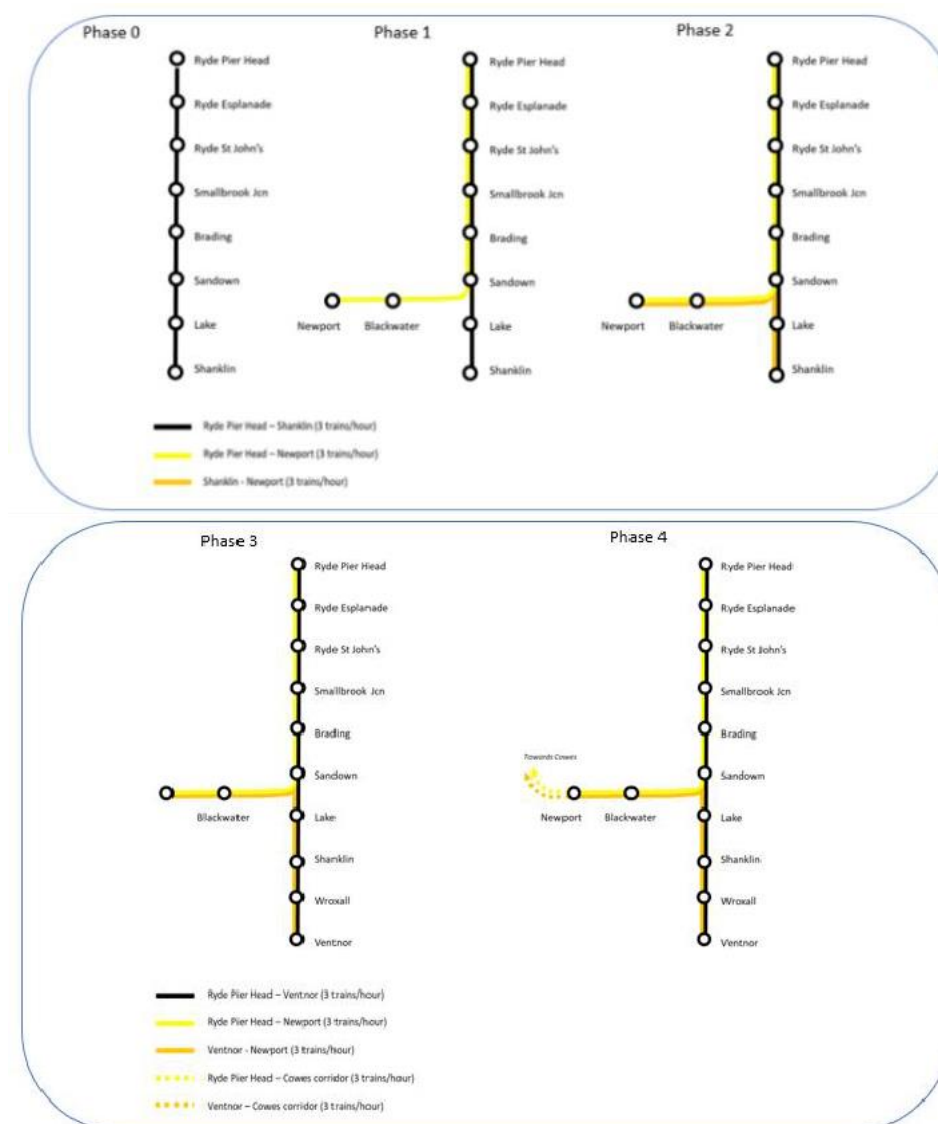
Overall, the introduction of a Ryde to Newport rail service is expected to have a dynamic set of impacts that goes to the heart of the strategic objectives and benefits a wide range of people and places across

IW and on the mainland. By contrast, the Ryde to Ventnor service plays a more localised role and is less central to the strategic vision of a more prosperous, inclusive and sustainable Island. This is reflected in Table 10, which shows that connectivity in the Ryde – Newport corridor is rated as ‘highly relevant’ to seven of the eight Investment Aims, whereas connectivity in the Ryde – Ventnor corridor attracts a ‘highly relevant’ rating for only 3 of them.

When checked against Table 10, this indicates that a wider set of Investment Aims would be addressed by proceeding with the Ryde - Newport via Blackwater railway ahead of the Ryde – Ventnor railway. It provides more opportunities for a rollout of benefits that build on one another, i.e. the case for the Ventnor line is likely to be strengthened if the railway to Newport is in place and has started generating dynamic economic benefits that will themselves boost prospective demand on the Ventnor line. This process could not be expected to operate in the reverse direction, i.e. with the Ventnor line first.

The proposed phasing is shown in Figure 28.

Figure 28: Indicative service patterns and frequencies, by phase



Other sub-options

An opportunity to create a Zero Carbon Railway

The IW has ambitions to become a net carbon zero location in the 2030s. There is an opportunity for the Island's rail system to be developed as an exemplar, which will not only help the Island achieve its objectives (and may itself help encourage mode shift) but also provide a demonstrator project of wider applicability to the rest of the UK rail network.

The infrastructure would be developed on the basis of low carbon; long-life design parameters, including the use of products made from recycled materials, modular construction and a 'right first time' construction approach. Examples of innovative thinking that could be incorporated in such a system include:

- Transporting bagged ballast from the mainland to the island is an expensive means of constructing and maintaining the railway. Slab track can be installed at the same cost or circa 10% higher Capex cost than ballasted track but has a design life of 120 years rather than 30 years and offers both carbon and monetary savings of circa 70% savings by year 60. Installation is far faster, allowing preliminary costs to be halved.
- New Light and VLR vehicles are well on in the production lifecycle and would provide low-carbon solutions for future rolling stock.
- Technologies such as digital coupling (to be demonstrated in the freight sector by the consortium DAC4EU in 2022) could allow services to split and join much more efficiently. This would reduce the need for carbon-hungry empty rolling stock operations during off-peak hours, as well as help minimise expensive investment in physical infrastructure capacity.
- Alternative fuel sources such as Biomethane could provide solutions to the challenges the Island will face when Food Waste collection methods change in 2023. Surplus renewable energy generated on the Island could also be used to power the system.
- The weather conditions on the Isle of Wight would lend themselves to trialling and implementing the use of solar panels on the track slab itself. Utilising this space would be unique, efficient and easily incorporated into the power generation facilities that already exist on the Island.
- There is also an opportunity to utilise surplus renewable energy produced on the Isle of Wight [See Financial Case].
- Real Time Information as used by many of the UK's bus networks could provide wireless customer information, thus removing the need for a physical communication spine. This reduces maintenance and subsequent embedded carbon, as well as achieving enhanced economic benefits.

2.12 Risks

A number of strategic level risks were identified in relation to shortlisted options, as set out below.

Engineering risks

Technical innovation

- The novel nature of semi-segregated 'hybrid light rail' in the rural UK context may lengthen or complicate the approval process for the safety case, leading to delays to implementation and/or infrastructure and operational design standards that do not enable cost savings to be realised as anticipated.

- The lack of UK precedents for achieving high-speed transitions of mid-section crossings using a 'hybrid light rail' approach may prevent target journey times/timetable performance being achieved, resulting in a less competitive service offer or more costly crossing solutions being required.
- The required 'hybrid' rolling stock with bi-modal third rail / battery traction capability is still in development and a lengthy delay to this being approved and becoming available on the market could lead to delays to implementation and / or costly changes to infrastructure / operational design.

Route / structures

- The lack of defined engineering options offering cost effective and acceptable solutions for reinstating the railway at Wroxall and Ventnor, where there has been encroachment on the former alignment from residential and commercial uses, results in delays to implementation and / or higher than anticipated costs.
- The lack of defined engineering options identifying the scale and scope of work needed to accommodate either rail or active travel within Ventnor Tunnel results in delays to implementation and / or higher than anticipated costs.
- The lack of defined engineering options for the Bus Rapid Transit route in Newport and reliance on shared use of existing roads in Ryde
- The historic, 'non-standard' nature of the Island Line's infrastructure could prevent 'off the shelf' rolling stock solutions from being implemented as part of any future conversion of the overall system to 'pure' light rail or VLR, resulting in increased costs / difficulties in making the case for proceeding with future phases of the strategic programme.

Demand and revenue

- The reduction in rail use observed during the Covid-19 pandemic leads to a permanent shift in travel behaviour, resulting in demand and revenues expectations not being met and higher levels of ongoing revenue support being required.
- The barrier effect on access/egress caused by the elevation of the railway station at Ventnor is not overcome by the provision of a first-mile/last-mile solution, resulting in demand and revenues expectations not being met and higher levels of ongoing revenue support being required.
- The improvements in connectivity between towns on the Isle of Wight results in a competitive response from other transport operators that reduces rail market share, leading to lower than expected demand and revenues and higher levels of ongoing revenue support being required.

