Agenda Item: 11

Meeting of:	**Cabinet**
Date of Meeting:	**Monday, 07 June 2021**
Relevant Scrutiny Committee:	Environment and Regeneration
Report Title:	Barry Docks Transport Interchange WelTAG Stage Two
Purpose of Report:	To update Cabinet on progress on the WelTAG Stage Two Outline Business Case and make recommendations for the next steps.
Report Owner:	Cabinet Member for Neighbourhood Services and Transport
Responsible Officer:	Miles Punter - Director of Environment and Housing
Elected Member and Officer Consultation:	Cabinet Member for Neighbourhood Services and Transport Cabinet Member for Regeneration and Planning Head of Neighbourhood Services and Transport Group Manager Transport Services Passenger Transport Manager Operational Manager Engineering Operational Manager Property Accountant Environment and Housing Services Accountant Resources Operational Manager Finance Head of Regeneration and Planning Legal Services (Committee Reports)
Policy Framework:	This report is a matter for Executive decision by Cabinet

Executive Summary:

- This Report provides Cabinet with an update on progress of the Barry Docks Transport Interchange WelTAG Stage Two Outline Business Case study.
- The Stage Two study has been completed by technical consultants Amey and assesses the Do-minimum scenario plus four options in consideration of an enhanced transport interchange at and around the Barry Docks Station

  Option 1 - Bus Interchange (to be located south of Station on part of Docks Offices Car Park) and additional Park & Ride Car Park (to be located north of Station platform) i.e. no residential or commercial uses.

  Option 1A - Bus Interchange (to be located south of Station on part of Docks Offices Car Park) and additional Park & Ride Car Park (to be located north of Station platform) i.e. no residential or commercial uses plus drop off point on the proposed access road to the additional parking to the north of the station platforms.

  Option 2 - Bus Interchange (to be located south of Station on part of Docks Offices Car Park), additional Park & Ride (to be located north of Station platform) and Residential Uses possibly with a Commercial Use (to be located north west of station).

  Option 3 - Bus Interchange (to be located north west of station) and additional Park & Ride (too be located north of Station platform) i.e. no residential or commercial uses.
- The Report recommends that the study is taken forward to Stage 3 of the WelTAG process during the 2021/22 financial year, subject to funding being approved by Welsh Government for continuation of the work.
- On the basis of the current WelTAG Stage Two study, it is considered that Option 2 has merit in being taken forward for further consideration at the next stage of assessment, based on the potential social, cultural and economic benefits and value for money identified.

Recommendations

1. That progress made on the Barry Docks Transport Interchange WelTAG Stage Two study is noted.
2. That Cabinet agrees in principle to support the taking forward of Option 2, detailed within the study, for further consideration at the next stage of assessment, based on the potential social, cultural and economic benefits and value for money identified.
3. That subject to the consideration of this matter by the relevant Scrutiny Committee and funding being approved by Welsh Government for the continuation of the works, the study is taken forward to Stage 3 of the WelTAG process during the 2021/22 financial year.
4. That this matter is referred to the Environment and Regeneration Scrutiny Committee for consideration.

Reasons for Recommendations

1. To update members on progress made on the scheme.
2. To agree in principle the preferred option from the Stage 2 Report.
3. To allow this project to progress subject to the views of the relevant Scrutiny Committee and Welsh Government funding being available. A transport grant submission has already been made to Welsh Government for 2021/22 in preparation to take forward the WelTAG Stage Three report in line with WelTAG (2017) guidance. Following completion that Stage Three Report will also be reported to a Review Group and then to Cabinet.
4. To allow consideration of the matter by the relevant Scrutiny Committee prior to any final decisions being taken.

1. Background

1.1 Consultant Amey was commissioned by the Vale of Glamorgan Council to develop and appraise potential options for the provision of a transport interchange around the Barry Docks Railway station in support of the previous infrastructure improvement undertaken in 2010-12. The appraisal of options has been undertaken in accordance with the Welsh Government's latest version of WelTAG (December 2017) including advice on the appraisal in relation to the Future Generations of Wales (2015) Act Well-being Goals.

1.2 A decision was made not to undertake a Stage 1 Weltag assessment as it was considered that the Local Development Plan allocation of land around the Barry Docks Station for transport interchange purposes provided sufficiently robust policy framework.

1.3 Following consideration of the options and the development of the Stage Two designs, the following Do-something options were defined for assessment:

Option 1 - Bus Interchange (to be located south of Station on part of Docks Offices Car Park) and additional Park & Ride Car Park (to be located north of Station platform) i.e. no residential or commercial uses.

Option 1A - Bus Interchange (to be located south of Station on part of Docks Offices Car Park) and additional Park & Ride Car Park (to be located north of Station platform) i.e. no residential or commercial uses plus drop off point on the proposed access road to the additional parking to the north of the station platforms.

Option 2 - Bus Interchange (to be located south of Station on part of Docks Offices Car Park), additional Park & Ride (to be located north of Station platform) and Residential Uses possibly with a Commercial Use (to be located north west of station).

Option 3 Bus Interchange (to be located north west of the station) plus additional Park & Ride (too be located north of Station platform) i.e. no residential or commercial uses.

1.4 A draft WelTAG Stage Two report was prepared by Amey (**Appendix A**) together with an Impact Appraisal Report (**Appendix B**) and presented to the Project Review Group on 22nd April 2021. Following consideration of the Reports by the Project Review Group (**Appendix C**), several recommendations were agreed for inclusion in the Stage Three study, including:

- Preference to the bus interchange south of the line;
- General agreement to the need to consider phases of development of the preferred scheme to tie in with the various funding programme windows being indicated as the WG Local Transport Grant funding window has a spending deadline of March 2023 which will, at this point in the programming of works generate a risk;
- Further consideration by the Council of the need to replace parking lost to the bus interchange element of the preferred scheme with additional new parking provision north of the line and
- The benefits of achieving the larger preferred scheme through multiple funding sources.

1.5 The study has been undertaken in conjunction with Council Officers with detailed evidence, data and analysis provided in the accompanying Impacts Assessment Report (Appendix B refers).

2. Key Issues for Consideration

2.1 The WelTAG Stage Two Outline Business Case study has taken forward and appraised the options in relation to the Five Case Business Model: the strategic, transport, management, financial and commercial cases (Appendix A refers).

2.2 The WelTAG process for this study is accompanied by an Impact Assessment Report (IAR) (Appendix B refers). Its purpose is to provide a permanent record of the appraisal work on the proposed transport interventions and contains the detailed evidence behind the summary of information provided to decision makers in the Stage reports. The IAR remains a live document for updating throughout the process.

2.3 The issues around the station were identified as follows:

Ref	Issues
1	To repurpose Barry Docks station as a key gateway for Barry, its town centre, employment opportunities and attractions.
2	To improve access routes to/from the station in order to increase the use of rail services as a sustainable means to access employment opportunities and other services, in the town and the wider Cardiff Capital Region .
3	To develop Barry Docks as a Mobility Hub, delivering an integrated network of sustainable transport solutions to provide a wider range of sustainable transport alternatives to those seeking access to/from the station .
4	To incorporate other transport and non-transport related facilities within the Mobility Hub, including housing/social housing, retail/commercial use and for example, a combined business and cycle hub.
5	To integrate and align the Mobility Hub services with the wider transport network for Barry, facilitating co-ordination and seamless interchange between all modes.
6	To bring the vision about, over time, ensuring each development stage provides the foundations required for the next and taking account of the land use allocations necessary to achieve the ultimate, overall, vision

2.4 The objectives as set out below were set for the study in order to address the problems, opportunities and constraints. These were accompanied in the main report by details of what success would look like and how it would be measured.

- To accommodate increasing rail demand both to and from Barry.
- To improve access to/from rail services by sustainable modes and increase access to Park and Ride from Barry Docks.
- To increase access to current and emerging employment opportunities for all.
- To support ongoing and future economic development throughout the region.
- Placemaking to establish Barry Docks as a key gateway, including the foundations for further station development phases.
- Equality, in relation to meeting the provisions of the public sector duties are set out in the Equality Act 2010 (Statutory Duties) (Wales) Regulations 2011.
- Climate change impacts, in the light of the declaration of a Climate Emergency by both the Welsh Government and the Council.

2.5 The objectives have been verified to determine how they contribute towards resolving problems of the study area, the Well-being of Future Generations Act Well-being Goals, the Wales Transport Strategy outcomes, the Welsh Government's Strategic Priorities as set out in the Wales Transport Strategy, and the Economic Action Plan Priorities.

STRATEGIC CASE

2.6 The Strategic Case establishes a case for change, based on ambitious imperatives for encouraging and accommodating increased demand for the use of rail services both to and from Barry Docks station. This is set out in the context of national, regional and local policies, including those relating to economic and housing growth and the effectiveness and efficiency of the transport network in supporting this growth. Objectives and critical success factors are defined in the context of stakeholder requirements to identify and select the preferred initiatives to take forward and a causal chain and logic map are provided to summarise the project and frame its appraisal.

2.7 A Barry Docks Transport Interchange will play a significant role in meeting national, regional and local policy and strategy objectives.

2.8 Within the Strategic case the rationale for intervention is set out in terms of the impacts of the scheme on these economic, social and environmental matters.

2.9 With regard to economic objectives the tables of the Report illustrate how the proposed Barry Docks Transport Interchange will support the potential growth in

rail demand expected as a consequence of housing and economic development within Barry, the Rural Vale and the wider Cardiff Capital Region. It indicates that all improvements will impact fully or to some extent on new demand for travel both to and from Barry. The exceptions to this are the car park measures and any housing or commercial development, which will support travel from Barry to employment and service opportunities in the wider area but not inward travel to Barry.

2.10 To address climate change, reduce emissions and other environmental objectives, a primary aim of the Barry Docks Interchange is to bring about modal shift from car use, to more sustainable modes. At present access to the station by sustainable modes is limited. In the case of buses there is only one service that stops within a reasonable walking distance of the station. Council Supported Local Bus Service 88, stops on Dock View Road, but only on its journey out of Barry to Penarth. There is no bus that offers onward travel from the station to access the town centre or that can distribute rail users to other destinations in the town. The nearest point to access such services is the stop west of Barry Dock Station on Ffordd Y Mileniwm and adjacent to Morrisons Supermarket, which is used by a majority of Barry bus services as a major timing point. This stop is some 900 metres walk from the station, over double the maximum walking distance commonly considered acceptable to access a bus stop. This is a substantial barrier both to those seeking onward travel from Barry Docks to destinations within the town or its surrounds and to residents of Barry seeking to access the station who would potentially use a direct bus.

TRANSPORT CASE

2.11 The four do-something options have been tested alongside the do-minimum option as part of the Transport Case (Outline Business Case Appendix A). The aim of the Transport Case is to explain the expected impacts of the project, how the project will contribute to the well-being goals and whether a project will provide value for public money. The social, cultural, environmental and economic costs and benefits of each option are considered.

2.12 One of the key aims of the Barry Docks Transport Interchange is to encourage those currently using their car to travel between Barry and Cardiff to consider switching to use of the more sustainable rail link. To achieve this additional Park and Ride spaces will provided to the north of the station platforms. With the current Park and Ride operating at capacity not only at Barry Docks but also at Barry Town these additional spaces are expected to attract some of those currently parking on road at Barry Town through the use of Barry Docks Station instead. However, there will also be new users attracted from amongst those currently travelling by car to destinations in and around Cardiff. The reduction in those using their cars for the whole journey will contribute significantly to reducing congestion on the main corridors and in addition generate further journey, punctuality and emissions savings.

2.13 The need for sustainable, connected and inclusive transport solutions to support economic and housing growth, drive prosperity and tackle climate change is highlighted specifically by WG National, Cardiff Capital Region regional and the Council's local policies and strategies and is also encompassed within the Well-being ACT, 2015. To facilitate this, improved bus, park & ride, taxi and active travel services are regarded as having a key role, especially in CCR where the plans for South Wales Metro are regarded as a cornerstone of the City Deal

2.14 This is also reflected in the Vale of Glamorgan where Barry is the significant focus for Economic and Housing development, while outward commuting from the region is known to be high, especially towards Cardiff. As a result, transport demand in the region is increasing at a greater rate than the national average and this is expected to continue as further economic and housing development takes place.

2.15 Barry Docks station is well placed to cater for this demand on a sustainable and inclusive basis. Bus and taxi services in the area have capacity now to accommodate increased demand and according to the Local Transport Plan this is expected to be the case into the future, assuming the proposals in their immediate and longer terms plans are taken up. However, if Barry Docks station is to undertake a role as a key gateway to/from the town it in particular requires additional infrastructure to enable improved access by public transport and active modes. This is required ahead of development generating additional travel if Barry Docks Transport Interchange is to attract this new demand from the outset, rather than having to encourage people out of their cars or to shift to bus or active travel use from making their journey in other ways.

FINANCIAL, COMMERCIAL AND MANAGEMENT CASES

2.16 In addition, the WelTAG Stage Two report (Appendix A refers) has set out the anticipated financial (Chapter 5), commercial (Chapter 6) and management (Chapter 8) cases, all of which will require further consultation with key stakeholders as the WelTAG assessment evolves into the next stages of appraisal.

2.17 This business case presents the detailed case for these initial improvements and outlines the appraisal undertaken so far to condense the shortlisted interventions to a preferred intervention that can meet the objectives, which is affordable within the limits of available funding and is deliverable. It also outlines how the proposed intervention can establish the foundations for attracting input by developers and service providers to further improve the Barry Docks site, including provision of sustainable homes and complementary infrastructure, at a future development stage. This will further enhance the role of Barry Docks to become the gateway to Barry Town and provide the comprehensive Mobility Hub envisaged, in the medium to longer term.

2.18 Further work will be undertaken at WelTAG stage 3 to refine these proposals into an integrated package and fully quantify the benefits they will obtain, alongside establishing how they can be procured and managed. Detailed designs and more detailed costs for the initial improvements will also be provided at this stage, as well as exploring further the potential for match funding support. The preliminary high level designs for a masterplan of the vision for medium to longer term development of the station as a comprehensive mobility hub will also be refined.

CONCLUSIONS

2.19 The reports indicate the assessed value of the various options using the appropriate methodology as set out in the WelTAG guidance.

2.20 While the benefits of Option 3 (with a bus interchange north of the line) appear to be higher than those of Option 2 (because trip lengths are shorter for the majority of trips) the preference from the consultation undertaken and from the Review Group was for Option 2 which appears to sit better with the master-planning vision for the area.

2.21 There is general agreement to the need to consider the preferred scheme being delivered in phases to tie in with the various funding programme windows being indicated as the WG LTA funding window has a spending deadline of March 2023 which will, at this point in the programming of works generate a risk.

2.22 There also needs to be further consideration by the Council of the need to replace parking lost to the bus interchange element of the preferred scheme with additional new parking provision north of the line.

2.23 The benefits of achieving the larger preferred scheme through multiple funding sources needs to be considered in order that both the transport and regeneration benefits can be maximised.

2.24 A decision on whether to then go forward with the recommended option to a Stage Three assessment is a matter for Cabinet when considering the recommendations of the Review Group based on the appraisal set out in this report.

3. How do proposals evidence the Five Ways of Working and contribute to our Well-being Objectives?

3.1 The introduction of the WelTAG report sets out an overview of how the approach and proposals of the appraisal evidence the Five Ways of Working and support the seven Well-being goals set out in the Future Generations of Wales Act 2015. The WelTAG guidance states it is required 'to ensure the needs of future generations are considered and understand how well they help public

bodies to meet the well-being objectives and maximise their contribution to each of the seven goals.' Consideration should be given to long-term challenges, trends, opportunities, as well as integration, collaboration, involvement and preventing problems from occurring or getting worse.

Long Term

3.2 The Impacts Assessment Report provides the evidence of both current and future problems, trends and opportunities to inform consideration of the long-term perspective and the development of options. This includes consideration of the existing traffic and transport conditions associated with the Barry Docks Station and the subsequent appraisal of impacts associated with the economy, access to education, jobs and services, health and the environment.

3.3 Current local traffic congestion and connectivity issues are anticipated to be exacerbated in the future with traffic growth as well as new developments. The options considered in the outline business case offer long-term solutions to address the existing issues.

Prevention

3.4 The options under consideration offer the opportunity to prevent/ alleviate as far as possible the future problems and trends from occurring, through the enhancement of the local and strategic highway network. Moreover, the commercial, financial and management cases seek to identify costs and deliverability risks to aid decision making and prevent long-term liabilities for public money by considering all of the issues at the outset.

Integration

3.5 The options under consideration involve the integration of active travel as part of the local and strategic highway network, as well as supporting the potential for enhanced integration with public transport services and facilities as the highway network is enhanced. The WelTAG study has been undertaken in an integrated manner to consider and take account of other schemes and proposals through discussion with stakeholders.

Collaboration

3.6 In undertaking the WelTAG study, there has been collaboration between departments within the local authority and Welsh Government, as well as between stakeholders and Amey.

Involvement

3.7 Stakeholder workshops were undertaken as part of the WelTAG Stage Two studies. A technical review group for the Stage 2 study was held on 22nd April

2021 and as a result of that meeting a revised version of the study was produced. A copy of these minutes is attached at Appendix C.

Well-being Goals

3.8 The objectives have been developed through consideration of the well-being goals and this is presented in the strategic case section. The strategic case also considers how each of the options meets the well-being goals. Together this seeks to ensure that achieving the well-being goals are at the centre of the setting of objectives for the study and the emerging interventions.

4. Resources and Legal Considerations

Financial

4.1 The study has been financed by funding support from Welsh Government via the Local Transport Fund. Merthyr CBC act as lead authority for the management of that fund.

4.2 The total WelTAG spending to date is £333,130 (excluding VAT).

Employment

4.3 Consultants Amey have been commissioned to undertake the technical work on this Project as the technical skills required to do so are not available within the Council.

Legal (Including Equalities)

4.4 The appraisal of options has been undertaken in accordance with Welsh Government's latest version of WelTAG (December 2017) including advice on the appraisal in relation to the Well-being goals set out in the Well-being of the Future Generations (Wales) Act 2015.

4.5 The Vale of Glamorgan Local Development Plan (2017) was adopted by the Council on the 28th June 2017, which sets out the vision, objectives, strategy and policies for managing development in the Vale of Glamorgan. It also seeks to identify the infrastructure that will be required to meet anticipated growth in the Vale of Glamorgan area up to 2026. The LDP states that priority will be given to schemes that improve highway safety, accessibility, public transport, walking and cycling.

4.6 The Vale of Glamorgan Local Transport Plan (2015) acknowledges the requirement for a collaborative approach for the future development of the Capital Region. The LTP seeks to identify the sustainable transport measures required to ensure Vale of Glamorgan Council adheres to current requirements and good practice, to allow for a sustainable transport environment for the period 2015 to 2020, as well as looking forward to 2030. The plan therefore

seeks to secure better conditions for pedestrians, cyclists and public transport users and to encourage a modal shift away from the single occupancy car.

4.7 The provision of a well organised transport network helps to increase mobility and accessibility.

5. Background Papers

None.

Outline Business Case (WelTAG, Stage 2)

Barry Docks Transport Interchange

COGL00000008 / 003 Final

12/04/2021

amey consulting

VALE of GLAMORGAN
BRO MORGANNWG

Document Control Sheet

Project Name:	Barry Docks Transport Interchange
Project Number:	COGL00000008
Report Title:	Outline Business Case
Report Number:	003

Issue Status/Amendment	Prepared	Reviewed	Approved
DRAFT 1	Name: Paul Beecham Signature: Date: 28/02/2021	Name: Neil Anderson Signature: Date: 01/03/2021	Name: Anthony Cahill Signature: Date: 01/03/2021
DRAFT 2	Name: Paul Beecham Signature: Date: 20/03/2021	Name: Neil Anderson Signature: Date: 22/03/2021	Name: Anthony Cahill Signature: Date: 22/03/2021
FINAL 1	Name: Paul Beecham Signature: Date: 12/04/2021	Name: Neil Anderson Signature: Date: 12/04/2021	Name: Anthony Cahill Signature: Date: 12/04/2021
	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:

1. Executive Summary

1.1 Introduction

This document sets out the Business Case for infrastructure improvements to upgrade Barry Docks Railway Station as a multi-modal transport interchange and key gateway for the town. Alongside promoting increasing demand and capacity for rail services serving the station, undertaking these improvements will enable a step change in the use of sustainable transport modes both by local residents seeking to travel to other parts of the Cardiff region to access employment, training and other services and by those from the Cardiff region and beyond, seeking access to Barry for the same purposes, as well as its visitor attractions.