Wider policy context

- The significant changes in the IW's planning approach that are required to unlock the transformational spatial benefits of the investment may increase the risk of the Local Plan not being approved, resulting in the expected shift to more sustainable/higher-density development patterns focused on existing urban areas being delayed or not fully realised.
- Landscape and habitat designations on or close to the proposed rail route between Newport and Sandown may require novel and potentially complex solutions to avoid or mitigate impacts, resulting in higher costs and / or delays to implementation.

None of the engineering risks are considered insurmountable and it should be possible to manage them within the estimated cost envelopes, which include 64% optimism bias.

The demand and revenue risks are not considered to materially detract from the strategic case for the scheme. Much of the value of the connectivity that the scheme will unlock will be translated into long term decisions such as where people choose to live and work, and there may be complex relationships between this and actual trip making. Moreover, the risks should be viewed alongside the broader context of the range of 'upside' factors that are set out in the strategic case.

Further work on demand scenarios would be desirable as part of a programme of work to deliver an outline business case.

3 The Economic Case

3.1 Introduction

A high-level financial and non-financial appraisal has been undertaken of those shortlisted options which appear viable. This includes:

- **Option 2** - Extend railway to Newport via Blackwater;
- **Option 4** - Reinstatement railway to Wroxall and Ventnor; and
- **Longer term 'Phase 3' developments** including both Option 2 and Option 4.

Economic modelling was used to explore the circumstances in which the options are likely to provide value for money while meeting strategic goals.

The SOBC Economic Case presents the following:

- Overview of option costs;
- Overview of demand and revenue impacts;
- High level assessment of value for money categories.

The main purpose of the Economic Case is to demonstrate that the investment is worthwhile for the envisaged economic return. The Green Book approach provides increasing levels of certainty in cost and return at each stage of qualifying the options for taking the programme forward. At this stage of development, benefit to cost ratios and value for money categories should be considered as indicative and will depend on further refinement of scheme costs, demand, revenues, and user benefits.

3.2 Overview of approach

Indicative costs

Indicative capital costs have been developed for the different options and packages considered. Information on how these have been derived is contained in the Financial Case.

Capital cost estimates include ■■■ optimism bias and no quantified risk assessment as recommended by the RYR Ideas Fund SOBC guidance⁹. All capital costs include an allowance for inflation, for design and project management, and a ■■■ Island cost premium. Costs exclude land acquisition, demolitions, landfill tax, cost of moving services in Ventnor tunnel, power supply upgrades or changes to power systems.

Operating costs have been developed for different service patterns for each option. These include rolling stock lease costs.

Demand, revenue and user benefits

Revenues have been modelled for a 2040 design year. Rail and bus fares are assumed to rise in line with general inflation (i.e. no real price changes are assumed). Rail revenues have been benchmarked against data provided by South Western Railways. However, there are reasons why demand and revenue may differ from the ticket sales data. In particular:

⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940959/tag-a5-3-rail-appraisal.pdf

- Ticketless travel (which is anecdotally high on Island Line) means that more people are travelling by rail than are captured in the ticket sales data;
- Gross rail revenues will differ from net revenues due to, for example, ticket retailing commissions; and
- The share of revenue for cross-Solent rail trips will vary according to the commercial agreements between operators. We have assumed that fares for cross-Solent trips generate the same revenue as they would if the originated/destinated at Ryde Pier Head.

User benefits are derived from the demand and revenue model and reflect how users value changes in transport journey characteristics. The model takes into account how much users would be willing to pay for changes to services and therefore captures both the difference in any financial cost that they do pay, and any consumer surplus from more convenient travel options over and above this.

Changes in financial cost reflect change in fares paid (for example when switching to a cheaper or more expensive mode of transport), car parking costs and ferry costs; factors reflected in travel convenience include journey times; number and type of transport interchanges; access to public transport services, and frequency of public transport services. User benefits are compared with the net cost of the project to determine indicative value for money categories.

Variation in revenues and user benefits have been examined under different assumptions regarding future Island development policy and economic scenarios. The Situational Analysis indicates that strategic drivers of demand include:

- Population growth, ageing and demographics;
- The scale, location, and nature of development;
- Strategic markets, including cross-Solent markets and the visitor economy;
- Modal policies such as car parking charges and public transport fares; and
- Post-Covid transport and economic behaviours.

All of these have the potential to change the demand and revenue of rail and other Island transport services. The model developed for the project is designed to rapidly examine the impacts of different scenarios for transport, behaviour, economic growth, and development – and this model was used to examine the sensitivity of revenues to different future policy, development, and behavioural scenarios.

Business as usual

- Island population grows from 141,500 in 2018 to 148,000 in 2040, with growth spread across the Island. While population increases by almost 7,000, the working population shrinks by around 3,000 with population growth occurring because of growth in the number of elderly residents. This is consistent with DfT's National Trip End Model;
- An increase in employment on the Island of 7% (5,000 jobs between 2018 and 2040), but productivity per worker remaining stubbornly behind the Great Britain average;
- Road speeds reduce by 10% between 2018 and 2040 (affecting buses as well) reflecting long term trends in speeds seen on the Newport to Ryde corridor as congestion worsens; and
- Car ownership and transport demand growth consistent with the SRTM model.

Economic catch-up

- 25% faster growth rate in population;
- Population growth assumed to be concentrated in Newport and in people of working age;
- 25% more ferry crossings in 2040;

- Closing half the gap between UK and Island GVA – 6,000 additional jobs and a 5.8% increase in productivity over the ‘business as usual scenario’; and
- Growth in employment concentrated in Newport and the Medina Valley.

Sustainable transformation

- Car ownership growth rate is halved;
- Additional £2.50/day car parking charges apply to all car trips to Newport and Ryde; and
- An additional £1 cost per car trip applied to simulate reduced preferences for driving or other measures to limit car use.

Continuing impacts from Covid-19

In addition to these scenarios, the impact of possible long term travel behavioural effects of Covid-19 was examined. This scenario assumes both that commuting trips reduce by 20% to reflect long term changes in working patterns, and that public transport becomes less attractive compared to highway and active travel modes. The result of these assumptions is to reduce overall demand in the Reference Case by 4.3% and to reduce public transport demand by 17.1%.

Transport change in the Reference Case

Alongside these policy and development scenarios, the transport model includes assumptions about how transport supply will change between 2018 and the modelled forecast year of 2040. The transport Reference Case assumes:

- No real changes in rail fares, bus fares or parking costs;
- That the Island Line upgrade is completed offering 2 trains per hour on a clockface timetable between Ryde and Shanklin;
- Where 3 train per hour services are tested on new routes, a 3tph service is also operated on Island Line. (This ensures than benefits from changes to Island Line frequencies are not erroneously captured when examining the benefit of service options on new routes);
- That road conditions continue to worsen as traffic continues to grow (reducing road journey times by 10% by 2040 compared to 2018 levels).

While the model used for the analysis is a geographically disaggregate, calibrated and validated logit mode choice model, it is strategic in nature and makes several simplifying assumptions which may affect model results. Results should therefore only be considered as a guide to the broad scale of changes in demand, revenues and user benefits that might be expected.

Phasing and discounting

Capital costs, operating costs, revenues, and user benefits are phased over time and discounted. For the purposes of appraisal, changes to services are assumed to begin in 2029 with capital cost phased over the preceding three years ([REDACTED]). No ramp up in demand is assumed. User benefits are assumed to grow annually by 1% in real terms to reflect continued Island population growth.

[REDACTED]

Value for money

For each option, the costs, revenues, and user benefits are brought together to examine whether each option is likely to offer a viable economic case, and the key factors that affect this. The indicative benefit cost ratio is calculated as the ratio of discounted users benefits to discounted net project costs (after net changes in public transport revenues have been allowed for).

This simplified approach does not capture:

- wider economic benefits associated with, for example, labour market impacts or agglomeration;
- environmental impacts from reduced CO2 emissions;
- safety benefits from passengers switching to rail;
- improvements to road speeds brought about by the scheme through decongestion; or
- changes in indirect taxes such as fuel duty.

3.3 Option 2 – Extend railway to Newport via Blackwater

Reopening the railway from Newport to Ryde via Blackwater (Option 2) offers the opportunity for services between Newport and the Bay which continue to Ryde. There are different ways that this could be achieved. In the short term, the most promising appear to be:

- **North facing junction with Island Line to the south of Sandown station:** In this arrangement, services between Newport and Ryde would serve Sandown. A Newport to Ryde and a Ryde to Shanklin service would be operated with passengers between Ryde and Lake or Shanklin changing at Sandown. This service pattern would require higher frequencies on the section between Ryde and Sandown where both services would operate.
- **North facing junction with Island Line at Moreton:** This arrangement would allow trains to operate directly between Newport and Ryde and between Ryde and the Bay. This implies relatively high frequencies on the section between Ryde and Moreton where both services would operate. Passengers from Newport to the Bay would change at Brading.