This increase in use of sustainable modes will reduce the impacts of increasing congestion on roads to and from Barry, especially between the town and the City of Cardiff. Unlocking this potential requires investment in transport infrastructure and to facilitate it, this document provides the case for investment which underpins a funding bid to the Cardiff Capital Region, Metro Plus 1, Regional Transport Authority programme.

As a result of the Covid-19 outbreak in early 2020, all key areas of the WelTAG assessment and appraisal including the case for change and socio-economic, cultural and environmental considerations are anticipated to be affected to a greater or lesser extent beyond expected conditions. At the time of this report, the future medium to longer term implications of Covid-19 at a local, regional and national level remain extensively unknown and this study has not therefore made any assumptions as to the impacts on these scenarios. However, it is anticipated that future work completed with regard to this appraisal and associated studies will increasingly need to consider the implications of the pandemic as information, trends and impacts become more widely known and accepted. This WelTAG Stage Two assessment therefore remains an assessment based on pre-Covid-19 conditions and forecasts and for the purposes of the WelTAG appraisal should be viewed with this in mind.

1.2 The Scheme

The Vale of Glamorgan Council (the Council) is seeking to upgrade Barry Docks Railway Station, including:

- Provision of a new Bus Interchange;
- Provision of a new Taxi Interchange;
- Provision of electrical vehicle (EV) charging infrastructure (Bus, Taxi & Cars);
- Provision of digital infrastructure;
- Improvements to access routes within station confines, including aesthetic improvements to the pedestrian subway;
- Improvements to Subway Rd, a key external access route to the station, including improvements to the tunnel on Subway Rd;
- Consideration of minor, station infrastructure requirements (ie cycle parking, signage, seating, information, etc);
- Consideration of a range of additional linkages to Barry Island;
- Provision of additional Park & Ride capacity;
- Consideration of the potential for housing/commercial development on land north of the station;
- Development of a high-level Station Masterplan.

The aim of the proposed Barry Docks Transport Interchange is to provide a bus station, enhance station access and facilities to accommodate increasing numbers of people using an increased number of trains, each with increased seating capacity, expected to stop at Barry Docks, on a sustainable and inclusive basis. The upgrades will improve local connections between the station and the town centre and between the station and developments taking place along the Waterfront. They will also improve access between the station and communities and businesses throughout the town and connect these to the Rural Vale and the

wider Cardiff Capital region. Together these improved connections will offer significant support to the economic development of both Barry and the wider Cardiff City region, assist those seeking to access employment, training and other services in the region, encourage greater use of sustainable transport modes and help improve air quality and reduce congestion and noise.

In the project brief the Council specify three options for the Barry Docks Transport Interchange. Each option is identified below:

- Option 1 - Bus Interchange (to be located south of Station on part of Docks Offices Car Park) and additional Park & Ride Car Park (to be located north of Station platform) i.e. no residential or commercial uses;
- Option 2 - Bus Interchange (to be located south of Station on part of Docks Offices Car Park), additional Park & Ride (to be located north of Station platform) and Residential Uses possibly with a Commercial Use (to be located north west of station);
- Option 3 - Bus Interchange (to be located north west of station) and additional Park & Ride (too be located north of Station platform) i.e. no residential or commercial uses.

An Option 1a was also added through the design and master planning exercise undertaken as part of the business case preparation. This Option 1a includes a drop off point on the proposed access road to the additional parking to the north of the station platforms, whereas Option 1 does not.

The key differences between the option (3) that proposes a bus/taxi interchange to the north of the station and those (1, 1a & 2) that propose this to the south are summarised in the table below (Table 28 in the main body of the report).

Interchange to the North	**Interchange to the South**
Lowest Cost	Comprehensive interchange
Largest car park capacity	The largest housing/commercial development capacity
Shortest journey time for buses and cars	Most attractive to bus operators
Limited improvements to station access from the south and no active travel links across the site	Improved active travel links north, west and south and across the site
Makes less of an impression as a gateway	Barry Docks clearly presents as a gateway to Barry
Limited scope for future development	Greatest scope for future development

The key outputs, costs and benefit cost ratio (BCR, including & excluding potential land value uplift – LVU) of each option have also been identified, as follows (Table 29 in the main report).

Output	**Option 1**	**Option 1a**	**Option 2**	**Option 3**
Car Park Spaces	308	308	308	371
Housing Units	88	56	99	62
Cost	£7.1m	£7.3m	£7.8m	£5.9m
BCR	0.79/0.77	0.76/0.74	0.71/0.69	1.12/1.09
BCR (inc LVU)	0.94/1.12	0.85/0.97	0.87/1.04	1.12/1.40

1.3 Strategic Case

The policy and strategy objectives identified at national, regional and local level can be collated under the following headings:

- Economic objectives;
- Environmental objectives;
- Social objectives;
- Transport objectives; and
- Other objectives.

The infrastructure improvements envisaged for Barry Docks Station have been considered against the objectives identified under each of the above heading using a Red, Amber, Green (RAG) analysis (Table 11, in the main report). The table illustrates that taxi facilities, the bus interchange, improvements to the northern access to the station and improved Park and Ride capacity, in that order, are those elements that meet the most overall policy and strategy objectives. However, all proposed improvements meet a substantial number of objectives and only 3 of the overall national, regional and local policy and strategy objectives are not met in some way by the scheme proposals.

To ensure the overall national, regional and local objectives are addressed, five scheme specific objectives have been identified, as follows:

- Objective A - To accommodate increasing rail demand both to and from Barry;
- Objective B - To improve access to/from rail services by sustainable modes and increase access to Park and Ride from Barry Docks;
- Objective C - To increase access to current and emerging employment opportunities for all;
- Objective D – To support ongoing and future economic development throughout the region; and
- Objective E – Placemaking to establish Barry Docks as a key gateway, including the foundations for further station development phases.

In addition, there are two overriding imperatives which need to be taken into account:

- Equality, in relation to meeting the provisions of the public sector duties are set out in the Equality Act 2010 (Statutory Duties) (Wales) Regulations 2011; and
- Climate change impacts, in the light of the declaration of a Climate Emergency by both the Welsh Government and the Council.

There are also six scheme specific objectives adopted that relate to the delivery of the infrastructure improvements, as follows:

- To provide a cost-effective solution to identified needs;
- To ensure infrastructure improvements are affordable, within available funding;
- To ensure solutions are deliverable;
- To ensure improvements are sustainable;
- To take account of interdependencies; and
- To ensure value for money

1.4 Financial Case

Cost estimates and associated risks for the different elements that make up the Barry Docks Transport Interchange scheme are presented in Table 14, for each option. These estimated costs will be refined in the Final Business Case. At this stage the total cost in real prices (2020) ranges from an estimate of £5.92m for

Option 3 to an estimate of £7.76m for Option 2 including all costs, overheads and 40% contingency on the capital cost elements.

Alongside the funds sought from the CCR Metro Plus, phase 1, Regional Transport Authority programme, The Council has set aside around £250K of section 106 funding from developments in the area surrounding Barry Docks to support the improvements, especially to Subway Road. There is also funding support envisaged from CCR and TfW for provision of EV taxi and car charging terminals within the interchange, respectively, with both in the process of developing programmes to support this across the region. While not included in the cost of the Interchange, Wayfinding signage to/from the north of the station is expected to be funded by TfW's Wayfinding Signage programme.

As further improvements to extend the station to become a comprehensive Mobility Hub are envisaged as a later phase/s the costs for this, including Housing and Commercial development, are not considered within this business case. However, the costs of purchasing the land on which to build the Bus/Taxi Interchange is included in the costs. A final decision on how best to progress land purchase to accommodate both the Transport Interchange and any development proposed will be made once it is clear what housing/commercial development is possible at WelTAG Stage 3, Full Business Case.

1.5 Transport Case

Value for money is a critical element of the decision-making process for any proposal that involves the use of public resources. Achieving value for money can be described as using public resources in a way that creates and maximises 'public value'.

Supporting evidence and details of the methodologies used to develop the Transport Case are summarised in the Transport Case in the main body of the report and detailed in a parallel 'WelTAG Impacts Assessment Report – Transport Case', provided as a separate document. The value of the monetised benefits identified are provided for each option in the table below (Table 23, in the main report).

Benefits by Mode	Options 1,1A and 2	Option 3
Car Park Benefits	£1,986,298	£2,241,229
Bus Interchange Benefits	£646,212	£719,949
Pedestrian Facilities Benefits	£263,846	£263,846
Cycling Facilities Benefits	£3,757	£3,757
Present Value Benefits Total	**£2,900,112**	**£3,428,847**

1.6 Options Appraisal

How well each scheme option meets the national, regional and local policy and strategy objectives, how deliverable each is and their value for money is key to establishing which should be the preferred option to carry forward for detailed design, further economic appraisal and delivery planning at WelTAG Stage 3. At this time we are unable to complete the economic appraisal to finalise the calculation of the BCR for each option, due primarily to delays in being able to undertake surveys and hence establish all inputs and costs. However, the options appraisal should not be based on the BCR calculations alone, as this just forms a part of assessing the value for money of each option. To place the BCR in context and reflect the impact the options have on the issues that exist the appraisal also needs to take account of the strategic case and in particular the 5 scheme specific objectives, 2 imperatives and the 6 scheme delivery objectives identified by this.

In the table below (Table 30 in the main report) each of the individual options are considered against each of the scheme specific objectives, key imperatives and the delivery objectives. The table uses a RAG analysis to score the options with green indicating the objective is fully met scoring 2, amber indicating the objective is partially met scoring 1 and red indicating the objective is not met, scoring 0.

Scheme Objective	**Option 1**	**Option 1a**	**Option 2**	**Option 3**

A. Accommodate increasing rail demand				
B. Improve access to/from rail services				
C. Increase access to current and emerging employment				
D. Support ongoing and future economic development				
E. Placemaking inc. the foundations for further station development				
F. Equality				
G. Climate Change				
H. Cost effective/VfM				
I. Deliverable				
J. Affordable				
K. Sustainable				
L. Takes account of interdependencies				
Score	23	19	22	19

It is clear from this overall analysis that the differences between options are relatively marginal. However, scores do indicate that Option 1 – a Bus/taxi Interchange to the south (in this case with no other development included but with scope for up to 88 housing units) and Option 2 - Interchange to the south with scope for housing/commercial development including up to 99 housing units, offer slightly better overall benefits than Options 1a and 3.

What, ultimately, tips the balance in favour of Option 1 (without housing) and 2 (with housing) is the capacity for further development and greater focus on sustainability and inclusion they will offer. Both options offer greater scope for housing and commercial development to take place alongside the transport interchange than other options under consideration. Whether this further regeneration opportunity is taken at this stage (Option 2) or as a 2nd stage (Option 1) is yet to be finalised, although due to funding timelines it appears most likely it will be the latter. Regardless, such development will make a significant contribution towards the establishment of the comprehensive mobility hub at Barry Docks that is the ultimate vision of the Council. Housing on site would include social provision and mean anyone taking up residency had direct access to all modes of sustainable transport for the journeys they need to undertake, negating the need for car ownership. Commercial development will allow for provision of a cycle and business hub to be incorporated into the interchange as envisaged, while also making the station environment more attractive in general, by increasing the available facilities, including the potential for further community facilities to be provided.

Locating the bus/taxi interchange to the south of the station establishes it as a distinct facility in its own space, emphasising its role as the gateway between the station and the town. It reduces the number of new car park spaces that can be provided, potentially replacing these with housing and as a result, gives greater prominence to the bus/taxi interchange over the Park and Ride car park. It also offers greater support for active travel by improving access to the station platforms from the north, the south and the west, as well as

establishing a direct active travel link between the town centre and residential areas to the north of the station and the developments taking place along the Waterfront to the south.

By placing the focus on use of sustainable modes options 1 and 2 also offer greater capacity to achieve inclusion and equality, with those excluded more likely to be able to access these modes than they are to own or have access to a car. Increased inclusion will, in turn, lead to greater opportunities for vulnerable groups to access jobs, training and services, via the rail network. This will be particularly relevant to post-Covid recovery.

1.7 Commercial Case

The commercial case provides evidence on the commercial viability of a proposal and the procurement strategy that will be used to engage the market and procure the necessary services for delivery. It clearly sets out the financial implications of the proposed procurement strategy. It presents evidence on risk allocation and transfer, contract timescales and implementation timescale as well as details of the capability and skills of the team delivering the project and any personnel implications arising from the proposal.

Given that much of the works will be undertaken within the station confines on land surrounding the platforms already owned by the Council or that they intend to acquire , the procurement processes will be governed largely by the processes of the Vale of Glamorgan Council. Consultation over the process has been undertaken with Cardiff Capital Region as the primary funder and Transport for Wales as the station owner to ensure it also complies with their requirements.

The Commercial Case will be finalised at WelTAG Stage 3.

1.8 Management Case

The management case assesses whether a proposal is deliverable. It tests the project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance.

The management case sets out a clear and agreed understanding of what needs to be done, why, when and how, with measures in place to identify and manage any risks. It sets out a plan to ensure that the benefits set out in the economic case are realised and will include measures to assess and evaluate this. The project and programme are provided a risk management plan, proportionate to its scale.

The Management Case will be finalised at WelTAG Stage 3.

1.9 Conclusion

Based on the above, it is proposed Options 1 and 2 should be considered indicative of the preferred option for further examination at WelTAG Stage 3, either including some housing/commercial development to the north or not, depending on the outcome of further surveys and investigations it has not yet been possible to undertake. This will be clarified at WelTAG Stage 3 and a final decision on the preferred option made, once we can establish the additional information required. This will include the completion of all geotechnical surveys, adjustments to costs once we have these and consequent reductions to the level of risk included in the costs. In addition, land value uplift calculations will be refined and included in the monetised benefits, as well as both EV costs and benefits being added to the economic appraisal of each option.

Contents

Tables

Figures

2. Introduction

2.1. Document Purpose

This document sets out the Business Case for a number of infrastructure improvements to upgrade Barry Docks Railway Station as a multi-modal transport interchange and key gateway for the town. Alongside supporting increasing demand for rail services serving the station, undertaking these improvements will enable a step change in the use of sustainable transport modes both by local residents seeking to travel to other parts of the Cardiff region to access employment, training and other services and by those from the Cardiff region and beyond, seeking access to Barry for the same purposes. This increase in use of sustainable modes will reduce the impacts of increasing congestion on roads to and from Barry, especially between the town and the City of Cardiff. Unlocking this potential requires investment in transport infrastructure and to facilitate it, this document provides the case for investment which underpins a funding bid to the Cardiff Capital Region, Metro Plus 1, Regional Transport Authority programme.

The Weltag process incorporates the business case model and is integral to it. The Business Case is set out using the 5-case approach recommended by HM Treasury[1] and the Welsh Government (WG) in their guidance document, Welsh Transport Appraisal Guidance, WelTAG 2017[2]. This guidance is supplemented by the Cardiff Capital Region, Metro Plus, Common Assessment Framework (CAF) and requirements set out by the Department for Transport (DfT), drawn from the DfT Business Case guidance[3], including WebTAG where necessary. The 5-Case approach encompasses strategic fit (Strategic Case), value for money (Transport Case), delivery (Management Case), affordability (Financial Case) and procurement (Commercial Case). Further details are provided in Section 2.4.

As a result of the Covid-19 outbreak in early 2020, all key areas of the WelTAG assessment and appraisal including the case for change and socio-economic, cultural and environmental considerations are anticipated to be affected to a greater or lesser extent beyond expected conditions. At the time of this report, the future medium to longer term implications of Covid-19 at a local, regional and national level remain extensively unknown and this study has not therefore made any assumptions as to the impacts on these scenarios. However, it is anticipated that future work completed with regard to this appraisal and associated studies will increasingly need to consider the implications of the pandemic as information, trends and impacts become more widely known and accepted. This WelTAG Stage Two assessment therefore remains an assessment based on pre-Covid-19 conditions and forecasts and for the purposes of the WelTAG appraisal should be viewed with this in mind.

2.2. Introduction to Proposals

The Vale of Glamorgan Council (the Council) is seeking to upgrade Barry Docks Railway Station, including:

- Provision of a new Bus Interchange;
- Provision of a new Taxi Interchange;
- Provision of electrical vehicle (EV) charging infrastructure (Bus, Taxi & Cars);
- Provision of digital infrastructure;
- Improvements to access routes within station confines, including aesthetic improvements to the pedestrian subway;
- Improvements to Subway Rd, a key external access route to the station, including improvements to the tunnel on Subway Rd;
- Consideration of minor, station infrastructure requirements (ie cycle parking, signage, seating, information, etc);
- Consideration of a range of additional linkages to Barry Island;

[1] The Green Book; Central Government Guidance on Appraisal and Evaluation
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf
[2] https://gov.wales/welsh-transport-appraisal-guidance-weltag
[3] The Transport Business Cases, Department for Transport, January 2013
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf

- Provision of additional Park & Ride capacity;
- Consideration of the potential for housing/commercial development on land north of the station;
- Development of a high-level Station Masterplan.

The aim of the proposed Barry Docks Transport Interchange is to provide a bus station, enhance station access and facilities to accommodate increasing numbers of people using an increased number of trains, each with increased seating capacity, expected to stop at Barry Docks, on a sustainable and inclusive basis. The upgrades will improve local connections between the station and the town centre and between the station and developments taking place along the Waterfront. They will also improve access between the station and communities and businesses throughout the town and connect these to the Rural Vale and the wider Cardiff Capital region. By improving links to residential and business areas to both the north and south of the station the upgrades will also enhance the routes between these areas, especially for those seeking to travel north/south by active travel modes between Dock View Rd and Ffford-Y-Mileniwm, via the pedestrian subway within the station confines.

Together these improved connections will offer significant support to the economic development of both Barry and the wider Cardiff City region, assist those seeking to access employment, training and other services in the region, encourage greater use of sustainable transport modes and help improve air quality and reduce congestion and noise.

Increased rail and bus use is a key objective for Cardiff Capital Region (CCR), Transport for Wales (TfW) and the Train Operating Companies (TOC). It will lead to a reduction in road traffic, especially between Barry and Cardiff and contribute to the wider well-being, social, health, economic and environmental objectives of the Vale of Glamorgan Council, CCR City Deal and Welsh Government (WG).

2.3. The HM Treasury 5-Case Model

The WelTAG Transport Business Case process is designed to ensure that investments are directed at the right schemes and that these are managed and delivered in the best way. This ensures that transport investment addresses important issues in an effective way, delivering value for money.

Traditionally, there are five stages to the process:

Stage 1 – Scoping: Strategic Outline Business Case (SOBC);

Stage 2 – Planning: Outline Business Case (OBC) – this stage;

Stage 3 – Procurement: Final Business Case (FBC) – next stage;

Stage 4 – Implementation: What actually happens;

Stage 5 – Post Implementation: What is achieved.

The first three stages lead up to the selection of the proposed intervention. The final two stages cover the period during and after implementation, recording what actually happens and is achieved. The core of each stage of the Transport Business Case is the 5-Case Model which ensures that schemes:

- Are supported by a robust **case for change** that fits with wider public policy objectives – the 'strategic case';
- Demonstrate **value for money** – the 'transport case';
- Are **commercially viable** – the 'commercial case';
- Are **financially affordable** – the 'financial case'; and
- Are **achievable** – the 'management case'.

This Outline Business Case uses the 5-case model in an appropriate and proportionate way to demonstrate the merit of investing in the proposed Barry Docks Transport Interchange.

2.4. Document Structure

Table 1 below summarises the information provided in each section of the business case.

Table 1 - Document Structure

Section	Description	Contents
3	The Project	Provides details of the infrastructure that makes up the project including locations, scale, inter-dependencies and links to wider development.
4	Strategic Case	Sets out the issues which are being addressed in the context of the policies and strategies within the region, especially housing, jobs growth and well-being. Establishes objectives and Critical Success Factors, a robust case for change and the impact of not changing. Sets out what is to be achieved, how this relates to stakeholder requirements and how the proposals will impact on the local, regional and National economy.
5	Options Appraisal	Identifies the options that have been considered, outlines the appraisal of these that has been undertaken and what would happen if the bid to the City Deal fund is not successful.
6	Transport Case	Develops proposals for an economic case for investment which demonstrates value for money, detailing the appraisal and modelling of the selected options required and how these can be monetised to provide an initial benefit/cost ratio.
7	Management Case (Delivery Case)	Sets out proposals for how the project can be managed and governed, including the approach to the management of risk and a risk register. The ways in which the scheme will be communicated are considered, including stakeholder engagement and the approach towards realising the predicted benefits and how the scheme will be monitored, evaluated and reported is outlined.
8	Financial Case	Presents high level evidence of the affordability of the scheme, including initial estimates of scheme costs, inflation assumptions and funding strategy.
9	Commercial Case	Outlines proposals for the procurement process, including the specification of the requirements, how the scheme will be procured and contracted.