Table 11: Indicative costs for heavy rail operation, 2018 prices

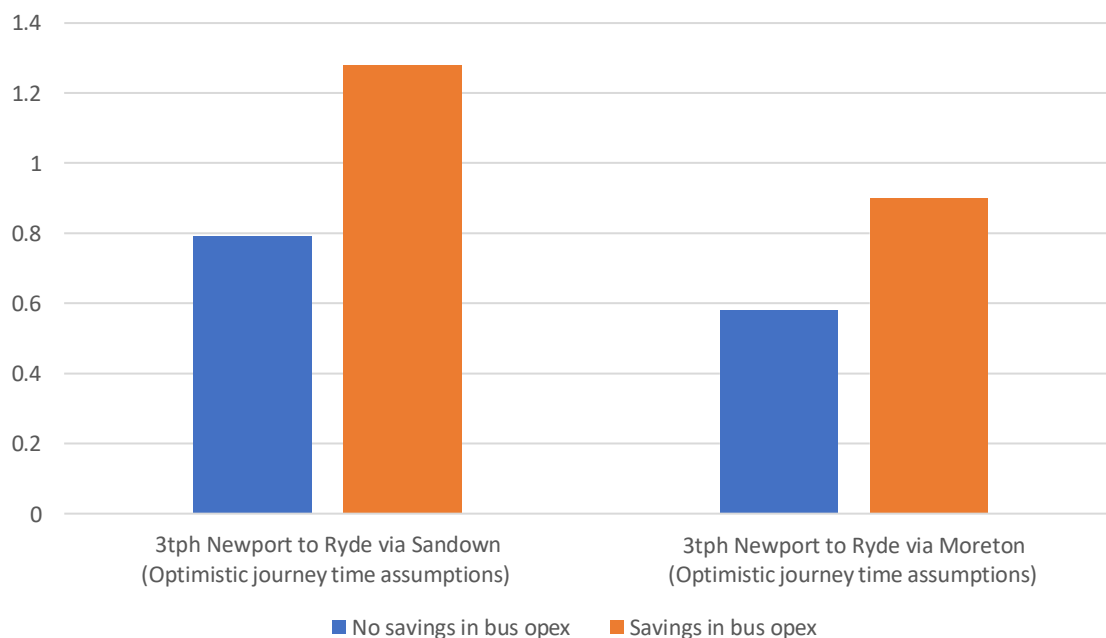
Option	Indicative cost		
	Excl. optimism bias	Optimism bias	Total
Capital costs			
Extension of railway to Newport via Blackwater with north facing junction at Moreton	■■■■	■■■	■■■■■
Extension of railway to Newport via Blackwater with north facing junction South of Sandown Station	■■■■	■■■	■■■■■
Operating costs			
3 tph Newport to Ryde via Moreton	■■■■	■■■	■■■■■
3 tph Newport to Ryde via Sandown	■■■■	■■■	■■■■■

Extending the railway to Newport via Blackwater with a junction south of Sandown Station or with a junction at Moreton require similar infrastructure and have similar operating cost requirements. More detailed design work would be required to identify any significant cost differences between them. A Newport to Ryde service via Moreton would have a faster end to end journey time than a service operating via Sandown (around 2 mins faster). However, the service via Sandown enables a direct connection between Newport and Sandown.

To put the scheme costs and the scale of the economic challenge in context, the ‘Economic catch up’ scenario sees annual Island economic output some [REDACTED] higher in 2040 than in the business as usual situation. The capital cost estimates are therefore less than [REDACTED] of the value of one year’s worth of this additional economic output.

Newport to Ryde services via Moreton and via Sandown have been assessed against ‘business as usual’ assumptions where the Island’s population continues to age, economic performance remains lagging and no significant environmental policy measures or behavioural change affects transport demand patterns. The outcomes of these tests are shown below.

Figure 29: Indicative benefit to cost ratios of Option 2 - Extend railway to Newport via Blackwater, BAU



Where new rail routes abstract a significant number of passengers from existing bus services, it is likely that service provision would be reduced in response, saving bus operating costs. The implications of specific changes in bus costs have not been modelled. Instead, benefit to cost ratios are presented showing what the BCR would be if reductions in bus revenue were offset by commensurate reductions in bus operating costs.

The service from Newport to Ryde via Sandown shows the strongest value for money case under business as usual assumptions. The disbenefits of slightly longer journey time between Newport and Ryde appear to be more than outweighed by being able to directly serve the Newport to Sandown route. If there are no savings in bus operating cost, this implies a benefit to cost ratio of around 0.8. However, if reduced bus

patronage also enables reduced bus operating costs, then the benefit cost ratio would be around 1.3. The service via Moreton delivers lower benefits and delivers lower benefit to cost ratios of 0.6 and 0.9 depending on the assumptions about bus operating costs. As noted, this indicative analysis does not include any wider economic benefits, safety, environmental or decongestion benefits and so is likely to be conservative in this regard.

The indicative benefit to cost ratio is based on the building blocks shown in Table 12 below.

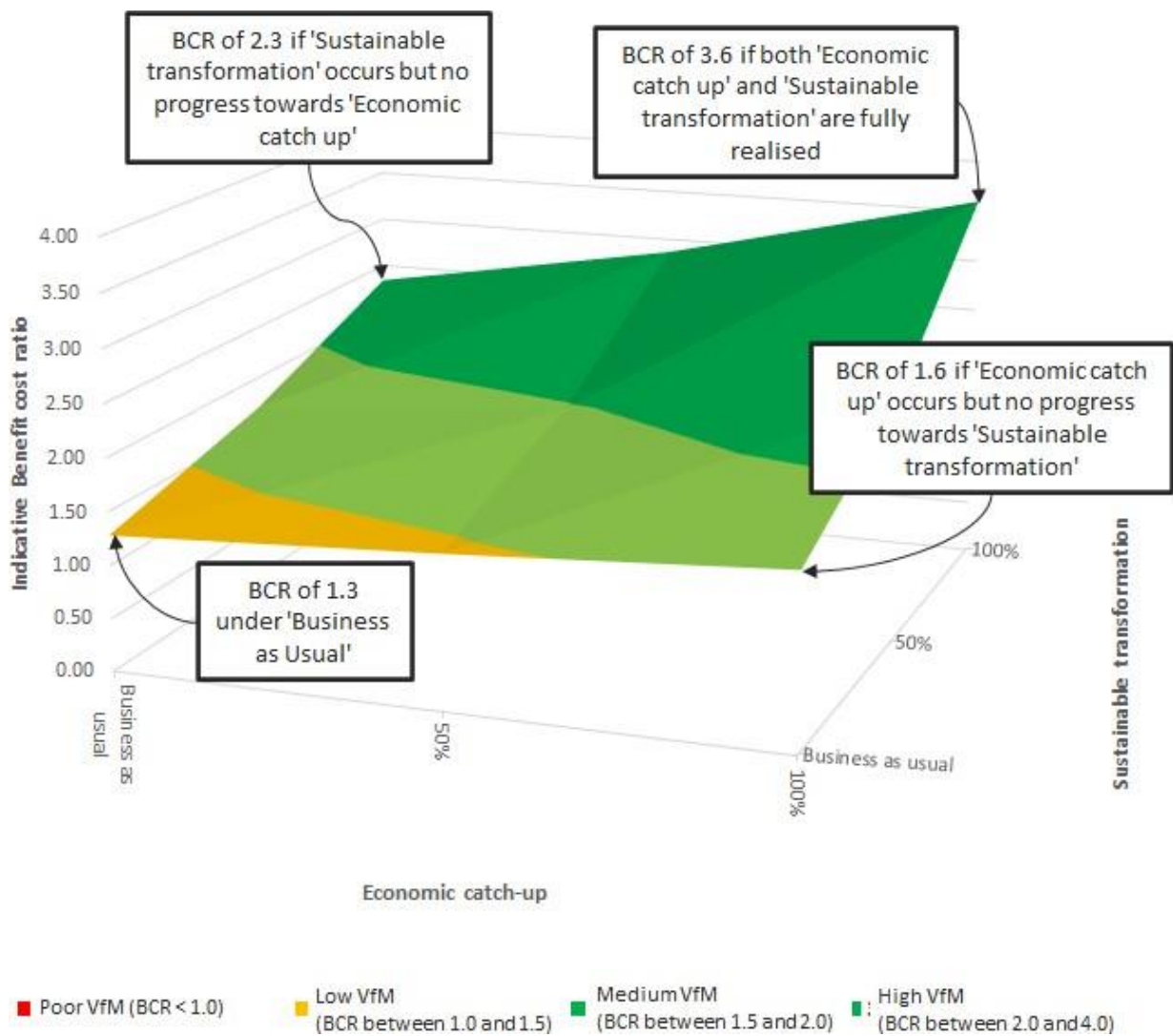
Table 12: Indicative benefit to cost ratio for Option 2 – Extend Railway to Newport via Blackwater

		Newport via Blackwater (Junction south of Sandown)		Newport via Blackwater (Junction at Moreton)	
		No savings in bus opex	Savings in bus opex	No savings in bus opex	Savings in bus opex
A	Discounted capital cost*	■	■	■	■
B	Discounted operating cost*	■	■	■	■
C	Net change in rail revenue	■	■	■	■
D = A + B + C	Net scheme cost	■	■	■	■
E	User benefits	■	■	■	■
Indicative BCR = E / D					
Business as Usual		0.8	1.3	0.6	0.9
Economic Catch-Up			1.6		
Sustainable Transformation			2.3		
Economic Catch-Up & Sustainable Transformation			3.6		

The balance of user benefits will be affected by future fares policy. In particular, evidence suggests that existing rail fares are often lower than corresponding bus fares. Shifts from bus to rail therefore reduce overall public transport revenues. However, this reduces costs to passengers so is reflected in benefits to transport users. The balance of these effects is likely to differ under different fares strategies for both rail and bus.

The benefit cost case is strongly affected by the future nature of Island development and policy. Figure 30 shows how the value for money case changes as combinations of the ‘Economic Catch-Up’ and ‘Sustainable Transformation’ scenarios come about. It shows the 3 tph Newport via Blackwater service option with a Junction to the south of Sandown (as depicted on the left-hand side of Figure 29) where bus passenger reductions are converted into savings in bus operating costs.

Figure 30: Impact of scenarios on value for money of 3 tph service from Newport via Blackwater with junction south of Sandown



The left hand side of the chart shows that under business as usual assumptions, this scenario delivers low value for money with a benefit to cost ratio of around 1.3. However, as the development and policy environment change, the case for the scheme changes. If the 'Economic Catch-Up' scenario comes about fully, but there is no move towards sustainable travel or sustainable travel policies, then the BCR increases from 1.3 to 1.6 putting the project into the 'Medium value for money' category. If the 'Sustainable Transformation' scenario fully comes about but with no economic catch up, then the benefit cost ratio rises to around 2.3 – the 'High value for money' category. If both of these scenarios come about together then the BCR rises to 3.6, also putting the project into the 'High value for money' category.

On top of the low growth rates and ageing population in the 'Business as Usual' scenario, our assumptions about potential long term negative impacts of Covid-19 significantly hamper the economic case. For comparison, the 3 tph Newport via Blackwater scheme with a junction to the south of Sandown sees the BCR fall from from between 0.8 and 1.3 under Business as Usual to between 0.4 and 0.6 as future transport markets – and public transport markets in particular – contract.

3.4 Option 4: Reinstate former railway to Wroxall and Ventnor

A service option has been developed that would see the three train per hour service on the Island Line extended to Ventnor with an additional journey time of around 6 minutes, including one stop at Wroxall. This is based on Option 4 above. Public transport competition on this corridor is provided by Southern Vectis route 3 which operates half hourly between Ventnor to Ryde and forms part of a Newport-Ryde-Ventnor service. The indicative capital costs for the options are shown in Table 13.

Table 13: Indicative costs for heavy rail operation, 2018 prices

Option	Indicative cost
Capital cost	
Reinstatement of former railway to Wroxall and Ventnor including Ventnor tunnel and new station	██████████
Operating cost	
3 tph Shanklin to Ventnor	██████████

The overall infrastructure cost including optimism bias is around ██████████ in 2018 prices for a three train per hour service. Additional operating costs are expected to be around ██████████ per annum in 2018 prices for a three train per hour service.

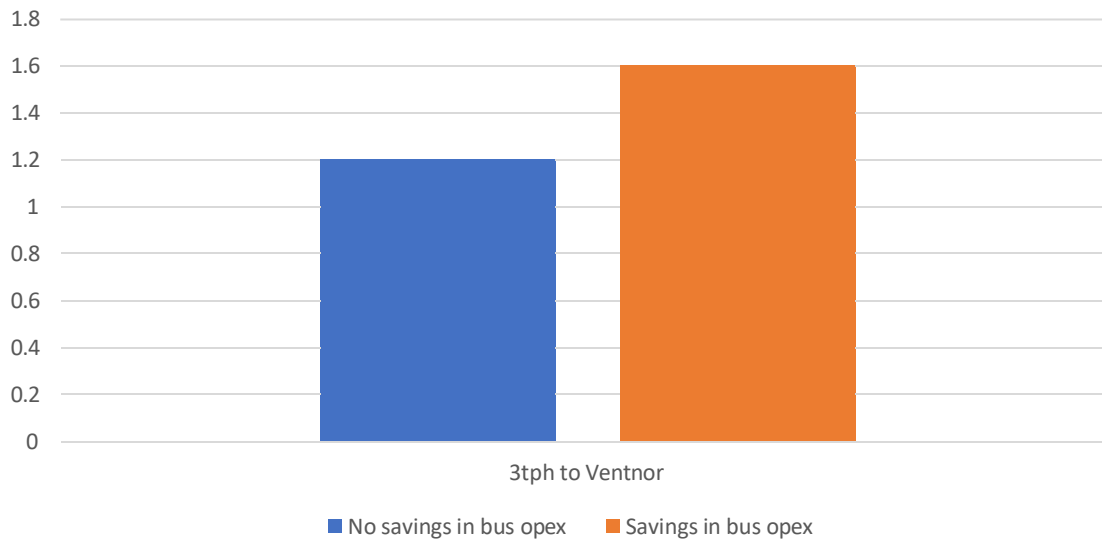
Demand and revenue modelling suggests that reopening the disused line would have the following effects:

- Capture more than half of passengers from car trips (although this is still a small share of overall car trips),
- Effectively capture all the existing bus market from Ventnor to Wroxall for cross-Solent trips, improving cross-Solent connectivity;
- Capture around two thirds of the bus market on longer distance journeys such as Ventnor to Ryde;
- Capture around 40% of the bus market between the Ventnor/Wroxall and the Bay.

An important issue at Ventnor is the location of the station above the town and accessibility to it. This is reflected by an access penalty of 10 minutes for access from Ventnor town and 5 minutes for access from the Ventnor suburbs. This is over and above the usual station access/egress penalties applied in the demand model. The strategic model is not well equipped to explore detailed issues of local station access arrangements. However, sensitivity testing suggests that the impact of this penalty reduced demand and revenue by around ██████████. Much of the modelled demand on the route comes from origins in the Ventnor suburbs and from Wroxall where difficulty of access will be less significant. Together, this suggests that access issues at Ventnor should not affect the broad estimates of demand or the strategic case for the reopening.

The modelled benefit to cost ratio for reopening the Ventnor line is shown in Figure 31.

Figure 31: Indicative benefit to cost ratios of Option 4 - Reinstatement former railway to Wroxall and Ventnor, BAU



Overall, it appears that the economic case for reopening the Ventnor line offers a benefit to cost ratio of greater than one, whether or not there are associated changes in bus operating costs. If no bus cost savings are possible, then the BCR is around 1.2 while if reduced bus revenues can be translated into lower bus operating costs, then the BCR under Business as Usual assumptions is around 1.6.

This option appears to offer a good prospect for delivering medium value for money and may be able to achieve high value for money in some scenarios.

3.5 Longer term: Phase 3 investment package

In a longer term vision for the Island's rail system, the Ryde to Newport via Blackwater and the Ventnor extension would combine to offer a three route service pattern covering Ryde, The Bay, Newport, and Ventnor (see strategic case phasing section). This longer term vision meets most of the strategic requirements for the transport corridors examined and could be further extended with future extensions from Newport to Cowes (Phase 4).

Phase 3 could be delivered either with a delta junction at Moreton or via a connection to Island Line at Sandown.

- **Reversing at Sandown:** If the Newport via Blackwater route were reopened with a junction to the south of Sandown, it would be possible to operate a direct Newport to Shanklin service which entered Sandown from the south and then reversed to serve Shanklin. This would require additional vehicles and operating cost with trains joining and splitting from the Ryde to Shanklin service at Sandown. However, it would not require new infrastructure. Services would split and join at Sandown to enable a three train per hour service on the section between Sandown and Shanklin.
- **Delta junction at Moreton:** Introducing a south facing connection at Moreton would create a delta junction which could allow a three way service with direct trains operating from Newport to Ryde, Ryde to Shanklin and Newport to Shanklin. Trains from Ryde and Newport would join and split to enable lower frequencies on the Sandown to Shanklin section. This arrangement requires higher frequencies on the Newport to Moreton section (where Newport-Ryde and Newport-Shanklin services operate) and on the Ryde to Moreton section (where Newport to Ryde and Shanklin to Ryde services would operate).

The additional costs for these options are shown in Table 14.