10	Conclusions and Recommendations	Summarises the five cases and how this demonstrates value for money and the further work required as the scheme moves towards delivery.
	Appendices	A range of supporting technical documents, maps and tables which support the Business Case

3. Project Description

3.1. Overview

The Vale of Glamorgan Council has commissioned Amey Consulting to provide an Outline and a Full Business Case (WelTAG Stages 2 & 3) for a Multi Modal Transport Interchange at Barry Docks station, compliant with stages 2 and 3 of the Welsh Government's WelTAG Guidance 2017[4]. This initial Outline Business Case provides the justification for regenerating land in the vicinity of Barry Docks Railway Station to include a proposed new Bus and Taxi Interchange, additional Park and Ride capacity and associated physical infrastructure improvements. In addition, it includes consideration of the potential to establish a mix of residential and commercial development alongside the Transport Interchange.

The interchange will improve connections between the station and the town centre, the waterfront, visitor attractions, communities and businesses in Barry and the surrounding area and increase use of rail and other sustainable modes (a key objective of the policies for the region). It will also lead to a reduction in road traffic and congestion in Barry and its surrounds, especially between Barry and Cardiff and contribute directly to the objectives for growth in well-being, social inclusion, economic development and environmental improvements of the the Council, CCR, City Deal and WG. It will also reduce the numbers travelling by car to access visiting attractions in the town.

3.2. The Town of Barry

Barry is located on the north coast of the Bristol Channel approximately 14 km south-southwest of Cardiff. It is well known as a seaside resort, with attractions including several beaches and the Barry Island Pleasure Park. To the west of Barry is Porthkerry Park, a large area of open, green space, with woodlands, streams, and access to a pebbly beach.

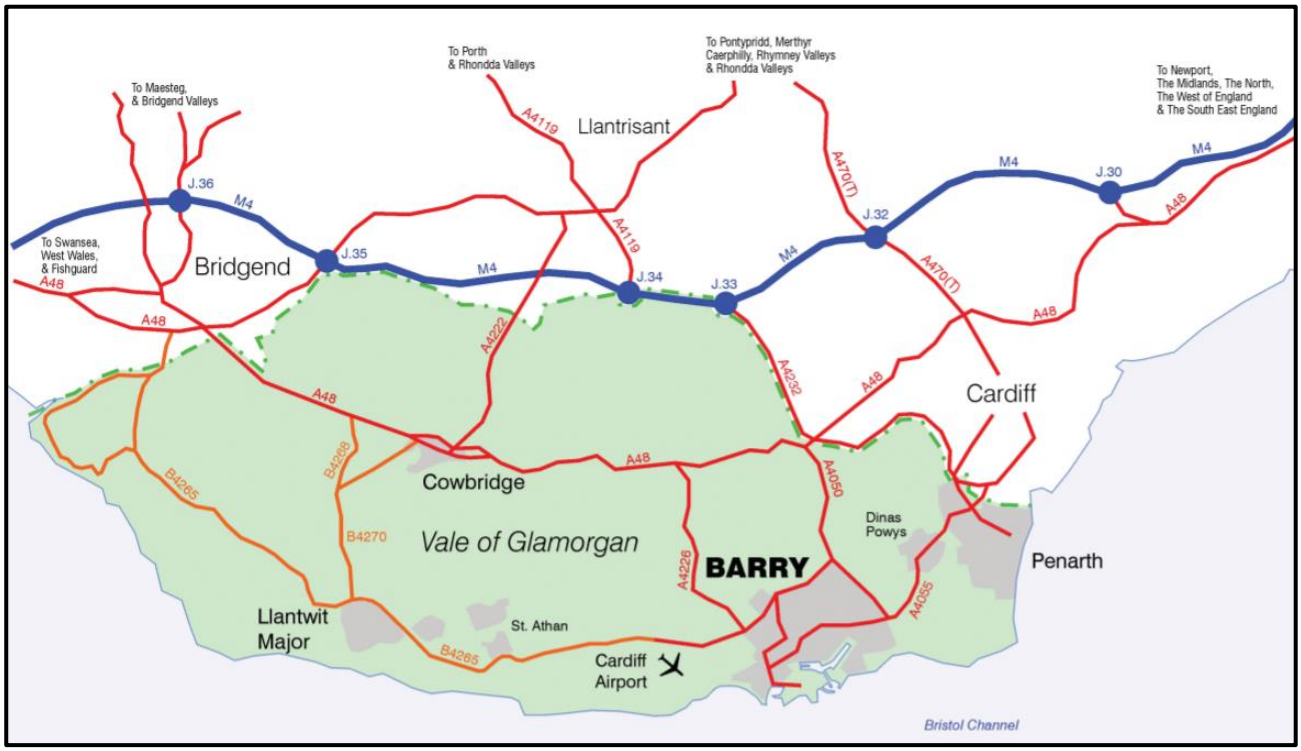


Figure 1 - Barry Location Map

Barry is the administrative centre of the Vale of Glamorgan. According to the Office for National Statistics the population of Barry in 2016 was estimated at 54,673. Once a small village, Barry has absorbed its larger neighbouring places of Cadoxton and Barry Island. And Sully is also close by. The town grew significantly from

[4] https://gov.wales/welsh-transport-appraisal-guidance-weltag

the 1880s with the development of Barry Docks, which in 1913 was the largest coal port in the world. Although still a port, Barry is increasingly, a prime residential location for those working in the wider Cardiff Capital region and is now considered a commuter town with manufacturing elements, and a service centre for the Vale of Glamorgan.

Currently, people aged between 16 and 64 make up 64% of the population of Barry. The 2011 census highlights that 73% of the working population of the Vale of Glamorgan commute by car and 45% of the Vale residents commute out of the local authority for work purposes. The majority commute to Cardiff (34.4%), Bridgend (4.8%), Rhondda Cynon Taf (3.6%) and Newport (1.9%).

Barry Docks, and the adjoining Waterfront industrial area, form the largest employment centre in the town. The docks, whose road links were substantially improved with the opening of the Docks Link Road in 1981, now have direct road access to the M4 motorway Junction 33. Most industrial firms are located in the dock area. The largest are the chemical producing concerns such as Cabot Carbon and Dow Corning who recently completed the development of the largest silicones plant in Europe. Other significant employers in Barry Docks are Jewson Builders' Merchants, Western Welding and Engineering, Bumnelly and Associated British Ports Holdings who, since 1982, have administered the docks as successors to the British Transport Docks Board.

Barry is served by four railway stations, Barry Dock Railway Station, Barry Town, Barry Island and Cadoxton, all located within close proximity to one another. Cadoxton, Barry Docks and Barry Town Railway Stations are located on the Vale of Glamorgan Railway Line which runs through the Vale of Glamorgan from Cardiff to Bridgend. Following the closure of the Vale of Glamorgan line to passengers, between Barry and Bridgend in 1964, it was reopened on 10 June 2005 and for most of these 19 miles now provides a scenic link from Barry to Llantwit Major, Rhoose and beyond to Bridgend. Barry Island Railway Station is located on a spur off the Vale of Glamorgan line just to the west of Barry Town.

The Vale of Glamorgan line is part of the wider South East Wales Metro rail network proposed by CCR. The Metro network as envisaged by 2023, including both the Vale of Glamorgan line and the Valley lines, is illustrated in the figure below.

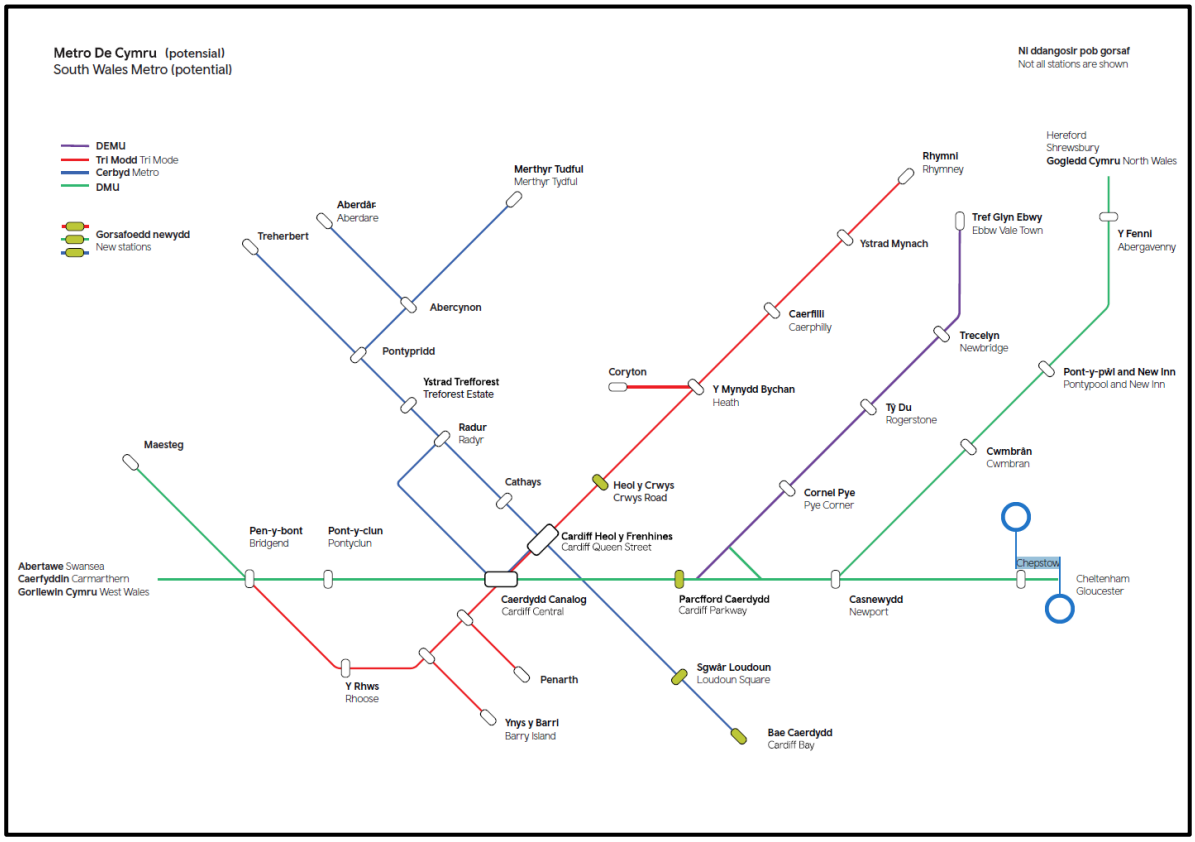


Figure 2 - South Wales Metro network

By bus Barry is served, primarily, by Cardiff Bus which operates the majority of services within the town as well as the 93, 94, 95 and 96/96a services that operate between Barry and Cardiff City Centre. Adventure Travel also operate a service (304) between Cardiff and Llantwit Major, via St Athan Enterprise Zone, Cardiff Airport, Barry, Llandough Hospital and Cardiff Bay. Easyway of Pencoed provide a service (88) between Barry town centre and Penarth, which operates as a circular around the town centre on its way into Barry and then continues on to Morrisons in the Waterfront Retail Park before returning direct to Penarth via Subway Road and Dock View Road. This service (88) is currently the only bus that serves Barry Docks Railway Station directly, from a stop near the northern access to the station on Dock View Road, but only on its route out to Penarth. King's Square in Barry town centre is served by a majority of the buses serving the town.

There are three main road corridors that connect Barry to areas west of Cardiff and its City Centre:

- Barry town centre to Cardiff Central via A4050 and Culverhouse Cross;
- Barry town centre to Cardiff Central via A4055 through Eastbrook / Cogan; and
- Barry town centre to Cardiff Central via A4055 then B4267 via Leckwith.

Cardiff International Airport is less than five miles to the west of the centre of Barry, located in the community of Rhoose and provides access to locations both within the UK and internationally. It is currently accessed by rail from Rhoose (Cardiff International Airport) Station, which is also located on the Vale of Glamorgan line. A Welsh Government supported bus link (Service 905) connects the airport with all passenger rail journeys arriving and departing the station daily (exc. 25th and 26th December). The airport is also served directly by Adventure Travel Local Bus Service 304 (Llantwit Major – Cardiff via Barry). There are aspirations to improve the rail link by provision of a rail spur, to serve the airport directly. Until recently, the airport was also served by the Welsh Government supported frequent TrawsCymru Service T9 (Cardiff Airport Express) that was withdrawn due to Covid-19 travel restrictions and the subsequent downturn in flights/passengers travelling to/from the Airport; however, Welsh Government has indicated it intends to review the situation when the situation improves, and the time is right to reinstate such a service.

With a population exceeding 50,000, many developers (housing and economic), multiple retailers and key inward investors are attracted to Barry and consider it a serious opportunity for future investment. Furthermore, examination of the towns academic attainment highlights that school leavers in Barry and the Vale of Glamorgan are out performing their counterparts in other areas of Wales, providing employers with a well-educated and balanced pool of potential future employees. This is increasingly important as Barry is identified as having a key role in the Vale of Glamorgan regeneration plans and is considered of significant strategic importance to the Cardiff Capital Region, City Deal and the South East Wales Metro proposals.

3.3. Site and Location Details

3.3.1 Site Location

Barry Docks Railway Station is an important strategic access to Barry's town centre for employers, residents and tourism. The station is one of four railway stations serving Barry, three located on the Vale of Glamorgan Railway Line and the fourth on a spur from this to Barry Island.

As illustrated by Figure 3 below, the regeneration site proposed consists of two sections divided by the railway line and Barry Docks Railway Station. The parcel to the north of the railway line is bound by Dock View Road and beyond this a large residential area of, circa, 4,600 houses. The western end of this parcel is currently in use as a used car sale outlet and parking compound. The eastern end of the site is formed of scrubby waste land that drops significantly, from an escarpment to the north, adjacent to Dock View Rd.

The land parcel to the south is bound to the west by Subway Road and to the south/south east by Ffordd Y Mileniwm. It currently includes the Dock Office which is a grade II* listed building used by the Council and incorporates parking for council staff and visitors adjacent to this. The current Park and Ride car park is also within this parcel, located on a raised elevation, immediately south of the rail line. The eastern end of the site is formed of scrubby waste land.

Figure 3 - Barry Docks Railway Station location plan

3.3.2 Surrounding the Development Site

Less than 1km south of the station is Barry Waterfront, a development that is ongoing and which to date, has delivered a new link road through the dock area connecting the docks to the town centre and seaside resort at Barry Island. This provides pedestrian, cycle and vehicular access to the station via Ffordd Y Mileniwm and Subway Road. Plans for development of vacant land at Barry Waterfront are ongoing as part of the Vale of Glamorgan Local Development Plan 2011-2026. Development proposals include residential (2000 dwellings), retail (A1: 6400 m² net), cafés, bars and restaurants (A3), hotel (C1) and, offices (B1: 3450m²). These are covered by outline planning permissions 2009/00946/OUT and 2009/00947/OUT. They also include the development of vehicular and pedestrian/cycle access, re-grading of the site to form new site levels and associated infrastructure works, parking, servicing, landscaping, public realm and public open space provision. The scheme is substantially complete and the housing consortium are currently constructing the final phase of housing at South Quay.

Barry Town Centre is approximately 1km to the north/north west of the Barry Docks station site. To the north/north east sits a large residential area containing approximately 4,600 households with a population of approximately 10,674 (2011 census). This residential area stretches north to Gladstone Road (A4055) and together with residential areas to the north west, presents opportunities for encouraging sustainable travel to the station to access economic opportunities in the wider Cardiff Capital region for residents of Barry and the Rural Vale, supported by the infrastructure upgrade at Barry Docks Railway Station.

3.3.3 Station Facilities

Barry Docks station currently benefits from a ticket machine, real time information, timetable information, seating, CCTV, help points and 10 cycle storage spaces, all on the station platforms. However, the station is un-manned and there is no ticket office, passenger waiting room, toilets or café facilities. A pedestrian subway under the rail line provides access to the station platforms from both the north and south, via a ramp that runs

(east) from the centre of the subway. The gradient of this ramp is just beyond DDA standards meaning the station is not considered accessible to wheelchair users. Also, the height of the subway means cyclists need to dismount to travel through this.

The station has an existing Park and Ride car park which is situated on a raised platform to the south of the station and accessed through the area alongside the Docks Offices, from a roundabout on Ffford-Y-Mileniwm. There is car parking for up to 132 vehicles on the platform area. However, it is not overlooked by CCTV, there are no dedicated disabled parking bays, electric vehicle charge points, or real time information services. This car park is complemented by a further 109 car park spaces surrounding the Docks Offices, including 8 disabled parking bays but no EV charge points. All car park spaces can be used by rail users, council staff or visitors to the town, without any demarcation and all parking is provided free of charge. In general this car parking is accessed on a first come first served basis with spaces by the Council 's Docks Offices tending to get taken up first as these are covered by CCTV and/or can be overlooked from the building, meaning they are perceived as the most secure. Currently, there is no direct vehicular access to the station from the north, east or west.

No taxi ranks are provided for the station but a taxi lay-by, used as a drop off point for visitors to the Docks Offices, is also used as a drop off/pick up point for the station. Taxis are also known to drop off station users on Dock View Road adjacent to the pedestrian access to the station.

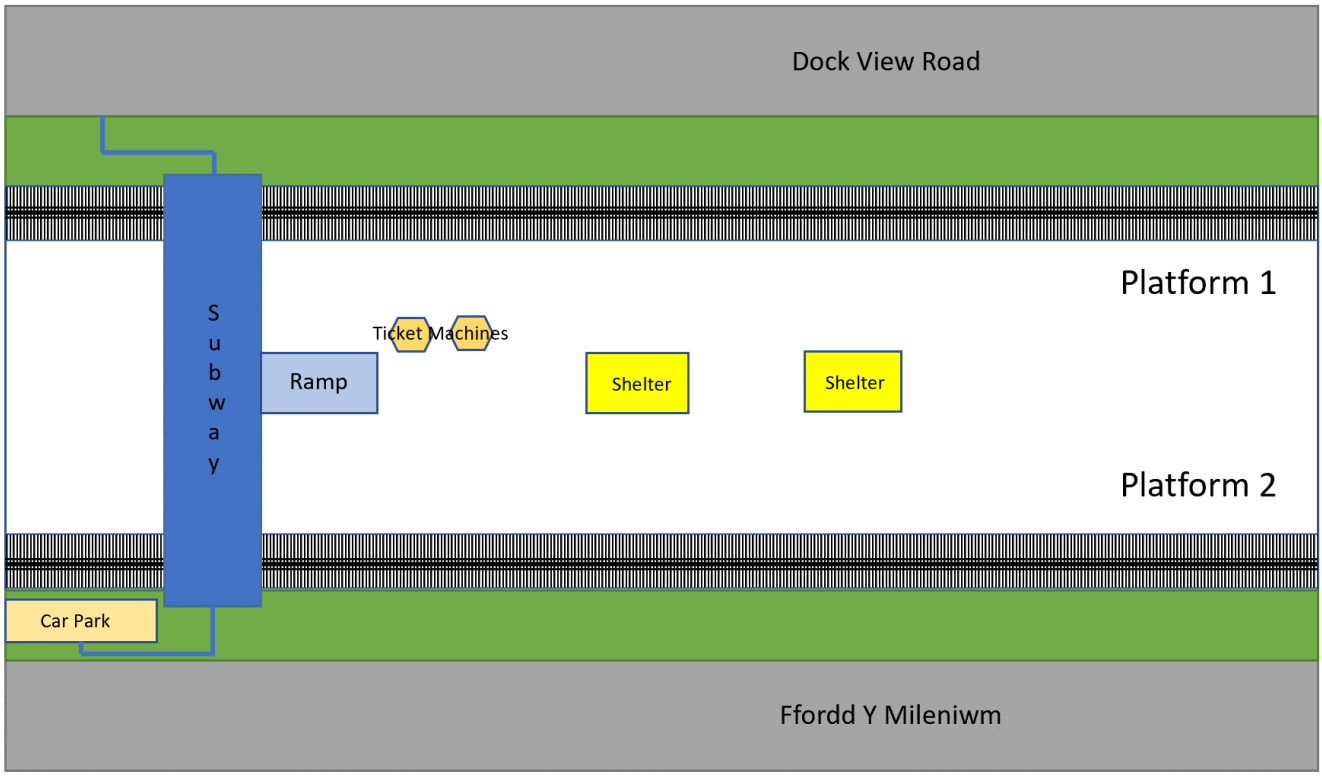


Figure 4 - Barry Docks Station platform layout

3.3.4 Station access

Barry Docks Railway station is within a 10 to 15 minute walk of the town centre and the Waterfront retail park. Land between the station and the Waterfront is flat. However, the gradient from the station up to the town centre and surrounding residential areas is relatively steep, is not signed and there are no bespoke active travel routes in the area.

Along Dock View Road, to the north of the station platforms, there is currently a pedestrian and cycle route to the station using the highway and footpath. Access to the station off Dock View Road is either via a disused road (previously an access road to BT premises, which are no longer in use) which slopes and winds down steeply to the pedestrian subway entrance or an alternative route involving steep steps down the embankment, to join the road to the pedestrian subway, leading to the access ramp up to station platforms. The footway on Dock View Road is generally in good condition, but relatively narrow. There are also footways alongside all

roads leading to the station from the residential area to the north of Dock View Road. There is no dedicated cycle route along Dock View Road or from the town centre and residential areas to the north and east of this.

From the south, pedestrians, cyclists, cars and other motorised vehicles can access the station and existing Park and Ride car park off the Cory Way/ Ffordd Y Mileniwm roundabout, via the Docks Offices forecourt and parking area. This is the same access as used by those working at or visiting the Docks Offices. Along Ffordd Y Mileniwm, which forms part of National Cycle Network, route 88 (NCN88) there are segregated foot/cycle ways. However, there are limited priority measures for cyclists on main roads and limited segregated cycle routes through the town to Ffordd Y Mileniwm, meaning for most of their journey to the station cyclists will use the highway, rather than dedicated cycle routes.

There is also a third access route to the station for non-motorised vehicles (pedestrians and cyclists) off Subway Road. This runs from Subway Road, past the back of the Council House, to join with the access to the pedestrian subway and up to the station platforms, from the south.

The general road conditions around the station at peak times are uncongested, with a steady flow of traffic passing the station entrances in both directions and relatively small numbers of HGVs using the roads. Some queuing can be experienced, during the peak, to access car park spaces at the station from Ffordd Y Mileniwm. Congestion on roads serving the town centre is greater, especially at peak times.

Barry Docks station has cycle parking facilities on the platform, with Sheffield type stands for up to 10 bicycles and CCTV surveillance, but the station does not currently provide any additional features such as lockers, changing facilities or designated cycle routes to ensure the safety of cyclists within the station confines.

The three main station access routes are illustrated by Figure 5 below.

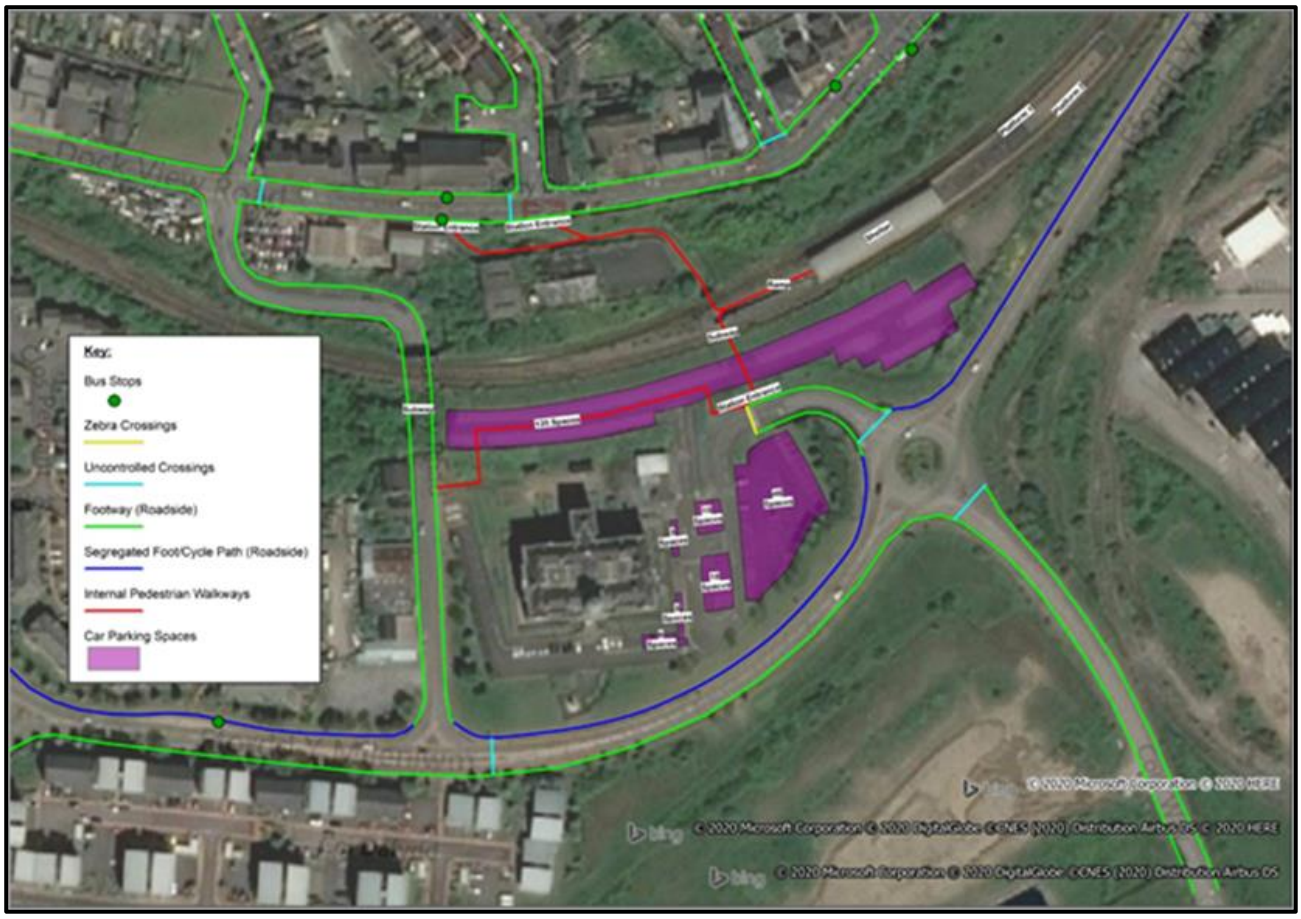


Figure 5 - Barry Docks Station Access Routes

Figure 6 below shows an isochrone for a 10-minute walking distance (720m at 4.3km/h) from the station platforms. The walking speed has been set low due to the steep gradient of the majority of routes from the

station, especially north, east and west. Barry Town centre extends along Holton Road, located at the periphery of the 10 minute isochrone.

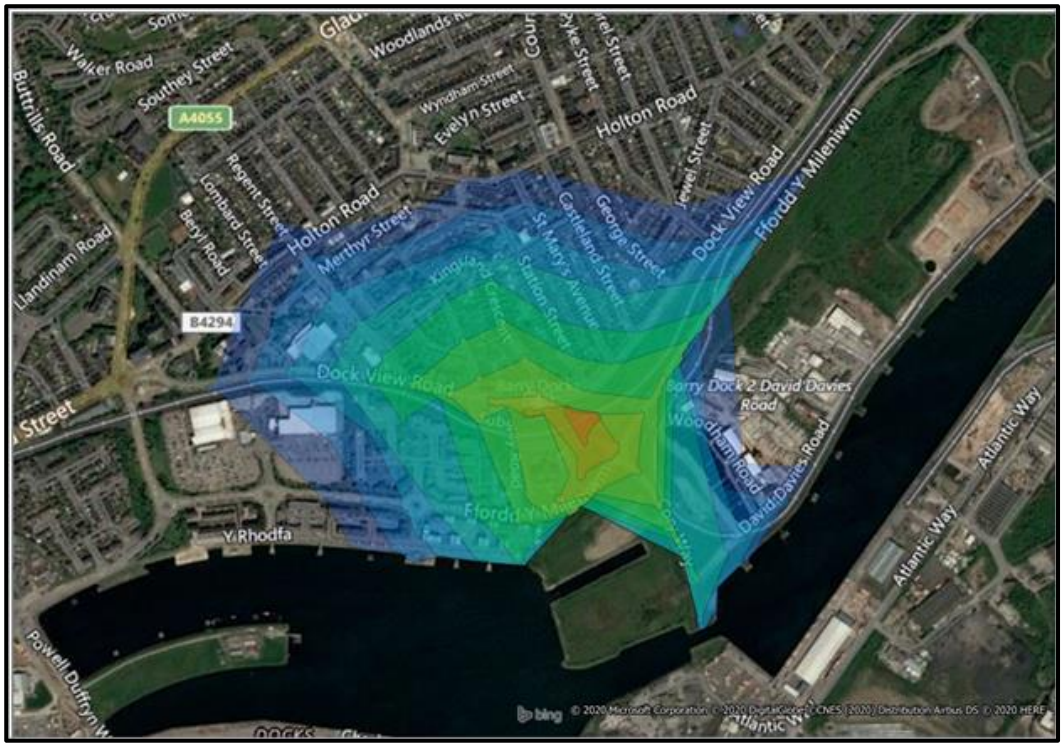


Figure 6 - Walking Isochrone to/from Barry Docks Station

3.3.5 Station Usage

With 4 stations Barry is well served by the local rail network. However, due to a discrepancy in published data on station entries/exits, from the Office of the Rail Regulator (ORR) and on journey origins/destinations from the LENNON (Latest Earnings Networked Nationally Overnight) database, it is not possible to use either source, directly, to identify and baseline current demand for rail services to/from Barry. It has been necessary first to establish a means to adjust both data sources to ensure more accurate demand estimates are applied. To achieve this, we have used a factor drawn from work undertaken by TfW to take account of this issue in the South East Wales Transport Model (SEWTM) and then applied this to Barry stations based on an analysis of census travel to work data in the area.

The discrepancy arises because both ORR and Lennon data rely on information from ticket sales. In consultations with TfW it became apparent that where stations are located close to one another and hence clustered under the same fare stage, often conductors selling tickets on the train will issue a ticket to/from the furthest station in the cluster, regardless of the station passengers are actually travelling to or from. As a consequence, many rail users purchasing their ticket from the conductor may be counted as travelling to/from the furthest station in the cluster when, in fact, this is not true. In the case of the 4 Barry stations, with most journeys being to/from Cardiff and its surrounds, the issue inflates ORR/LENNON figures of demand for Barry Island station and deflates the numbers for Barry Town, Barry Docks and Cadoxton stations, compared to reality. It is not the case for tickets purchased by other means.

Figures provided by TfW indicate that within the SEWTM they reduce demand at Barry Island station by circa 54% compared to ORR/LENNON data. Analysis of Travel to Work, 2011 Census data, for Barry identifies that the reduction in patronage this represents should then be reallocated to the 3 other Barry stations on the following basis:

- Barry Town - 44%;
- Barry Docks - 8%; and
- Cadoxton - 48%.

It is likely the issue has existed for some time. Therefore, in the time series tables below we have adjusted the data for each year to establish more accurate estimates of demand for all Barry stations over time, from the ORR published data.

Table 2 - Barry Stations - Entries & Exits, All ticket types (Adjusted).

Year	Barry Island (adjusted)	Barry Town (adjusted)	Barry Docks (adjusted)	Cadoxton (adjusted)
2008/09	*265,845*	*617,569*	*144,912*	*410,580*
2013/14	285,763	706,707	230,461	439,297
2014/15	279,774	675,639	231,500	426,190
2015/16	300,738	699,102	244,175	451,593
2016/17	327,434	701,729	254,996	471,638
2017/18	346,566	712,741	278,307	477,380
2018/19	382,822	721,838	286,996	486,226

The data illustrates that Barry Town station experiences the highest footfall of all Barry stations and Barry Docks currently has the lowest take-up. However, consideration of growth in patronage at each station over time indicates that Barry Docks has seen the most growth over the past 10 years. Whereas, over the past 5 years Barry Island at 34% has experienced slightly greater growth than Barry Docks at 25%.

Table 3 - Growth at Barry Stations

Growth	10 Years to 2018/19	5 Years to 2018/19
Barry Island	44%	34%
Barry Town	17%	2%
Barry Docks	98%	25%
Cadoxton	18%	11%

The footfall at Barry Island is probably due in part to seasonal visitors in the summer months. However, recent housing development in the area will have also contributed to the growth in footfall at this station over the past 5 years. The substantial growth at Barry Docks between 2008/09 and 2013/14 is probably mainly due to the additional Park and Ride capacity provided there initially in 2010. More recent growth is likely to have come from new housing and other developments along the Waterfront. As this development is planned to extend further east along the Waterfront and occur closer to Barry Docks, it is envisaged growth in rail patronage at the station will increase at a greater rate in the future. This increasing patronage will be supported and encouraged by the range of station upgrades proposed for Barry Docks.

The 2019 annual footfall (adjusted) for the Barry stations, averaged out over a year, provides a daily estimate of the 2019 demand, as identified in the table below.

Table 4 - Number of People Boarding/Alighting Trains in Barry (Daily estimate assumes w/end demand @50%)

Station	Daily Estimate	Annual 2019
Barry Island	1,227	382,822
Barry	2,314	721,838
Barry Docks	920	286,996
Cadoxton	1,558	486,226

Official Labour Market Statistics show that the rail mode share for travel from Barry is 2%. According to the DfT National Travel Survey (2011/12), the mode share for trains in Wales is 2%, therefore the rail mode share for trips for Barry is consistent with the national average.

3.3.6 Rail Services

Public transport provision, both rail and bus, has been impacted significantly by Covid 19 with services amended or reduced significantly during the 'first wave' of the pandemic between March and June 2020. At this time government stepped in to support services financially and continue to provide this support today, including to many services as they re-emerge. However, not all services have returned, and timetables continue to flex. A further and more severe wave of Covid 19 is now extending across the UK, with South Wales especially badly affected. The Welsh and WG and the UK governments are introducing a further lockdown and the current usage of the public transport network cannot be considered representative. Neither is it entirely clear what the network will look like post-Covid or when this may be, although aspirations are for it to remain at least the same as it was, if not improved.

Similarly, at this time, future plans for the development of the rail and bus networks remain in place, although in the case of rail it is noted that WG announced on the 23rd October 2020 that they will take full ownership of Wales' rail services due to the "dramatic falls in passenger numbers" during the pandemic. In February 2021 following a managed transition process, the Wales and Borders Rail Franchise will be brought under Welsh Government control via a subsidiary of Transport for Wales operating under its own licence and approvals, regulated by the independent Office for Rail and Roads in its role as regulator for the U.K. rail industry.

Rail service provision pre-Covid is detailed below. Barry is well served by the rail network with all services via the town currently operated by KeolisAmey on behalf of Transport for Wales. Regular services link Barry to the wider network via Cardiff and Bridgend. The Vale of Glamorgan line not only links Barry to Cardiff and Bridgend but also extends beyond Cardiff to stations across the South Wales Valleys. Table 5 shows the level of service provided by the train services calling at the stations in Barry.

Table 5 - Rail Services at Barry Stations

Direction	Main Services (Key Calling Points)	Train Frequency
Towards Barry	Aberdare – Pontypridd – Cardiff Queen Street – Cardiff Central – **Barry Docks** – **Barry** – **Barry Island**	30-minute
	Merthyr Tydfil – Pontypridd – Cardiff Queen Street – Cardiff Central – **Barry Docks** – **Barry** – Bridgend	
	Merthyr Tydfil – Pontypridd – Cardiff Queen Street – Cardiff Central – **Barry Docks** – **Barry** – **Barry Island**	Hourly during AM and PM Periods
Towards Cardiff	**Barry Island** – **Barry** – **Barry Docks** – Cardiff Central – Cardiff Queen Street – Pontypridd – Merthyr Tydfil	30-minute
	Bridgend – **Barry** – **Barry Docks** – Cardiff Central – Cardiff Queen Street – Pontypridd – Aberdare	
	Barry Island – **Barry** – **Barry Docks** – Cardiff Central – Cardiff Queen Street – Pontypridd – Aberdare	

Services run northbound to Cardiff Central and beyond (alternately, to Merthyr Tydfil & Aberdare) and run southbound to Barry Island and to Bridgend via Rhoose and Llantwit Major. Eastbound services connect at Cardiff Central to other valley lines termini, e.g. Rhymney, Treherbert and Ebbw Vale town and also the shorter City Line trains that run between Radyr and Coryton and of course, the South Wales main line eastbound to England. The westbound Vale of Glamorgan line to Bridgend provides a connection to the South Wales main line through to Swansea and the Llynfi branch to Maesteg, which also runs through to Aberdare or Merthyr Tydfil. Figure 7 and Figure 8, below, illustrate the connections with the wider Valley Lines and Wales rail network.

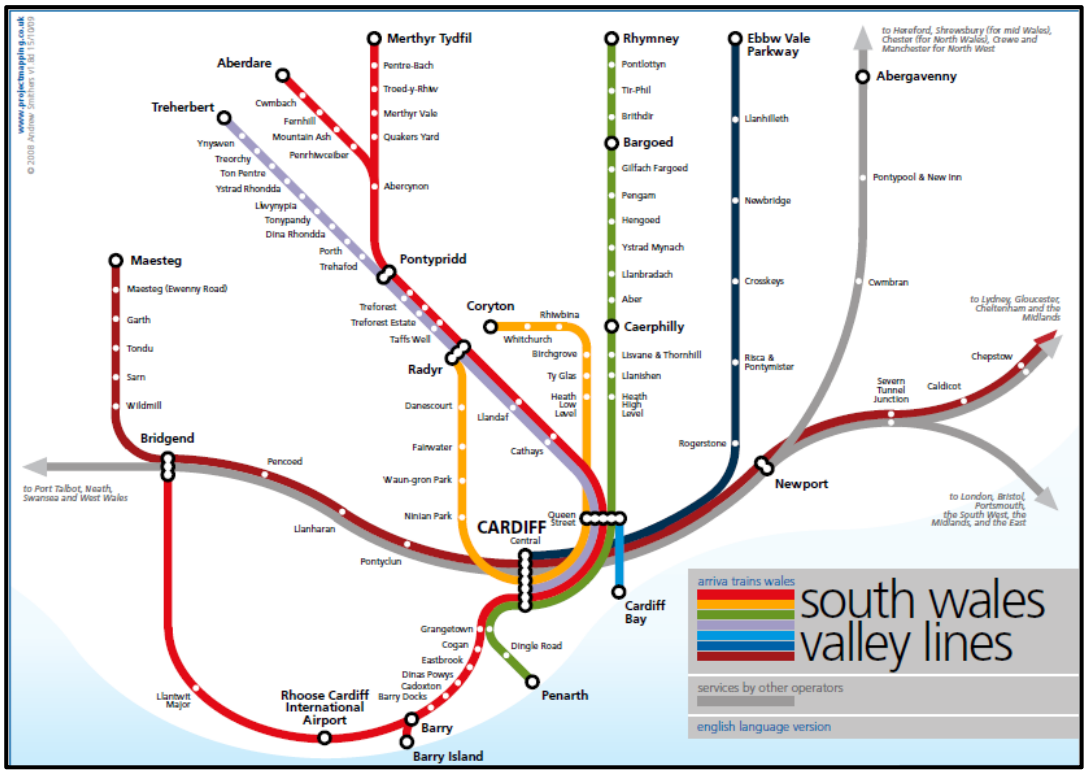


Figure 7 – Vale of Glamorgan line links to South Wales Valley Lines (NB – TOC is now TfW, not Arriva Trains)

Figure 8 - Wales Rail Network

3.3.7 Bus Services

Bus service provision through Covid 19 has seen significant changes to the network. Again substantial public funds have been provided to sustain the network, but not all services emerged following the initial lockdown in the form they were provided pre Covid. There is currently no intention to nationalise bus services. However, while public subsidy continues transport authorities will have greater influence over them. Bus service provision for Barry, prior to Covid, is described below.

The number 88 bus operates between Penarth and Barry and is a fully subsidised service. The service runs hourly and is operated by Easyway of Pencoed. It serves Barry Docks station on its return to Penarth, from its stop on Dock View Road between St Mary's Avenue and Station Street, approximately 60/70metre walk from the station platform. On its inward journey to Barry from Penarth the service does not serve the station, instead turning north just before reaching Dock View Road, then south to operate a loop around the town centre. The service terminates at the stop outside Morrisons in Waterfront Retail Park. To return to Penarth it travels east from Morrisons along Ffordd Y Mileniwm and then turns into Subway Road to join Dock View Road just ahead of its stop at Barry Docks.

Other bus services for the town do not run close enough to Barry Docks station to be attractive for rail passengers to use. However, there are 8 services that stop outside Morrisons on Ffordd Y Mileniwm Road approximately 1km walking distance from Barry Docks station platforms. Many of these services return via the town centre to serve residential areas north, northeast and northwest of Barry Docks. All these services are illustrated in Figure 9, below:

Figure 9 - Buses stopping at Morrisons

The number 303 bus service is inter-worked with the 304 bus service to provide a service from Cardiff to Barry and onwards to Llantwit Major and Bridgend. The service is partially subsidised and operated hourly during peak times by New Adventure Travel. Commuters change busses at Llantwit Major interchange. The 304 bus stops outside of Morrisons on Ffordd Y Milenwm. On its journey from Barry to Llantwit Major it also serves Cardiff International Airport/Enterprise Zone and St Athans Business Park.