Table 14: Indicative costs for heavy rail operation, 2018 prices

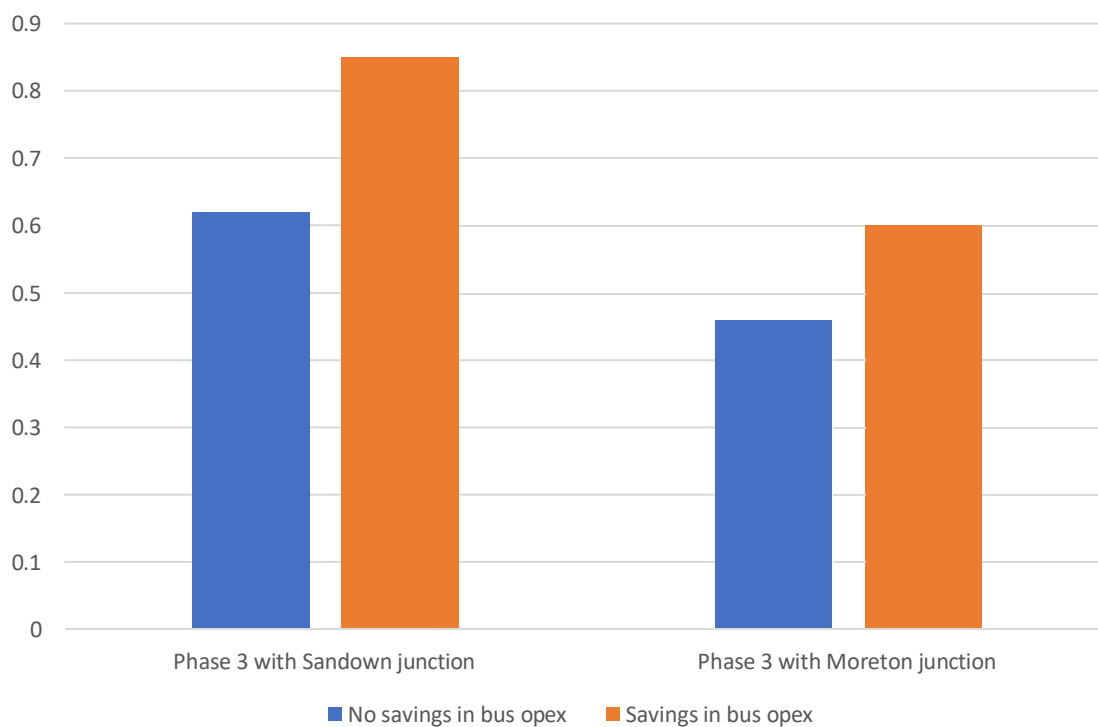
Option	Indicative cost		
	Excluding optimism bias	Optimism bias	Total
Capital costs (for Moreton option only)			
Additional cost of delta junction at Moreton to enable 3-way operations	■	■	■
Operating costs (for Moreton and Sandown junction options)			
Incremental operating cost of 3tph Newport to Shanklin	■	■	■

The costs for Phase 3 have been derived by adding up the costs of:

- Option 2 – Reopening the Newport via Blackwater route;
- Option 4 – Reopening the Wroxall to Ventnor route; and
- Incremental costs of operating a triangular service pattern.

The benefit cost ratios of this longer-term vision are shown for the business as usual scenario in Figure 32.

Figure 32: Indicative benefit to cost ratios of complete Phase 3, BAU



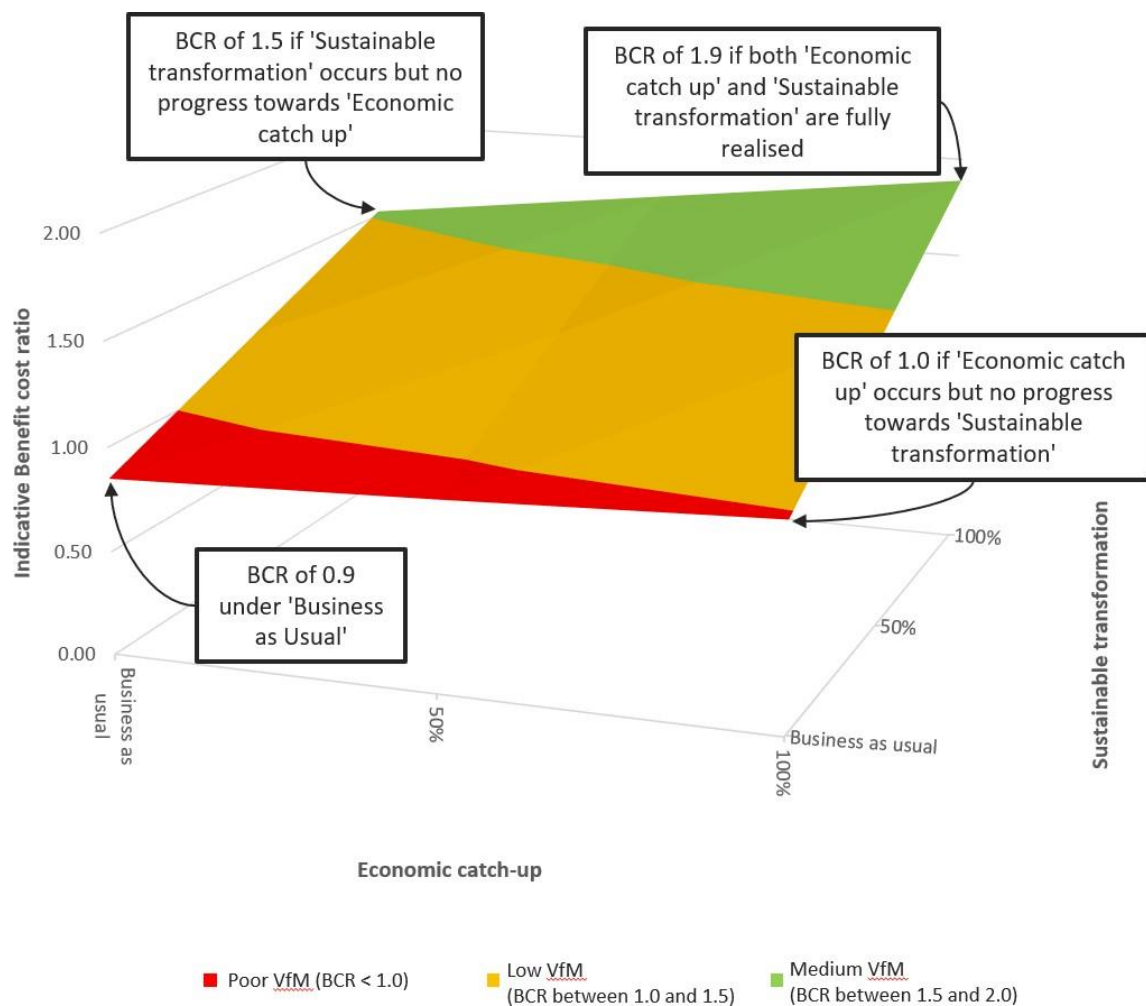
With bus operating cost savings, the value for money of the option via Sandown (on the left of the chart) is between 0.6 and 0.9, excluding other impacts such as wider economic benefits, decongestion, safety, and carbon. As modelled, the combined Option 2 and 4 as well as the impact of a three way service which creates direct connections between Ryde, Newport and the Bay delivers lower value for money compared to either Option 2 or Option 4 alone. This is because the additional third service either delivers:

- Modest benefits if operated via a junction to the south of Sandown. This is because the link between Sandown and Newport is already served in Phase 1 so marginal benefits do not cover the marginal costs of the service; or
- High costs if operated via a delta junction at Moreton.

In practice, the costs of this longer term vision are likely to be overstated and BCRs could therefore be higher. This is because simple addition of costs for different elements does not allow for opportunities to optimise service patterns, reduce train requirements, and save operating costs. It also does not allow for approaches that enable more capital costs synergies through coordinated provision of new infrastructure.

When considered against the Island's development ambitions however, the longer term vision shows that it could provide medium value for money – or potentially greater once cost synergies and other benefits are calculated. This is shown in Figure 33.

Figure 33: Impact of scenarios on value for money of longer term 'Phase 3' transport development options



Small steps towards Economic Catch-up or Sustainable Transformation would provide a benefit to cost ratio of greater than one and make a substantial contribution to levelling up and delivering the Island's wider growth and environmental ambitions.

However, a note of caution is again required if continued fall-out from the Covid-19 epidemic continues to affect transport demand. In this case, reduced demand when combined with the already lacklustre economic performance of the 'Business as Usual' scenario deliver BCR's of 0.3 to 0.4 for this longer term vision.

4 The Financial Case

4.1 Introduction

This section presents the Financial Case for the Isle of Wight Restoring Your Railway proposition. It concentrates on the affordability of the Phase 1 proposal and the range of potential funding sources that could be available to support its delivery. It sets out:

- Project costs and an explanation of how these costs were calculated;
- Cost risk and uncertainty; and
- Potential sources of funding.