The 93, 94, 95 and 96/96a all provide a service between Cardiff and Barry, on a commercial basis, with all serving Barry town centre its residential surrounds and Morrisons in the Waterfront Retail Park. All are operated by Cardiff Bus. The 93 operates hourly and other services twice hourly. The 94 runs between Cardiff and Barry via Penarth, the 93 and 95 via Dinas Powys and Penarth, with the latter also serving Barry Island after stopping at Morrisons. The 96/96a operates between Cardiff and Barry via Culverhouse Cross.

The 100 service provided by Cardiff Bus operates 6 services a day which provide a loop around Barry Town between Barry Highlight Park and Merthyr Dyfan. The service is a fully subsidised service. The B3 bus service is operated by Easyway of Pencoed and provides an hourly service stopping outside of Morrisons on Ffordd Y Milenwm road. It operates between Barry and Cadoxton and is a fully subsidised service.

All Barry bus services operated prior to Covid are illustrated in the figure below and summarised in the table below this.

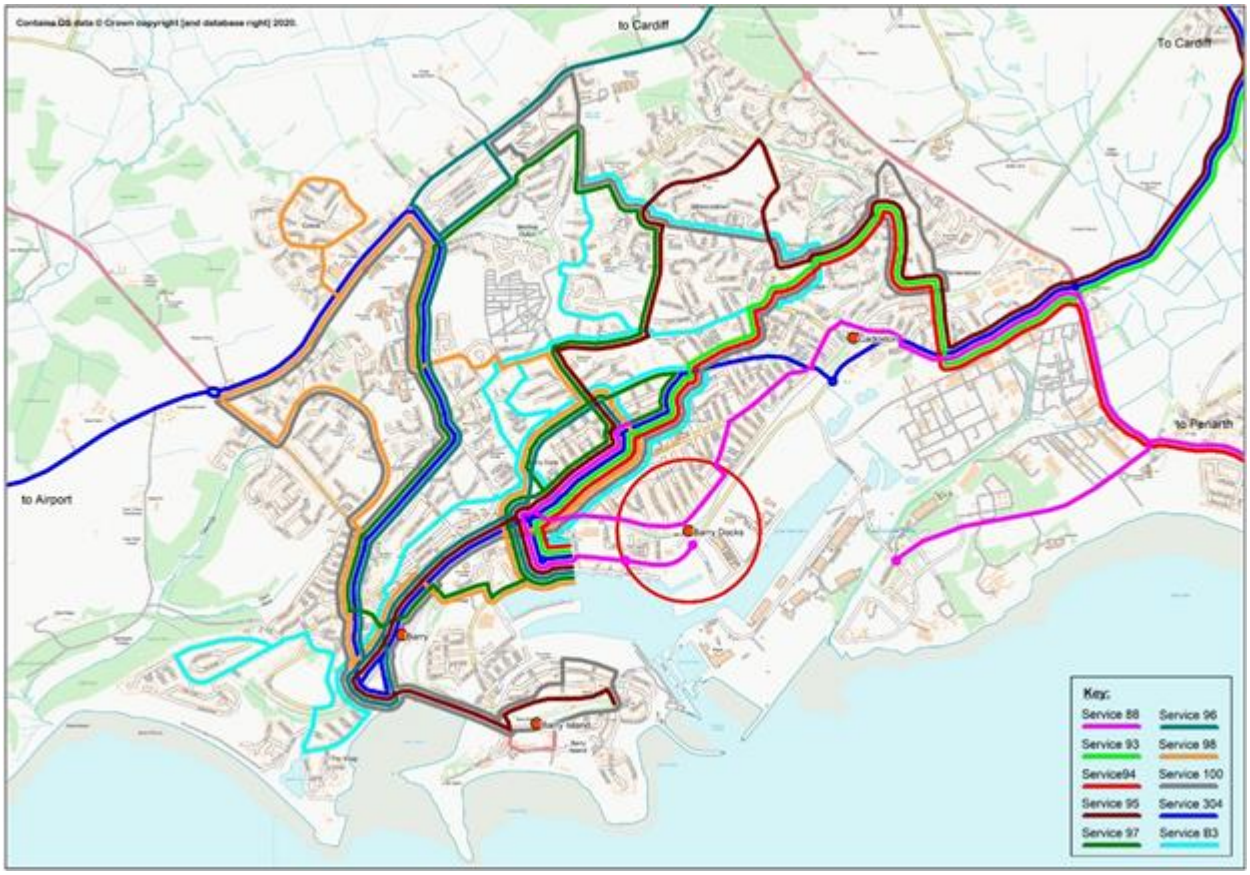


Figure 10 -: Buses serving Barry (pre Covid)

Table 6 – Summary of Barry Bus Services (pre-Covid)

Service	Operator	Route	Type	M-F (Excl Bank Holidays)			Saturday			Sunday			Public Holidays		
				Typical Frequency	First Service	Last Service	Typical Frequency	First Service	Last Service	Typical Frequency	First Service	Last Service	Typical Frequency	First Service	Last Service
88	Easyway	Barry - Penarth	Fully Subsidised	Hourly	06:55	17:55	Hourly	06:55	17:55	Nil	-	-	Nil	-	-
88	Easyway	Penarth - Barry	Fully Subsidised	Hourly	06:48	18:26	Hourly	06:48	18:26	Nil	-	-	Nil	-	-
93	Cardiff Bus	Barry - Dinas Powys - Penarth - Cardiff	Commercial	Hourly	09:26	17:38	Hourly	09:26	17:36	Nil	-	-	Nil	-	-
93	Cardiff Bus	Cardiff - Penarth - Dinas Powys - Barry	Commercial	Hourly	07:14	18:20	Hourly	08:15	18:20	Nil	-	-	Nil	-	-
94	Cardiff Bus	Barry - Penarth - Cardiff	Commercial	2 per hour	06:14	22:04	2 per hour	08:46	22:16	Hourly	06:40	23:15	Hourly	06:40	23:15
94	Cardiff Bus	Cardiff - Penarth - Barry	Commercial	2 per hour	07:03	23:00	2 per hour	07:10	23:00	Hourly	07:30	23:00	Hourly	07:30	23:00
95	Cardiff Bus	Barry Island - Dinas Powys - Penarth - Cardiff	Commercial	2 per hour	04:53	20:45	2 per hour	06:10	20:40	Hourly	09:00	17:55	Hourly	09:00	17:55
95	Cardiff Bus	Cardiff - Penarth - Dinas Powys - Barry Island	Commercial	2 per hour	06:35	19:40	2 per hour	07:24	19:40	Hourly	10:05	17:05	Hourly	10:05	17:05
96/96A	Cardiff Bus	Barry - Culverhouse Cross - Cardiff	Commercial	2 per hour	06:40	22:48	2 per hour	06:47	22:48	Hourly	09:50	23:45	Hourly	09:50	23:45
96/96A	Cardiff Bus	Cardiff - Culverhouse Cross - Barry	Commercial	2 per hour	07:35	22:45	2 per hour	07:40	22:45	Hourly	09:05	22:45	Hourly	09:05	22:45
97A	Cardiff Bus	Barry - Colcot - Barry (Anti-clockwise)	Commercial	2 per hour	07:35	16:50	2 per hour	09:10	15:40	Nil	-	-	Nil	-	-
97	Cardiff Bus	Barry - Colcot - Barry (Clockwise)	Commercial	2 per hour	07:40	16:30	2 per hour	09:15	15:45	Nil	-	-	Nil	-	-
98	Cardiff Bus	Barry - Highlight Park	Commercial	8 per day	08:13	14:23	Nil	-	-	Nil	-	-	Nil	-	-
98	Cardiff Bus	Highlight Park - Barry	Commercial	6 per day	09:27	14:04	Nil	-	-	Nil	-	-	Nil	-	-
100	Cardiff Bus	Barry Highlight Park - Merthyr Dyfan	Fully Subsidised	Nil	-	-	Nil	-	-	6 per day	12:17	19:47	6 per day	12:17	19:47
100	Cardiff Bus	Merthyr Dyfan - Barry Highlight Park	Fully Subsidised	Nil	-	-	Nil	-	-	6 per day	11:30	19:00	6 per day	11:30	19:00
304	NAT Group	Cardiff - Barry - Llantwit Major	Partially Subsidised	Hourly	00:02	23:02	Hourly	00:02	23:02	10 per day	06:31	22:36	10 per day	06:31	22:36
304	NAT Group	Llantwit Major - Barry - Cardiff	Partially Subsidised	Hourly	00:24	23:55	Hourly	00:55	23:55	9 per day	01:40	22:50	9 per day	01:40	22:50
B3	Easyway	Barry - Barry (via Cadoxton)	Fully Subsidised	Hourly	07:25	18:25	Hourly	07:25	18:25	Nil	-	-	Nil	-	-

The table indicates there is a reasonable level of service within Barry during the day, but this is much reduced during the evening and on Sundays. Only the 88 bus serves Barry Docks Station directly. All services pass through the town centre, with the nearest stop to Barry Docks station for most being on Ffordd Y Mileniwm outside Morrisons Supermarket.

3.3.8 Taxi Services

There are a number of different taxi companies (circa 20) providing taxi services in Barry. Most offer a range of taxi services using both Hackney and Private Hire vehicles. A few focus on providing specific services, such as airport services. Many also provide education transport on behalf of the Council meaning their availability ahead of school opening times 07:30 to 09:00 and just after schools close 15:00 to 16:30/17:00 can be limited.

There is no taxi rank at Barry Docks station. However, taxis currently serve Barry Docks either from the drop off/pick up point to the south of the station, which also serves the Docks Offices or from DockView Road where they drop and pick up passengers near the pedestrian access route to the north of the station.

3.4. The Vision for Barry Docks

In the project brief the Council specify three options for the Barry Docks Transport Interchange. Each option is identified below together with an illustration of what this could look like. In the case of the scheme Option 1 there are two alternative layouts. Option 1 does not include a drop off point on the proposed access road to the additional parking to the north of the station platforms, whereas Option 1a does. In the case of scheme Option 2, which itself is the same as scheme Option 1 but with residential and/or commercial development incorporated, an alternative access route to the additional car parking is proposed from Dock View Rd, instead of from Subway Rd. This provides for the largest developable area for housing/commercial use.

- *Option 1* - Bus Interchange (to be located south of Station on part of Docks Offices Car Park) and additional Park & Ride Car Park (to be located north of Station platform) i.e. no residential or commercial uses;

Figure 11 - Option 1 Indicative Layout (no layby on northern access road))

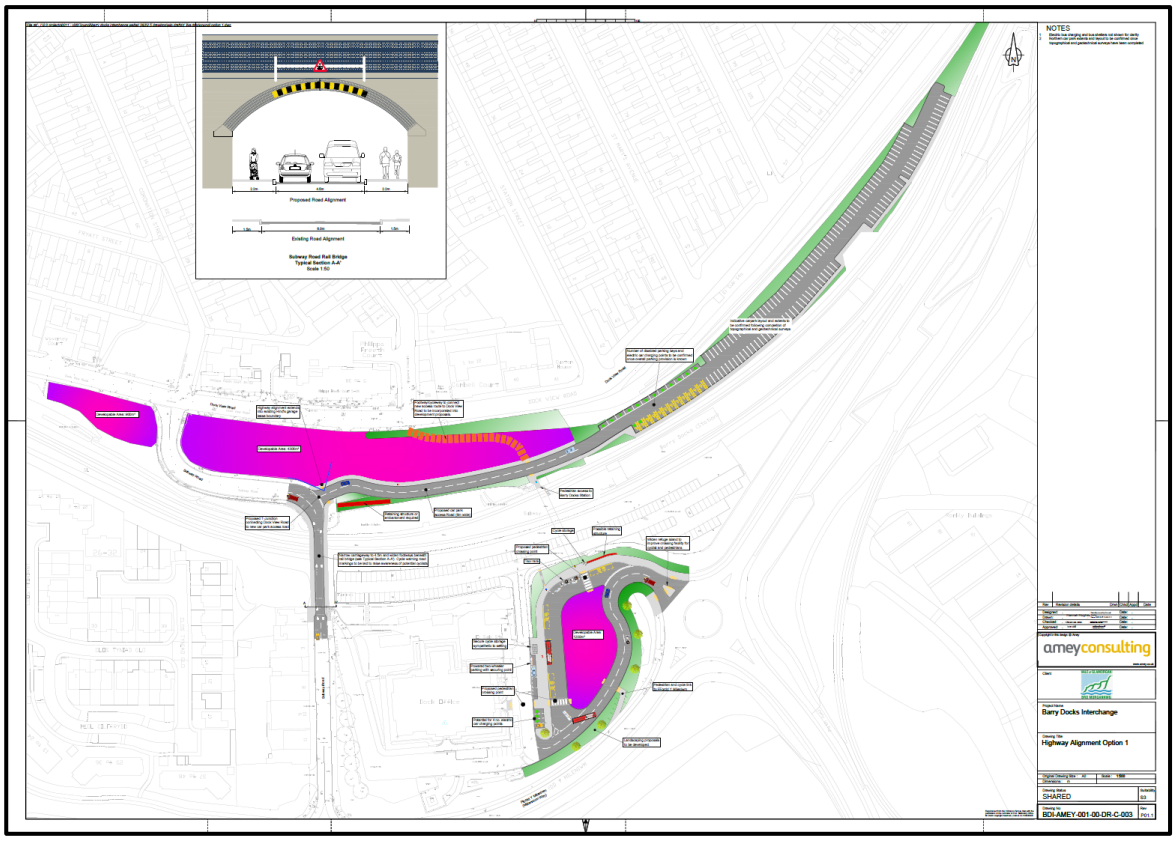
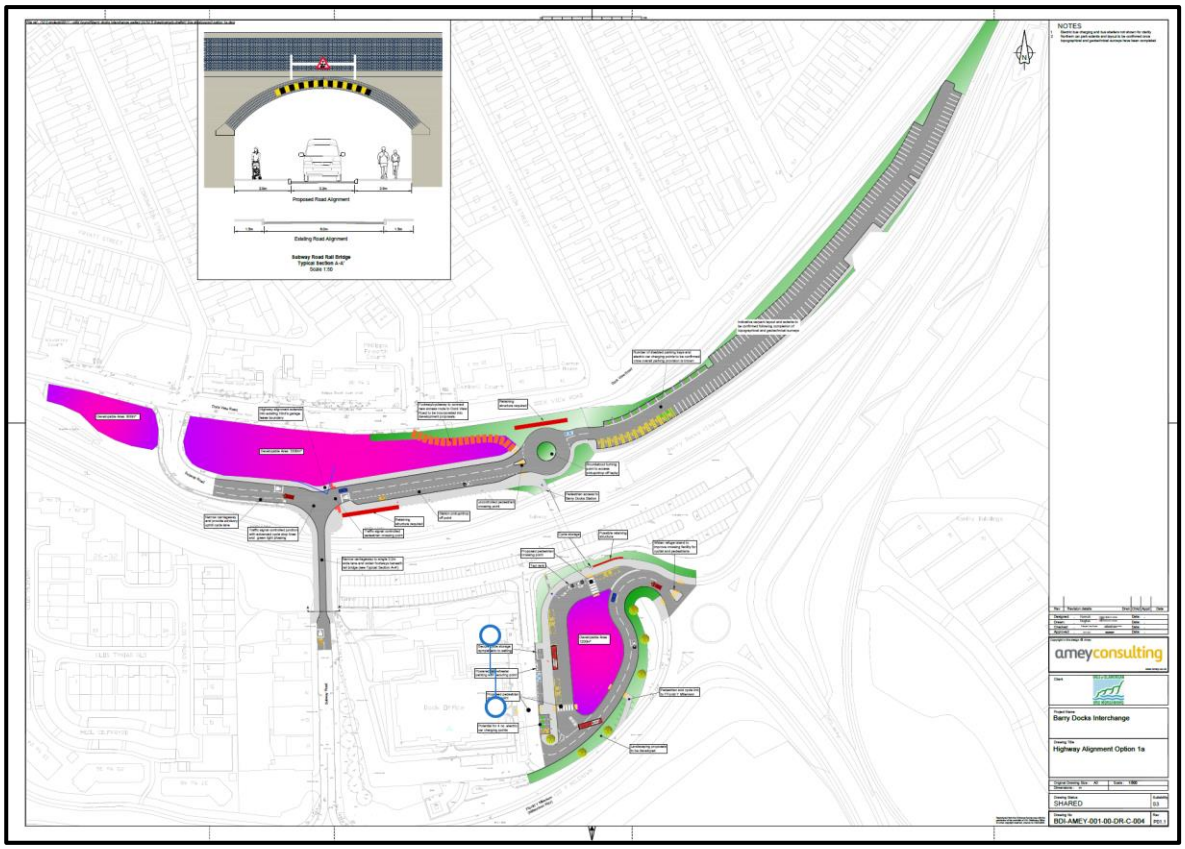
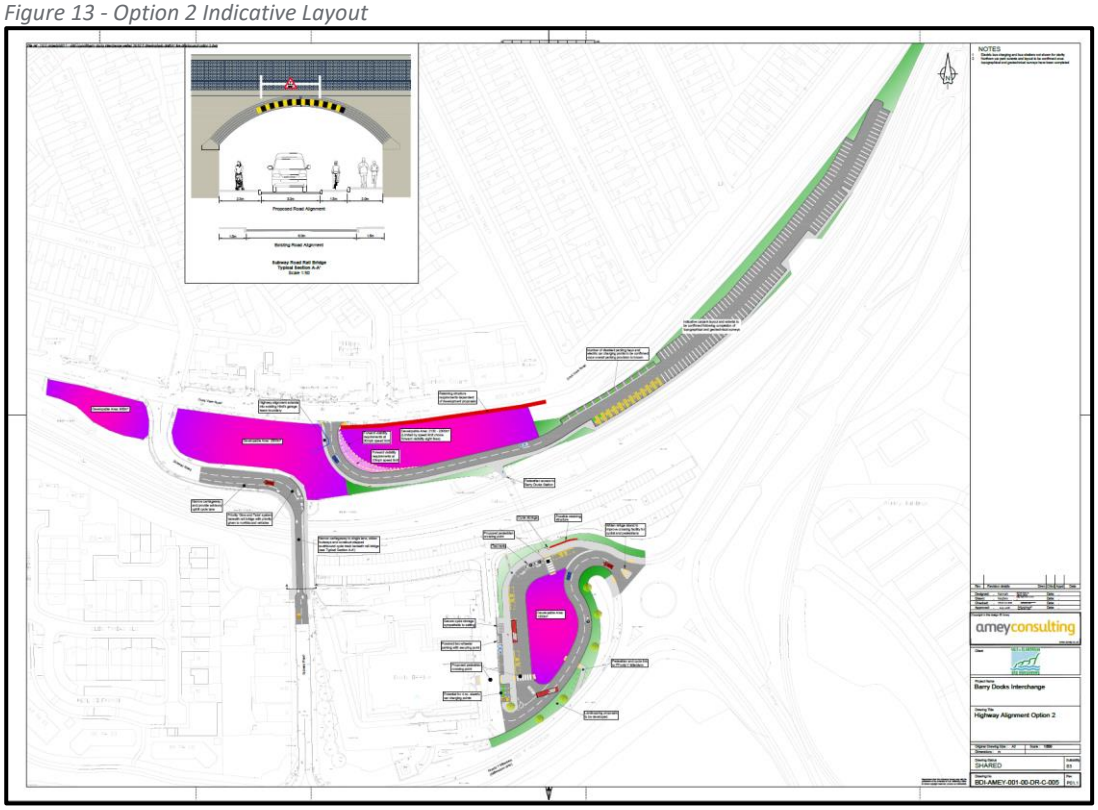


Figure 12 - Option 1a Indicative Layout (including layby on northern access road)



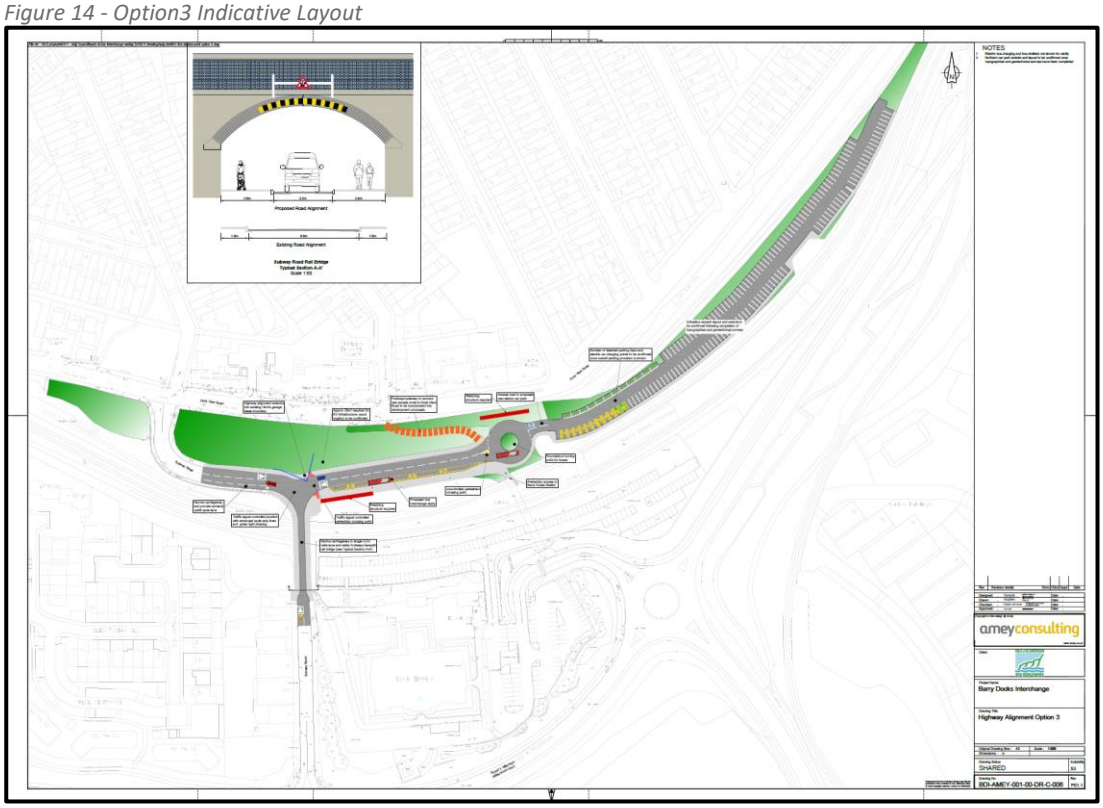
- *Option 2* - Bus Interchange (to be located south of Station on part of Docks Offices Car Park), additional Park & Ride (to be located north of Station platform) and Residential Uses possibly with a Commercial Use (to be located north west of station);

Figure 13 - Option 2 Indicative Layout



- *Option 3* – Bus Interchange (to be located north west of station) and additional Park & Ride (too be located north of Station platform) i.e. no residential or commercial uses.