4.2 Scheme costs

Indicative cost estimates for the range of options considered within the Strategic and Economic Cases have been produced to inform decision-making and to guide the development of 'preferred options' in preparation of this SOBC. In many cases, only high-level estimates were required to discount certain options e.g. double-tracking significant sections of the existing Island Line. In other cases, the production of cost estimates has been undertaken in parallel with the development of options, whereby a level of iteration and refinement has been required.

The capital cost estimates presented in Table 15 below have been prepared on the basis of high-level block rates and quantities, benchmarked against similar new build and railway re-instatement projects that have been completed recently. The estimates are not based on a full bill of quantities, and only limited information regarding asset condition, e.g. permanent way and structures, was available to inform the cost estimation exercise. Nevertheless, they are considered sufficient to inform the option sifting and shortlisting process and to provide an indication of the likely value for money that can be achieved by the proposed programme of interventions.

Table 15: Indicative infrastructure cost profile for Phase 1 scheme (Option 2 - Ryde to Newport railway), 2021 prices

	Total	2023	2024	2025	2026	2027	2028
Infrastructure costs	████████	██	██	██	████████	████████	████████

The infrastructure cost profile presented in Table 15 includes the cost of:

- upgrading the existing Island Line to permit 3 trains per hour in each direction through increased line speeds (this could be considered an initial phase of the proposition and implemented in advance of the other works described below);
- a completely new section at Sandown Meadows linking to a south-facing lead at Morton Common;
- reinstatement of the former railway route between Sandown Meadows and Shide, including a single platform station at Blackwater; and
- a completely new section at to the south of Newport (in the vicinity of the obliterated former rail corridor) and a terminal station in the vicinity of Newport town centre.

Cost estimates are expressed in 2021 prices and include both a location uplift of 20% to reflect the relative difficulty of undertaking infrastructure works on the Island, and a management and design uplift of 25%.

Unit costs include:

- turnout, control (including interlocking) and underbridge at Morton Common Junction;
- reinstatement of up to nine Automatic Half Barrier Crossings (AHBC) between Morton Common and Newport (it may be possible to avoid reinstating some crossings on lightly-used tracks and private land);
- building of seven underbridges to channel waterways (six on the River Yar and one on the River Medina in the vicinity of Newport); and
- a passing loop sufficient for 80m trains and three trains per hour.

Other items, including Pier Head enhancements, land acquisition, demolitions, landfill tax and diversion of the Red Squirrel Trail have not been included. It is further assumed that capital costs for the additional rolling stock required to deliver the enhanced timetable and new services will be leased and therefore paid for through operating and maintenance costs. Commensurate with the level of scheme development, at this stage a quantified risk assessment (QRA) has not been carried out.

The cost estimates presented in Table 15 are consistent with, albeit presented differently to, the equivalent cost figures presented within the Economic Case (Chapter 3). This is because several translations to the cost estimates in Table 15 are needed in order for them to be consistent with the projections of transport user benefits. To ensure consistency:

- The 'price base' for costs is adjusted from 2021 prices to 2018 prices;
- Costs are factored up by 64% to represent 'optimism bias' which captures the historic tendency of scheme promoters to be overly-optimistic regarding scheme costs and timescales; and
- Costs are 'discounted' to reflect that society places greater weight on both costs and benefits that are experienced now, compared with those that are expected to occur in the future. Discounting provides a way of comparing costs and benefits that occur in different time periods.

4.3 Cost risk and uncertainties

Several strategic level risks related to shortlisted options are described in section 2.12, some of which are expected to have cost implications should they materialise. In line with DfT's Transport Appraisal Guidance (Unit A5.3, Section 2.5), schemes at project definition and pre-feasibility development levels "any measure of QRA and contingency should be excluded from the definition of costs". Therefore, no adjustment for either upside or downside risk has been included within the cost estimates presented. Further information regarding the approach to managing and mitigating risks is provided within the Management Case (Chapter 6).

4.4 Funding opportunities

Additional development funding to progress the scheme is anticipated to be provided via the Restoring Your Railway Fund, subject to agreement of the business case. As with the current round of Ideas Fund projects (which supported this SOBC) there may be a requirement for local match funding, although the terms for subsequent funding have not, at the time of writing, been published.

Looking ahead to the scheme delivery phase there is limited scope for any additional funding via the standard support for South Western Railway under the current management contract, and no grant support for any Network Rail infrastructure works has been factored into the current Control Period settlement. It should be noted, however, that local priorities are expected to be brought into sharper relief through many of the initiatives described within the recent Rail White Paper (2021) and funding opportunities hitherto unspecified may provide suitable opportunities to secure capital funding support¹⁰.

Other central government funds, such as the recently launched £4.8bn Levelling Up Fund, appear ideally suited to support the improvement of public transport services on the Island. Its prospectus indicates that *“the most impactful infrastructure projects – those that help bring pride to a local area – are often smaller in scale and geography: regenerating a town centre, local investment in cultural facilities or upgrading local transport infrastructure.”*¹¹

In addition to seeking central government grant funding, there may be opportunities to access local and regional funds to provide an element of local match funding. For example, in partnership with Solent Transport, the Isle of Wight secured £10m of Transforming Cities Fund cash to improve transport provision in Ryde. At present, no third-party funding has been identified to meet the assumed requirement for a local contribution towards the scheme. However, with both commercial and residential development expected to come forward in the areas served by the enhanced IW rail network, it is possible that developer contributions may be secured as part of the planning process. Given that the scheme is expected to support delivery of planned growth, and would enhance connectivity, it is also likely that the scheme would be a good fit with the objectives of various funding streams managed by Solent LEP. Subject to additional tranches of funding being made available by central government, therefore, a third-party funding contribution from the LEP could be sought.

Other funding sources

Notwithstanding the possibility of securing regional or local funding to supplement central government grant funding there is a range of alternative, third-party funding sources that may be explored in subsequent development phases.

As discussed in the Strategic Case, the investment aims of the proposals relate strongly to addressing the long standing economic performance gap between the IW and the rest of the SE and the proposals have been developed as part of a wider vision aimed at transforming the IW’s economic, social, and environmental performance. If this vision succeeds it should increase the GVA of the Island significantly. Capturing a share of this ‘delta’ could provide a major funding contribution.

The proposals could be at the heart of an Island Deal based around the principle that a share of the tax revenue generated by the additional growth unlocked could be retained. To put the scheme costs and the scale of the economic challenge in context, the ‘Economic catch up’ scenario sees annual Island economic output some [REDACTED] higher in 2040 than in the business as usual situation. The working capital cost of the Newport – Ryde scheme is therefore around [REDACTED] of the value of one year’s worth of this additional economic output.

¹⁰ See Great British Railways: The Williams-Shapps Plan for Rail CP423, Department for Transport (2021)

¹¹ See Levelling Up Fund: Prospectus, HM Treasury, Ministry of Housing Communities and Local Government, Department for Transport (2021).

Other potential sources of funding might include:

- **Vehicle testing fees:** A significant opportunity exists for cooperation with Vivarail (or other vehicle manufacturers) over testing of battery powered vehicles in a segregated environment¹². Not only would this help mitigate risks associated with relying on unproven technology for any extensions, but it could address existing problems with power supply in Shanklin, which is relatively distant from a feeder station, and which may be exacerbated if the Class 484 vehicles have a higher draw than those they are replacing. Essentially, the Island Line would become the UK's longest third rail test track and could be a significant pioneer in the field of developing battery train technology for practical application across the SE third rail network.
- **Improving grid stability:** Development work on options for the conversion of excess renewable energy on IW into hydrogen is currently underway. The context for this is that while there is a connection back to the mainland, capacity on this connection is largely taken by the (rarely used) backup Kingston Power Station located in Cowes. Excess supply introduces the risk of grid instability, which means current options for IW to exploit renewable energy are heavily constrained. An expanded rail system, e.g. with battery traction, could provide a ready on-Island market for excess renewable energy. To the extent that this could enable development of further renewable energy supply on IW, options could be explored for the stakeholders to make a funding contribution to the proposals.
- **Testing alternative standards:** There is an opportunity for innovation in the application of infrastructure and rolling stock standards to extensions of the Island Line e.g. through adopting construction and rolling stock standards appropriate to a semi segregated metro style operation (subject to risk assessment). This could support the development of more cost effective / lower carbon solutions for the deployment of new rail infrastructure and services, with wider benefits for network development across the UK. Such a range of benefits could help a case to be made for a funding contribution to the proposals from the wider rail industry.
- **Dependent development:** Delivery of enhancements to the rail network are closely linked with the potential for higher density residential development on the Island. Hence there may be some potential for additional sources of funding to be generated through Land Value Capture associated with the 'dependent development' unlocked by the proposal. Land Value Uplift can be expected at key development sites in Newport and capturing a proportion of these may be possible through a variety of mechanisms. In addition to standard approaches such as S106 funding, options that might be considered include a Council Tax precept, the auctioning of development rights to developers, Tax Incremental Financing and Business Rates Supplement.