Figure 14 - Option3 Indicative Layout



Improving Barry Docks Station will play a significant role in supporting the ongoing development and regeneration of Barry. It will help shape the public realm by establishing an improved physical environment linking the residential areas to the north of the station with the Waterfront development to the south. It will improve, the sustainable transport links required to access employment sites both within Barry and the wider Cardiff Capital Region (CCR). Improved sustainable transport links will also support town centre regeneration and accommodate the movement of tourist/visitors who frequent Barry Island each year. Together the improvements will reduce congestion on arterial roads and carbon emissions within the town, whilst also attracting new housing and business development, new visitors and opening up access to employment in the area.

However, the Barry Docks Transport Interchange is regarded as only the first step in Barry Docks becoming a key gateway to Barry Town. Over time it is envisaged that further development will build on the foundations this will provide to establish a more comprehensive mobility hub at the station, encompassing all modes and to further enhance the station experience for all potential users. It will also be at this later stage that any housing and commercial development, if considered feasible, will be brought about. This longer-term vision for Barry Docks Station incorporates:

- To repurpose Barry Docks station as a key gateway for Barry, its town centre, employment opportunities and attractions;
- To improve access routes to/from the station in order to increase the use of rail services as a sustainable means to access employment opportunities and other services, in the town and the wider Cardiff Capital Region;
- To develop Barry Docks as a Mobility Hub, delivering an integrated network of sustainable transport solutions to provide a wider range of sustainable transport alternatives to those seeking access to/from the station;
- To incorporate other transport and non-transport related facilities within the Mobility Hub, including housing/social housing, retail/commercial use and for example, a combined business and cycle hub;
- To integrate and align the Mobility Hub services with the wider transport network for Barry, facilitating co-ordination and seamless interchange between all modes; and
- To bring the vision about, over time, ensuring each development stage provides the foundations required for the next and taking account of the land use allocations necessary to achieve the ultimate, overall, vision.

3.5. Development Stages

The following development stages are envisaged to bring about this overall vision (see options appraisal for further details on the choices made for the options specified in the study brief):

Stage 1, Current Proposal – Establish Barry Docks as a Transport Interchange

- Extend Park & Ride capacity (additional spaces - North);
- A Bus Interchange (Up to 4 bays – probably South);
- A Taxi Interchange (Up to 2 bays – probably South);
- Improved/Revised Docks Offices Parking Layout (South – circa 63 spaces removed and relocated North);
- Ducting/draw ropes/socketed bases for Electric Vehicle charge point/s (Bus, Taxi & Cars);
- EV charging Terminals (up to 50% of the number required for car and taxi long term)
- Improvements to Road tunnel (Subway Rd);

- Aesthetic improvements to Pedestrian Subway (Station platform access);
- Improved pedestrian, cycle and vehicular access along Subway Road (including priority signals through tunnel);
- Improved northern Access Point to the Station (Car, Cycle & Pedestrian - off Subway/Dock View Rd);
- Improved Pedestrian access into southern access to the Station);
- Improved Car Park Walk/Cycle through routes within station confines (all directions);
- Improved Signage (within station confines);
- Improved Seating, Lighting and Security measures (within station confines);
- Improved aesthetic and environment surrounding the station;
- Wayfinding signage for active travel routes to/from the station, from 2021;
- Rail service improvements:
  - New Tri-mode trains to be introduced on Vale of Glamorgan line from 2023, increasing capacity from 2/3 carriages per train to 3/4 carriages per train;
  - Additional train/hr between Cardiff & Bridgend, via Barry Docks, Mon to Sat from 2023;
  - Additional train/hr between Cardiff & Bridgend, via Barry Docks, Sundays, from 2024.

Stage 2, Short/Medium Term – Complimentary Rail Service & Infrastructure improvements in surrounds

- Further station and surrounding area infrastructure improvements:
- Improvements to active travel routes between the station and town centre and within the surrounding residential areas, including in particular to the north/north east of the station;
- Barry Bus network review and service improvements, including additional/amended routes to serve Barry Docks Interchange and the Waterfront development;
- Review and revise the alignment/permeability of Barry Town with Barry Docks to consolidate the station gateway role;
- Discussions with developers & suppliers re Housing development, Commercial uses, electric cycle/scooter provision, CAV/EV vehicle hire, etc, at Barry Docks;
- Establish new development as a potential source of sec 106/in kind match funds to CCR, City Deal or other potential funding sources for further station improvements.

Stage 3, Medium/Long Term – Barry Docks as a comprehensive Mobility Hub

- Improvements to station facilities – café, toilets, changing room, Wi-Fi, CCTV, waiting room, seating, RTI, ticket office, staffing, etc;
- Establish a Cycle Hub at Barry Docks (offering cycle repairs, electric cycle hire, secure cycle parking, cycle equipment, lockers, etc);
- Install remaining EV charging terminals (Bus, Taxi, P&R/car, Bicycle, scooters, motorbike, mobility scooters);
- Consideration of further improvements to Pedestrian subway, including examining the feasibility of re-profiling the ramp with a 'landing' to break the gradient/better align this with DDA standards;
- (Social) Housing development (to the north of the station);

- Commercial development (to the north of the station);
- Development of Buildings for community use (to the north of the station);
- Direct link from through routes to the South of the station to active travel routes to Barry Waterfront (including link road) and Town Centre;
- Consideration of options to provide a direct link to active travel routes to the town centre and within the residential areas surrounding this;
- Consideration of options for Controlled/Signalised crossings on Barry Docks View Rd and Ffordd y Milenywm to active travel routes;
- Sustainable transport link (ie Road Train, Heritage Rail) between Barry Docks and Barry Island, potentially via Barry Waterfront;
- Further increase car park/park and ride capacity;
- Consideration of options for a shared path, alongside railway, from medical centre bridge to station platforms and from this bridge to town centre.

This business case is to support Stage 1 of the vision, the current proposal, to establish the Transport Interchange that will meet significant and increasing passenger demand now, current local, regional and national objectives and also provide the foundations for future development. In so doing it will consider the land allocations necessary for further development, enable consideration of the land purchase required to facilitate this and provide a preliminary, high level, Station Masterplan for the future development stages envisaged.

This in turn will inform the future discussions required with developers and service providers to establish interest in these partnering with the Council to bring forward the complimentary transport and non-transport related infrastructure to extend the station from the initial transport interchange envisaged, to a comprehensive mobility hub and gateway to the town.

4. Strategic Case

4.1. Introduction

This Strategic Case establishes a case for change, based on ambitious imperatives for encouraging and accommodating increased demand for the use of rail services both to and from Barry Docks station. This is set out in the context of national, regional and local policies, including those relating to economic and housing growth and the effectiveness and efficiency of the transport network in supporting this growth. Objectives and critical success factors are defined in the context of stakeholder requirements to identify and select the preferred initiatives to take forward and a causal chain and logic map are provided to summarise the project and frame its appraisal, respectively.

4.2. Background

Barry is the administrative centre of the Vale of Glamorgan (VoG) and is identified as a 'key settlement' in the Wales Spatial Plan in recognition of its place in the South East Wales Capital Region. The current Vale of Glamorgan, Local Development Plan, 2011/26 (LDP) focuses on maintaining and enhancing the town's role as an important service centre for the Council by exploiting its strategic road and rail links as well as its attractive coastal location.

In 2010, the Welsh Government designated Barry as a Regeneration Area to help co-ordinate regeneration activities and to encourage engagement with relevant interested parties. The Barry Regeneration Partnership Board identified skills and employment as the overarching theme and agreed two objectives for the programme:

- Supporting the development of Barry as an attractive place to live; and
- Supporting the development of Barry Island as a destination primarily for activity-based day trips.

Powell Dobson Urbanists ("the Urbanists") were subsequently commissioned by the Vale of Glamorgan Council and produced a report "Barry Town Centre – Framework for Future Public Realm Improvements". Completed in early 2010, the Framework provided various ideas for regeneration of the town in the form of public realm sketch proposals for enhancing:

- Thompson Street;
- Gladstone Road Roundabout junction; and
- Dock View Road.

This provided the basis for the Barry Gateway Regeneration plan which outlined a range of proposals to improve the town, including identifying both Dock View Road to the south of the town centre and the Gladstone Road area to the north as key gateways to the town. In regard to Barry Docks the plan identified a need to "*Unlock the development of a key site identified in the Local Development Plan at Barry Dock Station for a mix of uses including a bus interchange*". During 2011/12 the Council successfully implemented the Thompson Street Public Realm Improvement Project which included providing a footbridge at the end Thompson Street across Dock View Rd and the rail line to the newly built Waterfront Medical Centre, 250m to the west of Barry Docks station. From the medical centre the bridge also links to footpaths alongside roads leading to Ffordd Y Mileniwm, offering a direct active travel route from Thompson St to the Waterfront area.

At this time the Council were also successful in obtaining funds to establish a Park and Ride car park at Barry Docks station. Prior to this there was no station car park available with users parking on roads around the station and in nearby town centre car parks. Jacobs Consultancy were commissioned and in April 2010 provided a proposal for a scheme that took some of the parking spaces from around the Docks Offices that were dedicated for use by council staff and converted these to Park and Ride spaces. This was combined with construction of a car park on a raised platform just south of the rail line to provide further Park and Ride spaces at its eastern end and at its western end, spaces to replace the council staff parking. Together this created 101 Park and Ride spaces at the station. No charge was introduced for the parking and this remains the case today. Also, over time dedicated car park spaces for council staff, both at the Docks Offices and on the car park

platform, have been released and all 241 spaces (132 on the raised platform and 109 at the Docks Offices) are now available to council and rail users on a first come first served basis.

The Council have also been successful in obtaining funds or establishing investment for other developments within the town identified initially in the Regeneration Plan or subsequently the Barry Waterfront Regeneration scheme and overarching Local Development Plan. This regeneration of the town is ongoing, in line with the LDP objective to make the town a key residential and service centre for the county. Key elements include improvements to the town centre, Barry Island and Barry Waterfront, as described below. There is also continuing housing and commercial development on various brownfield sites throughout the town.

Over recent years there have been various schemes and initiatives to improve and promote the Town Centre. As part of the Castleland Renewal Project, around £600,000 of Council funds was spent on upgrading the shop fronts of commercial properties on Holton Road and there has been nearly £1 million spent on extensive refurbishment of residential properties to improve the overall appearance of the area. There has also recently been major work carried out to upgrade infrastructure at Holton Road, which involved the road and pavements being resurfaced, kerbs re-laid, and safer crossing points installed.

Another key element in the regeneration of Barry has been to maximise opportunities for new visitor and tourist facilities at Whitmore Bay, Barry Island for the benefit of both residents and visitors to the area. Barry Island seafront and Whitmore Bay are recognised as the main tourist destinations within the Vale of Glamorgan. The resort is well known throughout the Valleys of South Wales, South East England and the West Midlands from which historically a high proportion of visitors are drawn. The resort's main attractions include the beach, Barry Island Pleasure Park, other smaller attractions and numerous amusements, cafes and bars. Housing development and other improvements have sought to change the perception of the area from that of a traditional seaside resort to a modern residential, leisure and visitor attraction. Despite having to face major market changes and ever increasing demands the area continues to attract an estimated 300,000 visitors per year.

In July 2011, the Vale of Glamorgan Council approved plans for a £230m development of the Waterfront area, including the redevelopment of West Pond/South Quay, East Quay and Arno Quay areas of the old docks. Land at Barry Waterfront is allocated for the development of 1,700 new affordable and private dwellings, 5,824 sqm (net) new retail floorspace, a hotel, cafe, bars and restaurants, offices (class B1), community, leisure and education facilities. The Waterfront development will facilitate improved transport connections between the wider town and Barry Island. As a first stage to this a new link road to Barry Island incorporating new walk and cycle routes has been provided. Over time it is anticipated a waterfront café quarter will be established as well as further expansion of the residential area to some 2,000 houses.

In October 2017 the Welsh Government launched a capital regeneration programme known as Targeted Regeneration Investment (TRI), for the three-year period 2018/19-2020/21. Under the programme local authorities, along with their partner organisations, can apply for capital investment for projects that promote economic regeneration and serve the aims of wider sustainable development, with activities focussed at individuals and areas of need. The TRI programme targets a small number of Regeneration Areas, including Barry, identified in the South East Wales Regional Plan for Regeneration, approved by WG in September 2018. Taking advantage of this funding the Council have focused on bringing forward regeneration initiatives in the vicinity of the Gladstone Road Roundabout Junction and Dock View Road, specified as:

- Dock View Road Regeneration Area; and
- Gladstone Road Regeneration Area;

Within the Dock View Road Regeneration Area, the Council has identified the need to comprehensively regenerate land in the vicinity of Barry Docks Railway Station, as an important gateway to the town centre and Waterfront. They recognise that much of the land alongside the station is semi derelict and in a poor environmental condition, thereby providing a poor first impression of Barry. To address this, they propose a master planned bus interchange and additional Park and Ride, potentially including new residential and commercial development sites. This is seen as offering an opportunity to bring forward £multi-million investment that will help transform the area and create a positive first impression of the town.

In 2019/20 the Council commissioned this business case to support a bid to the Cardiff Capital Region, Metro Plus 1, Regional Transport Authority programme seeking funds to bring about the Transport Interchange and additional Park and Ride capacity. Alongside this they are in discussions with WG about a potential bid to their Targeted Regeneration Investment Programme (TRIP)[5] to support housing and commercial development at Barry Docks. However, the scope for this development is dependent on surveys confirming the derelict land available to the north of the station is suitable for development and the capacity it offers to accommodate housing/commercial development alongside provision of the Transport Interchange and car parking required. Together this is the subject of a high-level masterplan for the station required in conjunction with the business case/s and is therefore included as part of the same commission.

At the time of producing this OBC, unfortunately, it has not been possible to complete geotechnical surveys of the land to the north of the station where it is envisaged that housing and commercial development may be located. This is in part due to Covid delaying access to the site and then once access was obtained slow worms being identified and it being necessary to await the end of their hibernation before undertaking the geotechnical surveys. The surveys will now take place under an environmental watching brief and without using any vehicular plant, at the end of March of 2021. A topographic survey was able to be undertaken in December 2020. However, this alone is not adequate to give the assurance required to demonstrate the feasibility of the construction of housing or commercial development.

4.3. Barry Docks Station Masterplan

Based on the topographic survey data indicative, draft, high level, masterplans have been drawn up for the specified scheme Options 1 to 3, plus an alternative option 1. This alternative (Option 1a) includes a bus and taxi layby on the access road to the additional parking to the north of the station. As this doesn't impact the strategic benefits it isn't included in the analysis against these. However, it does impact scheme delivery and hence is included in the Financial and Transport Case and the options appraisal within the latter.

The masterplan drawings provide indicative numbers for the housing that could be built on the potentially developable land and identify the scope for commercial development, depending on the outcome of the options appraisal for the Transport Interchange. Pending the outcome of geotechnical surveys, a decision will be made on which of the overall masterplans for the station to develop further at FBC stage, although it should be noted that surveys may yet point to the land not being suitable or there not being the capacity envisaged to accommodate housing and commercial development at the station. To date, four alternatives have been drafted, two (options 1 & 1A) relating to the Transport Interchange Option 1, one relating to the Transport Interchange Option 2 and one relating to the Transport Interchange Option 3. The drawings for each of the options are provided below. In addition, a masterplan drawing for a Transport Interchange to the south of the station platforms is provided, based on this being the likely preferred scheme option to take forward to FBC.