¹² Currently Vivarail has no active third rail test infrastructure (outside a short stretch at Long Marsden). The Island Line offers an opportunity for Vivarail to test their third rail battery charging capability 'on the fly' and see how a vehicle reacts to the method of operation. The power control can be managed without interference with other national network services, and sections could in theory be switched off in different areas, to allow the trains to be tested on battery power between fixed points.

5 The Commercial Case

5.1 Introduction

The Commercial Case provides evidence on the commercial viability of the Restoring Your Railway scheme and the emerging procurement strategy that will be used to engage the market. At SOBC stage an outline of the procurement strategy is required.

In January 2020, the DfT launched the Restoring Your Railway Fund. The [REDACTED] funding pot was split into three categories to allow schemes at different levels of maturity to benefit from central government support. The categories are:

- the Ideas Fund – development funding for early-stage ideas to explore options to restore lost rail services connections to communities.
- advanced proposals – support for lines and stations already being considered for restoration and for those identified as having further potential via the Ideas Fund application and assessment process.
- proposals for new stations and the restoration of old station sites.

This SOBC is part-funded via the Restoring Your Railways Ideas Fund. Subject to agreement of the business case, further funding to develop the business case may be available. Moreover, some of the [REDACTED] funding pot may be available to contribute towards the capital costs of the scheme, subject to sufficient funding remaining available at the point powers and consents for reinstating the railway are granted.

Should such funding not be available, it is expected that the proposed scheme would fall into the standard DfT pipeline for third-party interventions. Assuming that rail-based options continue to present the most compelling approach to meeting the investment aims set out in Figure 13, this would be the Rail Network Enhancements Pipeline (RNEP) launched by DfT in March 2018 which sets out a revised process for the development and approval of major enhancement projects.

The Strategic Case has identified a range of options for providing rail services on former rail corridors in the Isle of Wight. As set out in the Strategic Case, the physical works for this project essentially involve the reinstatement of rail (including light-rail) infrastructure on former railway corridors to passenger standards, encompassing the construction of two new stations, installation of level-crossings, and enhancements to the existing Island Line corridor.

These works are largely confined either to railway land already under the full ownership of Network Rail (the existing rail track bed, and land on either side of the track bed marked by boundary fencing, including embankments and cuttings), or Isle of Wight Council. Some relatively small incursions onto privately-owned land are also likely to be required.

5.2 Procurement Strategy

It is expected that a preferred strategy for procurement for capital works would be identified by Network Rail (NR) or its successor Great British Railways (GBR) during the Outline Business Case development stage. In line with NR processes, the preferred strategy would be selected in order to ensure that value for money is achieved, and that all procurement is compliant with all relevant processes and standards.

NR has a mature framework in place for managing contractors on major projects, fully audited to ensure they meet expectations around safety and sustainability. In 2019, Network Rail established a series of procurement frameworks for schemes being delivered during Control Period 6, covering aspects such as

track and signalling. In many cases, specific contractors have been appointed for the Wessex region as part of these frameworks.

In terms of rail operating options, it has been assumed that the any emergent GBR/Train Operating Company (TOC) arrangements would apply. GBR would maintain the track and signalling infrastructure and an existing TOC would operate the train services on the Island as part of the specification of a future concession arrangement (in line with expected rail industry reform). An existing TOC would be able to operate services more efficiently than a new TOC who would need to secure the relevant Licences, Safety Management System and competencies under a fixed period concession arrangement as well as negotiate train maintenance and recruit traincrew. The TOC that is geographically most aligned and that could be operationally best suited to operate train services on the branch is South Western Railway.

In order to operate the service following reopening for passenger use, agreements will be needed to:

- procure and maintain the necessary rolling stock;
- formalise the payments by the operator to Network Rail for operating and maintaining the infrastructure;
- hire additional railway staff; and
- extend (or replace) existing supply arrangements which would support the new operation (for example – ticketing systems, timetable systems etc.)

6 The Management Case

6.1 Introduction

The purpose of the Management Case is to outline how the proposed scheme and its intended outcomes will be delivered successfully. It gives assurances that the scheme content, programme, resources, impacts, problems, affected groups and decision makers, will all be handled appropriately, to ensure that the scheme is ultimately successful. It describes:

- The governance and oversight arrangements for subsequent phases of scheme development;
- An indicative programme for further scheme development and a phased approach to implementation;
- The interdependency between the proposals set out in this SOBC and other schemes and initiatives;
- An overview of stakeholder engagement activities undertaken in preparation of this SOBC;
- The proposed approach to managing and mitigating project risks; and
- The proposed approach to monitoring and evaluation of the scheme.

6.2 Governance and Oversight

An appropriate governance structure is essential to the successful delivery of the Isle of Wight Council's ambitions for enhanced branch-line rail services. At this stage it is not possible, nor meaningful, to set out a governance structure for delivering the scheme. It is, however, possible to describe the arrangements should funding be awarded to explore the proposals set out in the SOBC further.

Established in October 2020, the Restoring Your Railway Isle of Wight Project Board meets every six weeks. It brings together representatives from the accountable body and partner organisations, together with specialist advisors and the Isle of Wight MP as project sponsor. The key function of the Board is to provide leadership and strategic direction in order to ensure successful implementation of the RYR IoW Project. The Project Board is the highest level of local governance for the project, with a remit which includes key decision making.

Key functions of the Board to-date have been to:

- Oversee and direct the successful implementation of the RYR IoW Project;
- Receive project updates from the consultancy responsible for delivering the project outputs;
- Review and discuss draft project outputs and approve final versions of project outputs;
- To communicate with stakeholders external to the project. The Project Board ensures that there is timely and effective two-way communication for each stakeholder group, that expectations are managed and that key messages are consistent and accurate throughout;
- Ensure that project expenditure is in line with the terms of the Department for Transport Grant Offer Letter, and accords with the project budget;
- Monitor the Project Risk Register and ensure that risks are appropriately mitigated.
- Authorise change requests where required;

- Authorise closure of the project once all outputs have been completed; and
- Assist with the post-project evaluation of benefits realisation.

Following submission of the SOBC to DfT it is anticipated that the Project Board will continue to meet to explore further the opportunities for enhancing rail provision on the Isle of Wight, and to explore and determine next steps in anticipation of DfT's consideration of the case for investment. It will align with the Transport Infrastructure Board as appropriate. Subject to the outcome of this phase, it is likely that a revised set of terms for the Project Board will be required in order to deliver the additional level of detail (and scrutiny) required at Outline Business Case phase.

The Executive Membership of the RYR IoW Project Board is currently as follows:

- Isle of Wight Member of UK Parliament (Project Sponsor);
- Isle of Wight Council Leader;
- Isle of Wight Council Executive Member for Transport and Infrastructure;
- Isle of Wight Council Assistant Chief Executive and Director of Strategy;
- Isle of Wight Council Transport and Highways Client Manager; and
- Network Rail Head of Strategic Planning Wessex Route.

Advisory Membership of the RYR IoW Project Board is as follows:

- Chair of Isle of Wight Transport Infrastructure Board;
- Isle of Wight Council Member for Ventnor West;
- Isle of Wight Council Member for Newport North;
- Local Rail Advisor; and
- Director, A-To-There Ltd (Project Support).

6.3 Programme

An indicative programme is provided in Figure 34 below.

Figure 34: Indicative delivery programme

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Approval of SOBC										
Development and approval of OBC										
Detailed scheme design										
Seek powers and consents										
Funding award										
Infrastructure delivery										
Rolling stock procurement										
Testing										
Scheme opening										

6.4 Project Dependencies

The rail-based interventions described in this SOBC all rely upon the successful completion of the ongoing programme of work to improve the Island Line between Ryde and Shanklin, including the delivery and operation of five Class 484 trains. This forms the basis for subsequent enhancements and extensions to the rail network on the Isle of Wight.

In order for the proposed additional rail services to be a success, however, they rely upon a range of wider planning and environmental policies that will facilitate higher density development in the Island's urban areas, while reducing the attractiveness and need for private car ownership. Moreover, these policies, alongside future iterations of the Island Plan and Local Transport Plan, will provide the statutory basis upon which any necessary land acquisition can take place in order to permit delivery of new rail infrastructure.