[5] https://gov.wales/support-improve-town-centres/targeted-regeneration-investment-programme

Figure 15 - Masterplan Option 1 (88 units, 73885sq/ft)

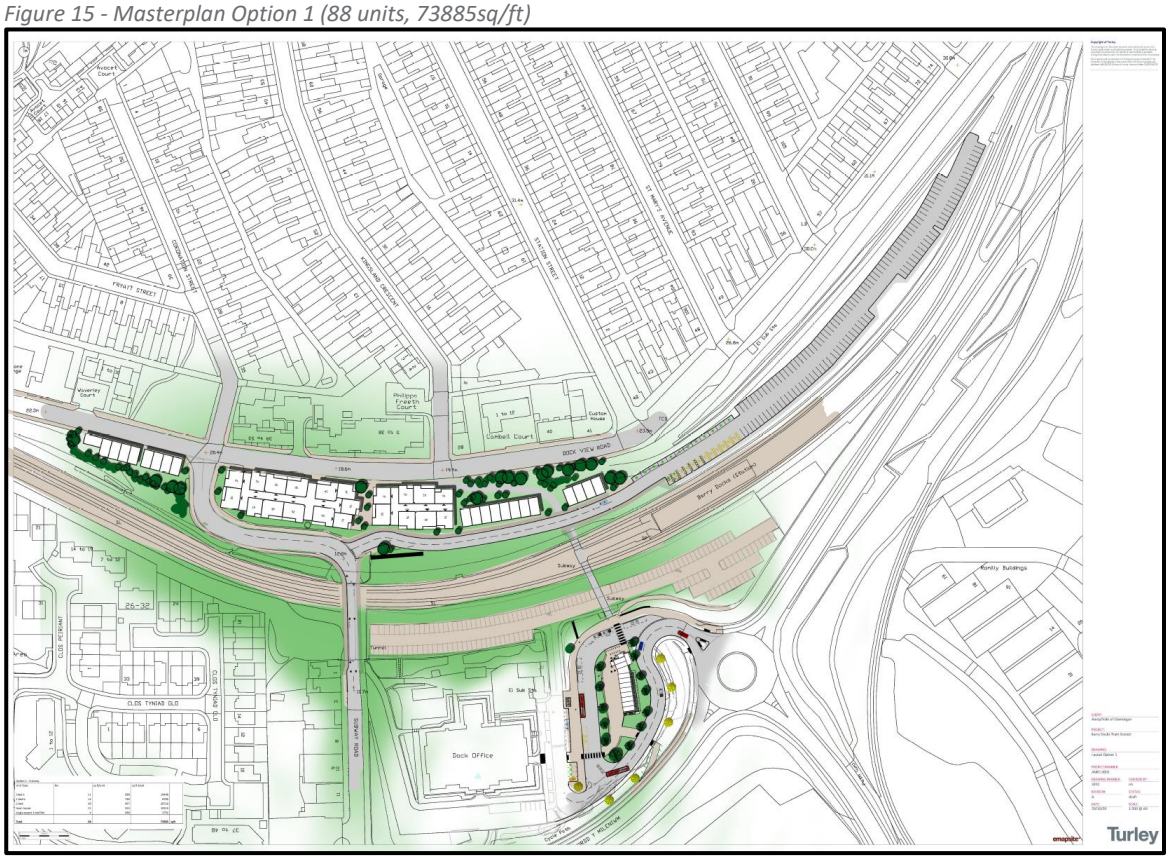


Figure 16 - Masterplan Option 1a (56 units, 48,162sq/ft)

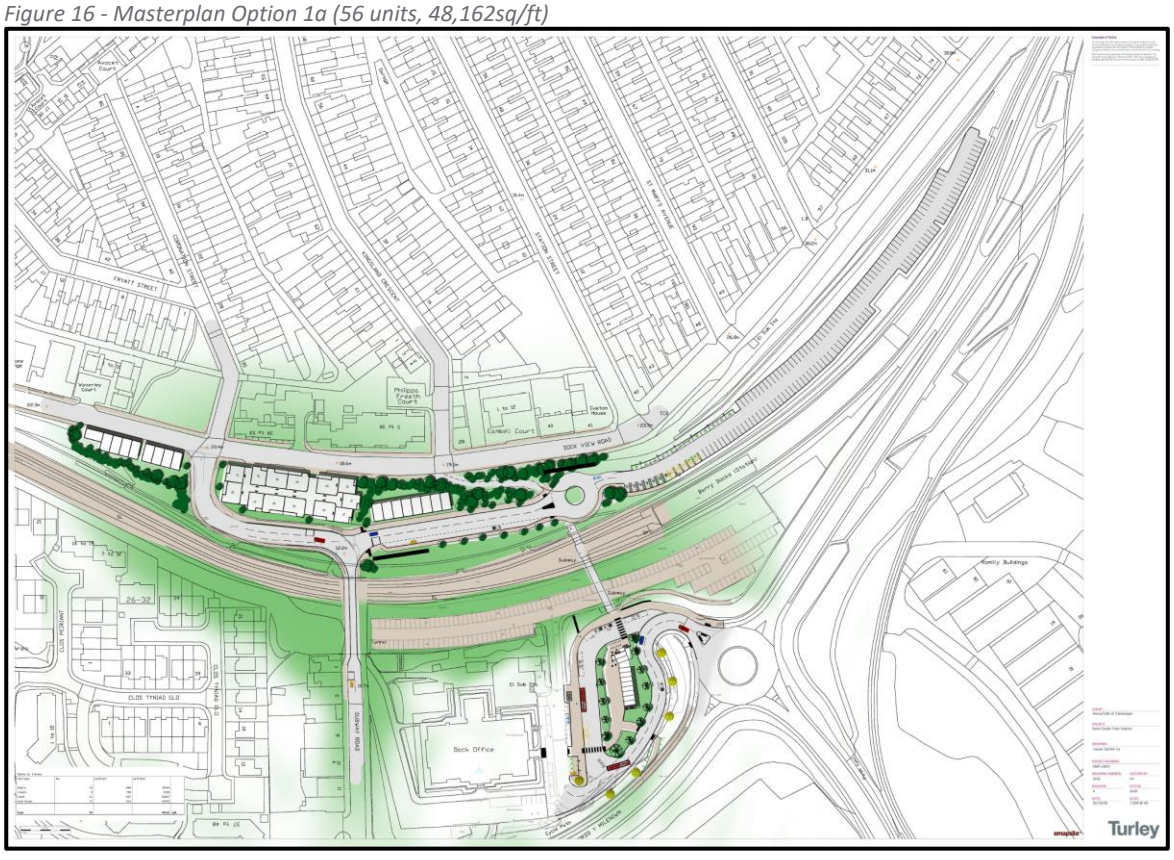


Figure 17 - Masterplan Option 2 (99 units, 79,410sq/ft)

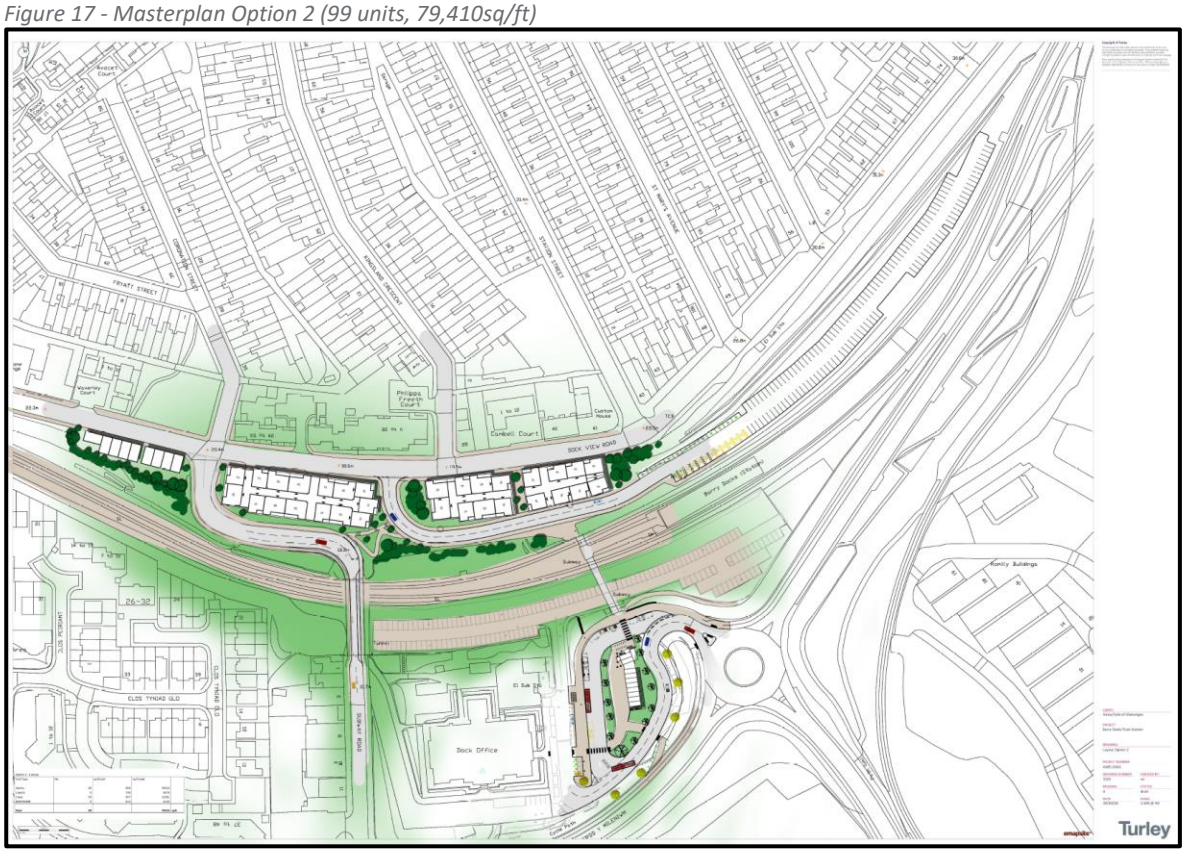


Figure 18 - Masterplan Option 3 (62 units, 53,223sq/ft)

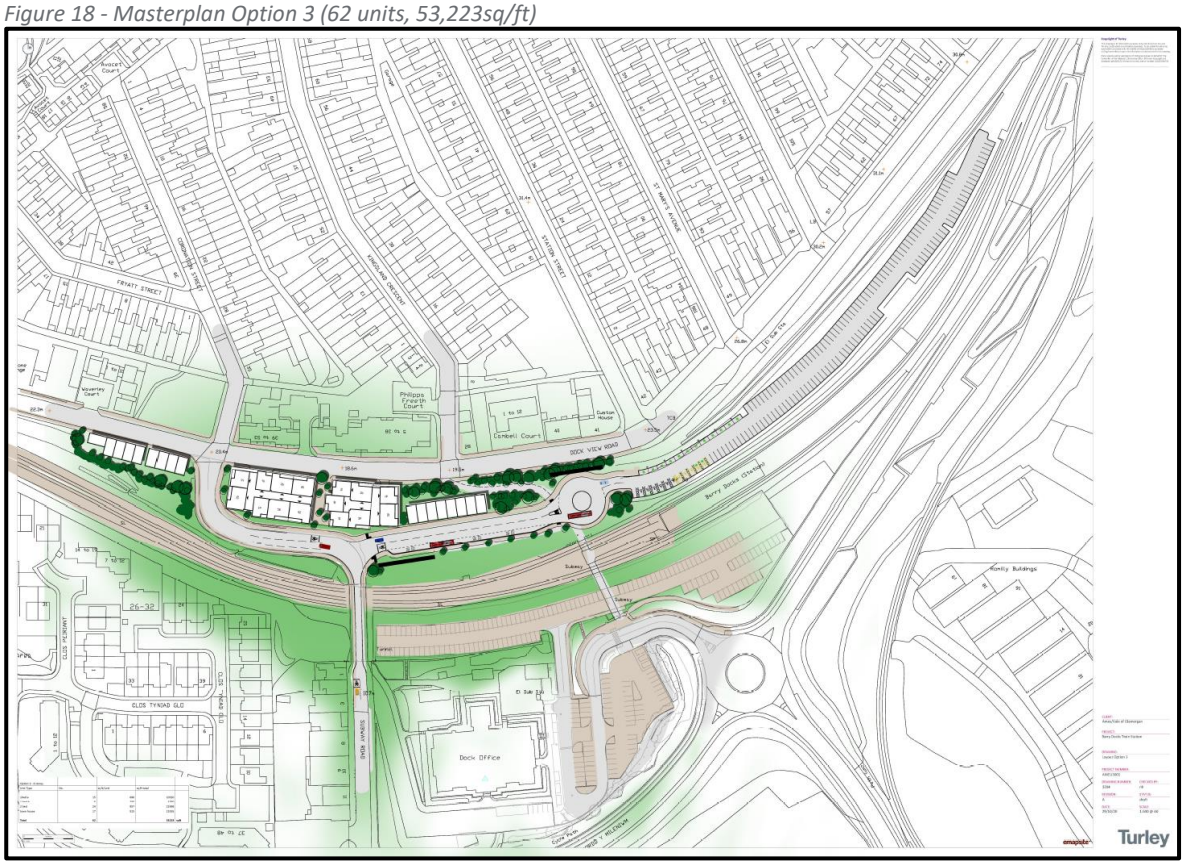


Figure 19 - Masterplan Transport Interchange (south)

4.4. Strategic Context

4.4.1 Policy Overview

A detailed summary of all relevant national, regional and local policies and strategies is provided in Appendix A to this business case.

The overarching policy, strategic development and planning framework for Wales is formed by Welsh Government. This sets out the requirements for growth across the country, whilst taking account of the need to improve well-being for residents and ensure growth is sustainable. The overriding theme of national transport policy is that the local transport systems must support growth in the economy through connectivity, capacity and sustainability. Regional and Local policy supports the thrust of the national policies, highlighting that the development of housing, employment and the key logistics hubs and corridors aligned with this will play a crucial role in meeting the growth vision.

Of particular importance at a regional level are the plans for Cardiff Capital Region and within this the City Deal and South Wales Metro, being brought about with support from both UK and Welsh Government. At a local level, the key overarching strategies are the Local Development Plan (LDP) and the well-being plans of the Vale of Glamorgan Partnership Board and Vale of Glamorgan Council. Transport strategy, including the need for improvements to Barry Docks Station, is provided through the Vale of Glamorgan Local Transport Plan.

The work undertaken, to date, that led to the Barry Docks Transport Interchange being included in the LDP has been accepted by CCR and WG as meeting the requirements for producing an SOBC for the scheme. This in turn led to the scheme being listed as one of the schemes expected to be funded through the CCR, Metro Plus 1, Regional Transport Authority programme as follows:

'A bus and rail interchange at Barry, complete with four to five bus bays, provision for taxis and the potential extension of the existing Park and Ride site'.

4.4.2 The Vale of Glamorgan Local Development Plan, 2011 to 2026

The Local Development Plan provides the framework for sustainable development within the Vale of Glamorgan up to 2026, guiding growth in the Vale of Glamorgan over a fifteen-year period. It identifies the infrastructure needs of the communities within the Vale of Glamorgan, in terms of employment, facilities and services needed to support that growth.

The LDP demonstrates the essential role that the Vale of Glamorgan plays in the success of the wider Cardiff City-Region Area and highlights the proposals for Barry Docks to become a key transport interchange and gateway to the town. Alongside this, the council has identified an integrated and phased approach to the redevelopment and improvement of Barry Dock Station commencing with the Transport Interchange and then enhancing this by linking it to transport developments in the surrounding areas and providing homes and commercial development alongside it. Prior to this, initial phases have resulted in the upgrading of the station platforms and the construction of a new strategic footbridge linking Thompson Street to the Holton Reach site on Barry Waterfront. Supported by the Welsh Government and the South East Wales Transport Alliance a Park and Ride site was also completed at Barry Docks station. However, this has now reached capacity and requires expanding.

Overall, the LDP Strategy seeks to promote new development opportunities in the 'South East Zone' of the county, which is inclusive of Barry. Whilst the Barry Docks Transport Interchange scheme will complement the public transport routes and provision of new facilities for walking, cycling and rail surrounding the station, it will also further integrate Barry Town centre with the surrounding area. For example, the station will link Barry's economic assets such as Barry town centre and MoD St Athan to the proposed housing developments in areas such as Barry Waterfront, Llantwit Major, Dinas Powys and the Rural Vale. It will also link the station to key employment sites within Barry, Cowbridge, Penarth and Cardiff International Airport and its surrounding enterprise zone and to retail developments in Barry Town Centre.

It is envisaged that the development proposed for Barry will help to provide new and improved community services and facilities and create new local affordable housing and employment opportunities during the LDP period. In order to ensure the successful delivery of the LDP Strategy, specific area objectives have been identified for the key settlement of Barry. These objectives provide a framework for Managing Development and Growth in the area.

The objectives for Barry include:

- Create new employment, training and learning opportunities to support existing businesses and encourage appropriate economic development and inward investment to further the regeneration of Barry;
- Provide new opportunities for enhanced community services, facilities, public realm and infrastructure to support the important role of Barry, both locally and regionally, as a key settlement;
- Improve the existing housing stock through continued investment in area-based renewal and promote a range and choice of new housing, particularly affordable housing given the high level of need identified in Barry;
- Support the Welsh Government's Tackling Poverty agenda through 'Communities First' working with residents, community organisations, business and other key agencies, leading to the long-term sustainability and wellbeing of communities;
- Improve access to and within Barry, through strategic and local highway improvements and a range of sustainable transport measures, which will support regeneration whilst at the same time effectively managing congestion on the town's main arterial roads;
- Improve walking and cycling links between the town centre, the Waterfront and Barry Island;
- Promote continued investment and environmental enhancement in Barry's retail centres, particularly Holton Road and High Street to reinforce their vitality, viability and attractiveness, whilst at the same time encouraging the beneficial use of retail premises upper floors;
- Promote Whitmore Bay and Barry Waterfront as all year-round attractive tourism and leisure destinations by encouraging a range of high quality serviced accommodation, all weather attractions, improved visitor facilities and event led tourism; and
- Favour development proposals which assist the long-term viability of Barry's Port to facilitate the efficient and reliable movement of freight by sea.

All current development proposals within Barry, included in the LDP, that will be supported by the proposed Barry Docks Transport Interchange are illustrated on the map below. Each of the residential and economic developments are then listed in two tables following this, respectively, based on the number given to each on the map, together with their predicted impact on demand for rail services from Barry Docks.

Figure 20 - Proposed Development sites in Barry

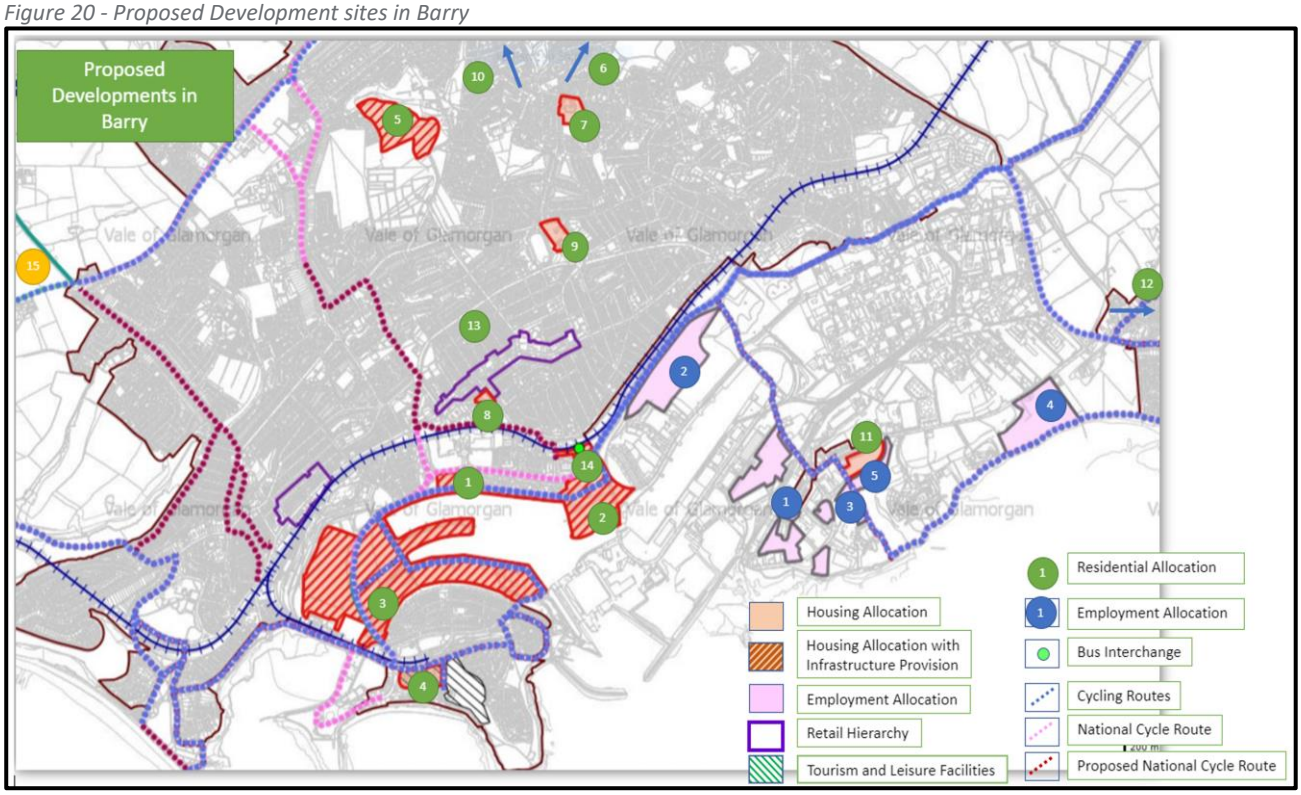


Table 7 - Table of Proposed Residential Development Sites in Barry

	Projects	Status	Predicted Impact	Project Details
1	Waterfront Development – Arno Quay MG2 (1)	Completed	High due to proximity to Barry Docks	0.8 Ha - 75-200 Residential Units
2	Waterfront Development – East Quay MG2 (1)	Started (groundworks only)	High due to proximity to Barry Docks	3.1 Ha - 175 – 450 Residential Units; 130 sqm of A3 uses; Potential Site for Barry College and Primary School
3	Waterfront Development – South Quay, West Pond, District Centre MG2 (1)	Almost Complete	Medium as between Barry and Barry Docks	> 19.5 Ha – 1150 – 1600 Residential Units; A1, B1, C1, D1, A3 Uses
4	Barry Island Pleasure Park MG2 (8)	Not Started	Low due to proximity to Barry Island Station	1.18 Ha - 25 Residential Units/ Mixed Use
5	White Farm MG2 (9)	Completed	Accounted in current population	12.1 Ha – 177 Residential Units
6	Residential Developments along Pencoedtre Lane, North East Barry MG2 (10) & MG2 (11)	Not Started	Low due to proximity of the location to Cadoxton	204 Residential Units (67 in east and 137 on west of the lane)
7	Ysgol Maes Dyfan MG2 (12)	Completed	Medium as between Cadoxton and Barry Docks	1.44 Ha – 81 Residential Units
8	Barry Magistrates Court MG2 (13)	Completed	Medium as between Cadoxton and Barry Docks	52 Residential Units
9	Court Road Depot MG2 (14)	Not Started	Medium as between Cadoxton and Barry Docks	1.6 Ha – 50 Residential Units
10	Holm View MG2 (15)	Started	Medium as far from Barry Docks station	1.2 Ha – 50 Residential Units
11	Hayes Wood, The Bendricks MG2 (16)	Started	Medium as between Cadoxton and Barry Docks	1.8 Ha – 55 Residential Units
12	Land West of Swanbridge Road, Sully MG2 (37)	Started	Medium as far from Barry Docks station	325 Residential Units
13	St. Pauls Avenue – Hafod Housing Association	Started	Medium as between Barry and Barry Docks	27 Flats
14	Residential Development, Subway Road	Started	High due to proximity to Barry Docks	72 Residential Units
15	Waycross Road Developments	Not Started	Low due to proximity of the location to Barry	710 Dwellings; 10 Ha Employment Use
16	Dock View Road – Newydd Housing Association	Not Started	High due to proximity to Barry Docks	28 Affordable Housing Units

There are 16 separate residential development sites in Barry identified as being supported by the Barry Docks Transport Interchange scheme. The majority are expected to have a medium (8) or high (4) impact on demand for rail services from the station. Together the sites provide for at least 53ha of land for up to 4,106 additional housing units in the town, between now and 2026. Based on the average household size in England and Wales, identified by the 2011 census, of 2.36 persons this is equivalent to the Transport Interchange supporting up to 9,690 additional Barry residents. With four of the development sites including mixed use the Transport Interchange will also support a new site for academic learning (circa 1,000 students) due to be established by Barry College and a primary school alongside this, at East Quay, as well as emerging employment opportunities at South Quay, Barry Island and Waycross Rd.

Table 8 - Table of Proposed Economic Development sites in Barry

	Projects	Status	Predicted Impact	Project Details
1	Proposed Employment Location (Atlantic Trading Estate) MG9 (4)	2025	Medium as closer to Cadoxton	9.14 Ha – B1/ B2/ B8 Use
2	Proposed Employment Location (Land at Ffordd y Mileniwm) MG9 (5)	Ongoing	High due to proximity to Barry Docks	8.9 Ha – B1/ B2/ B8 Use
3	Proposed Employment Location (Hayes Wood, Barry) MG9 (6)	Ongoing	Medium as closer to Cadoxton	1.4 Ha – B1/ B8
4	Proposed Employment Location (Hayes Road, Sully) MG9 (7)	Current: Residential; Might be re-assessed	Medium as closer to Cadoxton	7.5 Ha – B1/ B8
5	Proposed Employment Location (Hayes Wood) MG9 (8)	Ongoing	Medium as closer to Cadoxton	1.9 Ha – B1/ B8
6	Town Centre Regeneration	Ongoing	Low	Low impact on demand

There are 6 separate economic development sites in Barry identified as being supported by the Barry Docks Transport Interchange scheme. The majority are expected to have a medium (4) or high (1) impact on demand for rail services from the station. Together these sites provide for 28.84ha of employment use.

It should be noted that in addition to the above there are also proposals to expand services at Barry Hospital which is located next to the current Vale of Glamorgan College site on Colcot Rd, approximately 2km from Barry Docks station. This includes providing additional satellite services for mental health at community locations throughout the town. With the hospital serving the wider Rural Vale as well as Barry town residents some will be able to utilise the improved Barry Docks to access these services on a sustainable basis.

4.4.3 Rural Vale and Cardiff Capital Region

Rural Vale is identified as the rural surrounds to Barry found within the southern area of Vale of Glamorgan, to the east, north and west of the town. This in turn is part of and surrounded by the Cardiff Capital Region which is made up of 10 local authority areas, including the Vale of Glamorgan and Cardiff immediately to the east, Bridgend to the west and Rhondda Cynon Taf to the north of the county.

An improved Barry Docks station will provide improved sustainable transport access for Barry residents to an increasing range of employment opportunities being developed in the Rural Vale and wider Cardiff Capital region. In particular increased Park and Ride capacity at the station will encourage greater use of rail services to access this employment sustainably and as a consequence reduce traffic congestion in the area, in particular on the 3 key road corridors between Barry and Cardiff. Many existing and emerging employment sites in this area are located adjacent or close to the rail network, whilst CCR's plans for the South East Wales Metro will enhance the rail services and infrastructure available to improve the experience of rail users over the next 5 years and beyond. This includes extending provision on the Vale of Glamorgan line serving Barry from 4 trains an hour to 5 trains an hour on weekdays by 2023 and also on Sundays from 2024, as well as providing new trains.

The development sites in these areas identified as those most likely to be supported by the proposed Barry Docks Transport Interchange scheme are illustrated by the two maps below, the first identifying developments within Rural Vale and the other those proposed adjacent to rail stations for the wider Cardiff Capital Region. Two tables are also provided following each map, respectively. The first lists each economic development site in the Rural Vale numbered as per the preceding map, plus the total expected housing and economic development in Cardiff Capital Region (as item 8). The second lists each relevant development in the Cardiff Capital Region correlating with the lettering of sites on the preceding map and based on information drawn from the current Cardiff LDP, the relevant numbers of housing and jobs these are expected to generate.

Figure 21 - Proposed development sites in Rural Vale

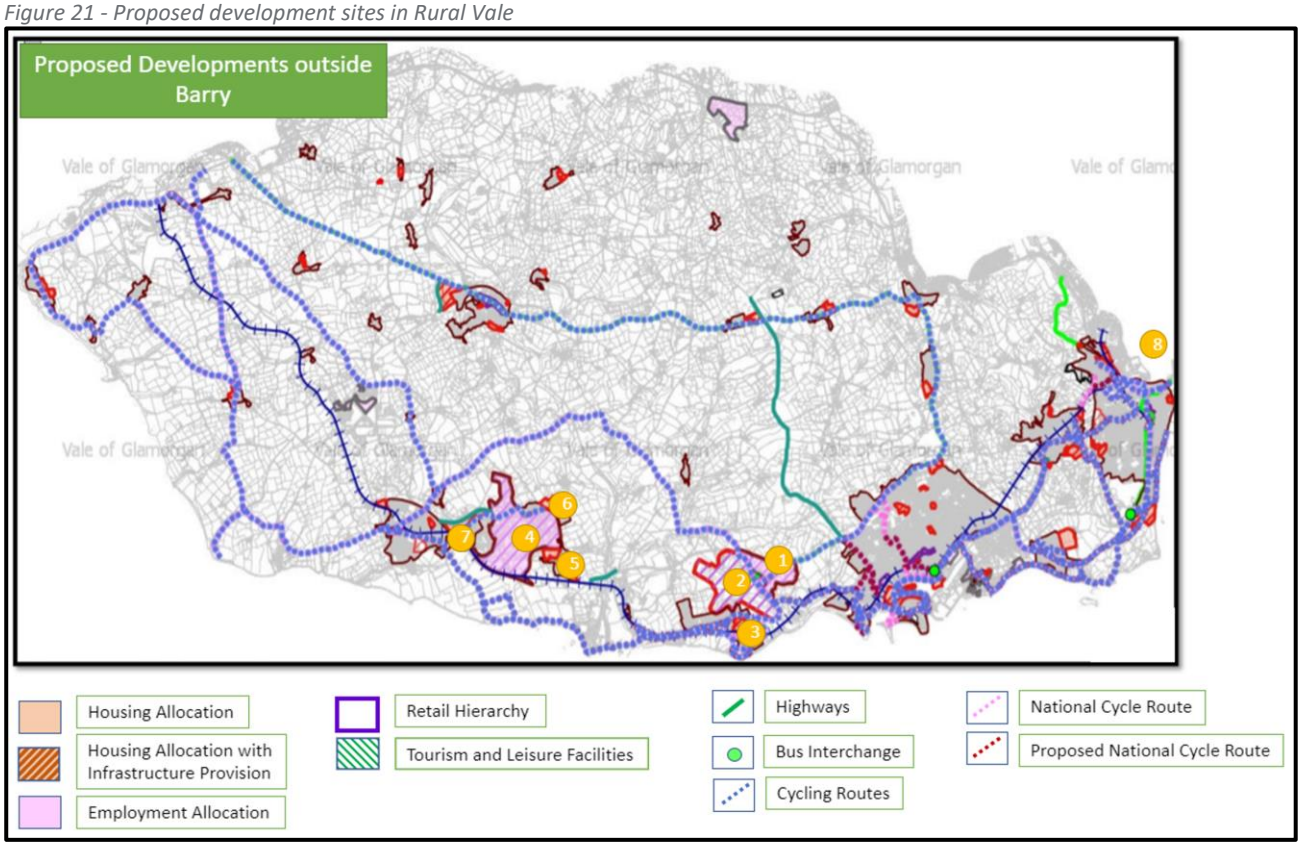


Table 9 - Table of Proposed Development sites in Rural Vale

	Projects	Status	Predicted Impact	Project Details
1	Cardiff and Vale College – New Campus MG 9 (2)	Not Started	Medium as an attraction zone	800 Students/ 90,000 sqft/ Part of St Athan – Cardiff Airport Enterprise Zone (77.4 Ha)
2	Cardiff International Airport MG 9 (2)	Not Started	Medium as an attraction zone	Part of St Athan – Cardiff Airport Enterprise Zone (77.4 Ha)
3	Residential Development around Rhoose Settlement MG 2 (35) MG 2 (36)	Started	Low due to proximity to Rhoose station	MG 2 (35) – 25.82 Ha - 700 Residential Units MG 2 (36) – 2.65 Ha - 87 Residential Units
4	Aerospace Business Park MG 9 (2), MG 9 (3)	Not Started	Medium as an attraction zone	Part of St Athan – Cardiff Airport Enterprise Zone (305 Ha)
5	Residential Developments in St. Athans MG 2 (2) MG 2 (3),	Started	Low due to proximity to Llantwit Major station	MG 2 (2) – 9.78 Ha – 220 Residential Units MG 2 (3) - 8.47 Ha – 250 Residential Units
6	Residential Developments in Eglwys-Brewis MG 2 (4), MG 2 (5)	Not Started	Low due to proximity to Llantwit Major station	MG 2 (4) - 2.2 Ha – 65 Residential Units MG 2 (5) – 10.9 Ha – 255 Residential Units
7	Residential Developments in Llantwit Major MG 2 (6), MG 2 (7),MG 2 (21) MG 2 (22), MG 2 (23)	Completed (21) & (22). Others Not Started	Low due to proximity to Llantwit Major station	MG 2 (6) – 4.4 Ha – 90 Residential Units MG 2 (7) – 15.8 Ha – 375 Residential Units MG 2 (21) – 4.4 Ha – 149 Residential Units MG 2 (22) – 2.4 Ha – 70 Residential Units MG 2 (23) – 2.41 Ha – 72 Residential Units
All	Cardiff Capital Developments	Ongoing	Medium as an attraction zone	14550 Houses; 13400 – 19200 Jobs

There are 7 separate development sites identified in Rural Vale that a Barry Docks Transport Interchange will support. Four of these are residential sites whose resident's sustainable access to Barry by rail will be enhanced by the Barry Docks Transport Interchange scheme. Two of the sites are economic development sites that will extend employment opportunities to residents. The final site is a new Vale of Glamorgan College site for vocational training that students will be able to access sustainably from Barry Docks, via Rhoose station and onward journey by bus. Together the residential sites will accommodate 2,333 new housing units or the equivalent of circa 5,506 additional residents. The two economic development sites will provide for 382.4ha of employment use and the new college site will accommodate circa 800 students.

It should also be noted that there are plans to significantly expand hospital services at the University Hospital site in Llandough, which is linked with Barry Hospital and also serves Barry and Rural Vale residents. Sustainable access from Barry Docks to the hospital by rail is available via Cogan rail station on the Vale of

Glamorgan line. Access to the hospital will be improved by provision of a Barry Docks Transport Interchange, especially if the hospital can establish the direct bus link from Cogan station to the hospital that they aspire to.

Figure 22 - Proposed Development sites in Cardiff Capital Region

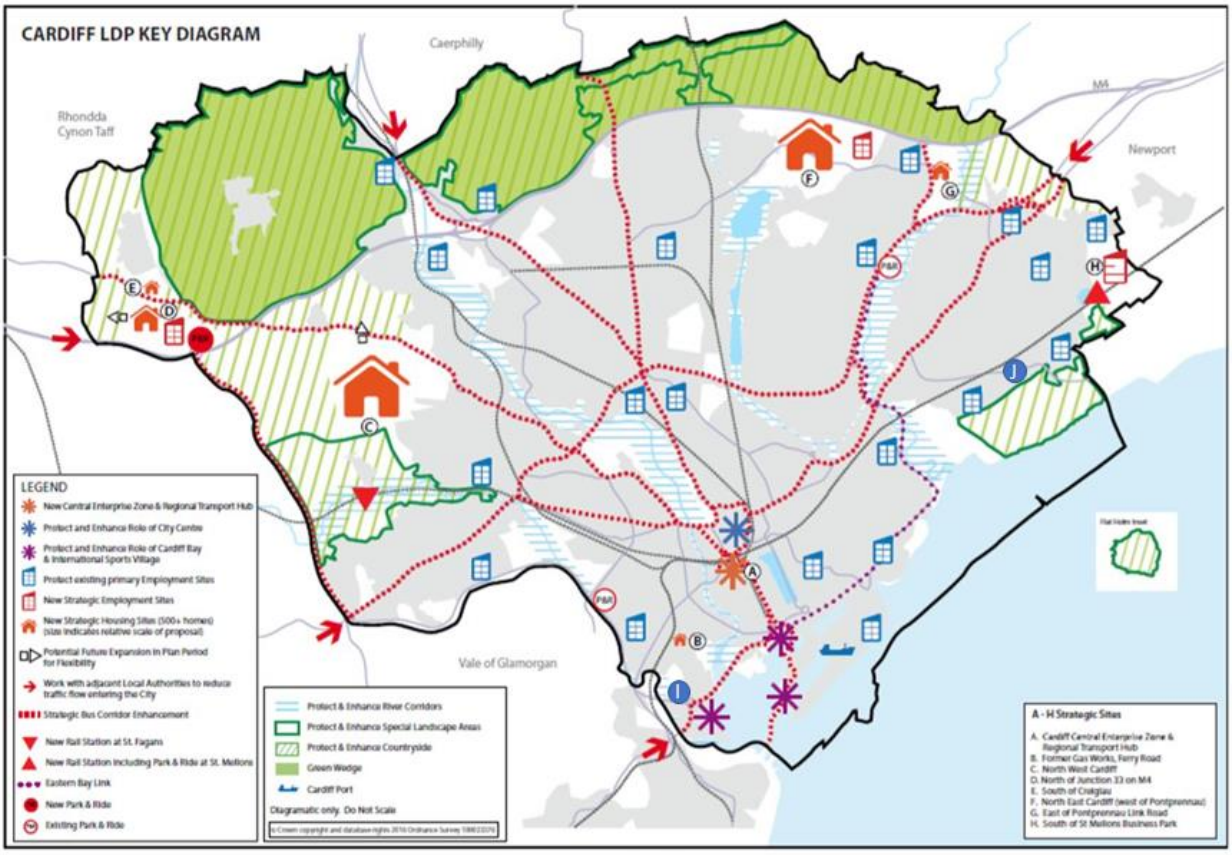


Table 10 - Table of Relevant Proposed CCR Development sites

A	Cardiff Central Enterprise Zone	2026	10,000 – 15,000 Jobs
B	Former Gas Works, Ferry Road	2026	500 Houses
C	North West Cardiff	2026	5000 Houses + 400 – 600 Jobs
D	North of J33 on M4/ Former Arjo Wiggins Paper Mill site, Canton	2026	800 Houses + 400 – 600 Jobs
E	South of Creigiau	2026	650 Houses
F	North East Cardiff (West of Pontprennau)	2026	4500 Houses + 800 – 1000 Jobs
G	East of Pontprennau Link Road	2026	1300 Houses
H	South of St Mellons Business Park	2026	1800 – 2000 Jobs
I	Sports Village site, Grangetown	2026	800 Houses +
J	Porth Teigr, Butetown (Roath Basin South)	2026	1000 Houses +
	Strategic Sites		14550 Houses; 13400 – 19200 Jobs
	Cardiff LDP 2026		41415 New Dwellings; 40000 Jobs

There are 10 development sites in the wider Cardiff Capital Region identified as potentially benefitting directly from provision of the Barry Docks Transport Interchange due to their proximity to rail services. Five are housing developments, three are mixed use sites and two are economic development sites generating jobs. Together these strategically relevant sites provide for up to 14,550 residential units, equivalent to circa 34,338 residents and up to 19,200 jobs.

4.5. Scheme Objectives

The policy and strategy objectives identified at national, regional and local level can be collated under the following headings:

- Economic objectives;
- Environmental objectives;
- Social objectives;
- Transport objectives; and
- Other objectives.

The infrastructure improvements envisaged for Barry Docks Station development as a transport interchange have been considered against the objectives under each of these heading using a Red, Amber, Green (RAG) analysis, as outlined in the table below. The scores allocated in the table are based on Green – 2, Amber – 1 and Red – 0.

The table illustrates that taxi facilities, the bus interchange, improvements to the northern access to the station and improved Park and Ride capacity, in that order, are those elements that best meet the overall policy and strategy objectives. However, all improvements meet a substantial number of objectives with electric vehicle charge points, improved pedestrian subway and improved car park walking routes, in that order, being the improvements next best meeting the objectives.

Only 3 of the overall policy and strategy objectives are not met in some way by at least one or more of the proposed infrastructure improvements. Those that aren't met – Give Children the best start in life, Minimise the need to travel and Facilitate the efficient and reliable movement of freight by sea are objectives the improvements wouldn't be expected to address, although it's possible they could eventually provide foundations for the latter.

Table 11 - RAG Analysis of Barry Docks Transport Interchange

Development Phase	Included in Barry Docks Transport Interchange												Included in Future Phase/s		
Scheme Elements	Park & Ride	Bus Interchange	Taxi Facilities	Council House Parking	Electric Vehicle chargepoint/s	Improved Road Tunnel	Improved Pedestrian Subway	Improved Northern Access Point	Improved Southern Access Point	Improved Car Park Walking Routes	Improved Signage	Improved Lighting	Sustainable Link to Barry Island	Housing development	Commercial development
Economic Objectives															
Wales as a Networked City Region															
Ambitious															
Attracting Inward Investment															
Buildig Capacity for Growth															
Making efficient use of Resources															
Increasing Learning & Upskilling															
Promoting Innovation															
Growing the Economy/Increased GVA															
Improving Productivity															
Increasing Competitiveness															
New Jobs Created															
New Housing created															
Increased Prosperity															
Supporting Regeneration															
Supporting Business Clusters															
Expanding the Labour Market Catchment															
Meeting Cardiff City Deal KPI's (Jobs, GVA, Private Investment)															
Supporting strategic development sites; ie Access to Enterprise Zones and Airport															
Improve Barry Town as a Retail Centre															
Promoting Barry as an all year round attractive tourism and leisure destination															
Score	21	28	28	2	10	10	9	24	12	6	3	3	19	22	23
Environmental															
Combating Climate Change															
Protecting and Valuing the Environment															
Reducing Carbon Footprint															
Reduced greenhouse emmissions															
Minimising Noise															
Sustainable growth															
Promoting use of ULEV															
Promoting use of Electric Vehicles															
Improved Public Realm															
Score	16	18	18	4	18	2	8	8	8	2	8	2	16	12	4
Social															
Improving Health															
Healthy Environments															
Improved Well-being & Quality of Life															
Addressing an Ageing Society															
Inclusive, addressing inequalities															
Addressing Deprivation (Hot Spots)															
Tackling Poverty															
To give Children the Best Start in Life															
Enhanced local facilities															
Increased Community Participation															
Enhanced Community Services															
Safe & Secure															
Score	16	16	16	3	18	12	17	17	17	16	7	7	14	6	4
Transport															
Meeting Metro Plus, Phase 1 Criteria															
High Quality Integrated Network															
Accessible Environments															
New Transport Capacity (to cope with future demand)															
Connected - to commercial, social, leisure and education attractors															
Improved Access to Employment, Training, Education and Post 16 Education															
Improved Access to Health facilities															
Improved Access to Retail and Leisure															
Improved Access to Culture and Tourist sites															
Minimise Need to Travel															
Comparable public/private journey times															
Improved access to Public Transport															
Improved Public Transport															
Increased modal choice															
Interchages/Hubs (for all modes)															
Increased Service Co-ordination															
More Direct Services															
Better Pedestrian & Cycle Links to Public Transport Stations															
More reliable, affordable and attractive services															
Ensuring Access for All															
Improved Road