6.5 Communications and Stakeholder Engagement Plan

Communications and Stakeholder Engagement Plan

An extensive stakeholder mapping, communications, and engagement plan was developed to inform delivery of this SOBC. Unsurprisingly given the scale and nature of the interventions being proposed, and the potentially transformative impact they could deliver, there was a significant level of support for enhanced rail services on the Island. In developing the SOBC the study team engaged with:

- 19 residents and organisations via email; (Tranzwight, Adrian Searle, Chris Harbott, Southern Water, David Baldwin, Richard Ferraro, Isle of Wight Bus & Rail Users' Group, Railfuture, Dr Ian Sesnan, Alan Mayes, Natural Enterprise, Nigel Bath, Isle of Wight Local Access Forum, Transport for the South East, Solent LEP, Historic England, FSB, Transport Focus, Snowdon Hotel)
- 18 workshop participants from the Isle of Wight Council (elected members and officers), Ryde Town Council, Lake Parish Council, Wroxall Parish Council, Isle of Wight Steam Railway, Solent Transport, Southern Vectis, Go South Coast, South Western Railway, Hovertravel, and the Isle of Wight Economic Development Board;
- Isle of Wight Council members and officers through a series of briefings;
- Local MP Bob Seely;
- Network Rail and the Department for Transport through their inclusion on the project board and a series of one-to-one meetings;

The stakeholder communications plan demonstrates that the proposals have been through an extensive, albeit non-formal, engagement exercise, with broad community support. Upon completion of the SOBC this plan will be retained and developed by the Project Board in anticipation of the next phase of development work.

6.6 Risk Management

An extensive risk register for both the scheme itself, and the scheme development process will be developed by the IW Project Manager. This register will include the risks described in the Strategic Case in addition to operational and tactical risks associated with development and refinement of the scheme.

The Restoring Your Railway Isle of Wight Project Board will be responsible for reviewing the risk register as a standing item when it meets, with the responsibility for compiling and maintaining the register delegated to the IW Project Manager. Risk management and mitigation activities will be delegated to named individuals within those organisations represented on the Project Board on the basis of relevant corporate responsibilities and the availability of relevant policy levers. Post-mitigation risks will lie with the organisations most able to influence or absorb the residual risks.

6.7 Monitoring and Evaluation

TAG guidance emphasises the importance of evaluation and recommends that an evaluation plan be drawn up as part of the development of the business case for a transport project. If this Restoring Your Railway scheme is progressed, then it will be important to monitor and evaluate to test whether the project has been a sound investment of public money, to assess what the outcomes are compared to the objectives and provide evidence for future rail reopening interventions and investment projects in England.

A formal monitoring and evaluation strategy for the scheme has not yet been developed. However, as a first step towards the drafting of such a strategy, there is a clear logic map which links the need for intervention to the project objectives and the project inputs, activities, outputs, outcomes and impacts (including benefits) as set out in Figure 2 and Sections 2.2 - 2.4. These are summarised below:

- **Inputs:** Expenditure, construction equipment and materials, management and supervision.
- **Activities:** Project management, planning, design and construction of a new railway corridor and stations and accompanying earthworks, structures, railway systems including integration with existing Island Line and mitigation measures.
- **Outputs:** New rail corridor between Merstone and Newport including new passing loop, two new stations at Newport and Blackwater, reinstated cycle and pedestrian corridor parallel to new rail corridor, integration with highway, walking and cycle networks, through-ticketing to destinations across IW and mainland.

The desired impacts correspond with the investment aims specified in the Strategic Case and are shown in Table 16 below. These have been mapped against intended outcomes and indicative key performance indicators.

Table 16: Anticipated scheme outcomes

Investment Aims	Outcomes	Key Performance Indicators
Increase the travel to work area for Island residents, including number and range of jobs available to Islanders	<p>Improve strategic connectivity between Island communities and Solent region</p> <p>Increase in participation rate and employment rate among Islanders</p> <p>Greater number of Islanders accessing employment opportunities on mainland</p>	<ul style="list-style-type: none"> • Census Travel to Work Areas • Labour Force Survey employment and participation rate data
Support the development of more high value and green job opportunities on the Island	<p>Improved accessibility between Isle of Wight population and employment centres, and complementary mainland locations e.g. within industrial supply chains</p> <p>Increase in number of jobs in high value and green sectors</p>	<ul style="list-style-type: none"> • Change in journey times (and generalised journey times) between primary locations on Island and mainland • Business Register and Employment Survey employment data by Standard Industrial Classification (by MSOA)

Investment Aims	Outcomes	Key Performance Indicators
Support skills development and participation in employment among deprived Island communities	<p>Improve accessibility to education and other key services</p> <p>Reduce the perceived cost of accessing education and employment opportunities</p>	<ul style="list-style-type: none"> • DfT Disability and Accessibility Statistics • DfT Journey Time Statistics (access to services) • Further Education (FE) and Skills in England, and Apprenticeships and Traineeships in England statistics
Encourage households employed on the mainland to relocate to the Isle of Wight, generating income and investment	<p>Increased volume of dormitory residents</p> <p>Increase in local retail and household services expenditure</p>	<ul style="list-style-type: none"> • MHCLG housing starts and completion data • Living Costs and Food Survey by region, income and household characteristic
Support emerging demand for more sustainable patterns of living and working and the development of a thriving, modern and diverse visitor economy	<p>Maintain post-pandemic proportion of individuals working from home one or more days per week</p> <p>Improve number of tourist visits and expenditure per tourist visitor</p>	<ul style="list-style-type: none"> • Labour Force Survey (LFS) • GB Tourism Survey (Visit Britain) • International Passenger Survey
Make a major contribution to reducing the share of trips made by car to 60% of 2011 level	<p>Reduce the quantity of private vehicle trips on the Isle of Wight</p> <p>Increase use of sustainable modes on the Isle of Wight</p>	<ul style="list-style-type: none"> • Society of Motor Manufacturers and Traders vehicle registration data • DfT road traffic statistics • ORR Rail Passenger Usage data • DfT Public Transport Statistics
Catalyse the transformation of Newport, as main focus of IW economic and population growth	<p>Increase residential population of Newport</p> <p>Increase employment in Newport</p> <p>Encourage start-ups to locate in Newport</p>	<ul style="list-style-type: none"> • Annual Population Survey • Labour Force Survey • Business births, deaths and survival rates

The collection of baseline data regarding the proposed key performance indicators should, ideally, commence immediately once the scheme has been given approval to progress into the option selection activities associated with development of an Outline Business Case (OBC). This will enable a sufficiently long time-series of data to be collected such that anticipatory impacts such as land purchases and/or business relocations that may occur prior to scheme opening can be captured.

It is proposed that a two-stage approach will be adopted to evaluation of the scheme:

- Stage 1 Evaluation – would be carried out around a year after scheme opening. This would be a high level assessment of the extent to which the project is on track to reach its objectives through the examination of relevant monitoring data (usage/ patronage levels, journey times, journey time reliability and abstraction/displacement from other modes and routes). A process evaluation of scheme delivery to assess of outturn versus predicted costs and timescales will also be made.
- Stage 2 Evaluation – a more comprehensive evaluation will be carried out when the completed scheme has had sufficient time to bed in. This would be between 3 – 5 years after the completion of the project. It would draw upon similar data as required for Stage 1 but also collect primary data to assess if the project has achieved its objectives. For example, surveys of passengers and stakeholders would typically be conducted. Where possible this data should be compared with information collected as part of the baseline data collection exercise.

7 Conclusions

7.1 Isle of Wight's 'Ask'

In his first speech as Prime Minister, Boris Johnson promised to 'level up across Britain' and 'answer the plea of the forgotten people and the left-behind towns'. In doing so, he pledged to 'unleash the productive power' of every corner of the country and made clear that boosting economic performance would be a priority of his new government.

This Strategic Outline Business Case sets out a case for railway investment that is aimed squarely at unleashing economic potential in the Isle of Wight and doing so in a way that will be a 21st century technological and environmental exemplar for the rest of the UK and beyond – including in relation to its ambitious net zero carbon goals.

The case is predicated on a broad view of the value of high quality, sustainable transport provision in realising a strategic vision for the Island's economic and physical development'. It takes a dynamic view of the future and considers wider strategic factors such as opportunities arising from living and working patterns that are evolving in a post-COVID world, changing lifestyle aspirations and opportunities for developing a thriving and more diverse visitor economy, based on public and active travel.

These opportunities appear likely to enable greater integration between the Island and mainland economies and therefore to increase the Island's growth and development potential.

The Island's eminently solvable 'inland' transport connectivity challenges should not be allowed to thwart these transformational opportunities.

The 'ask' is therefore for development funding to proceed to an Outline Business Case for Phase 1 of the Island's transformational rail vision – the implementation of a frequent, fast, and reliable railway service between Ryde Pierhead and Newport.

The Isle of Wight's annual output would be [REDACTED] higher each year if its economy had the average productivity of its wider region, the South East of England. In order to represent 'good value for money', i.e. to generate twice as many benefits as it costs, the railway would only need to shrink this performance gap by about [REDACTED]. Put another way, if it closed say [REDACTED] of the gap, it would have paid for itself 20 times over in terms of 'levelling up'.

8 Appendix A: Options for Old Station Road, Ventnor

Indicative options for re-introduction of single-track railway and new station at Old Station Road, Ventnor - courtesy of Richard Ferraro FRIBA -. Drawings not to scale

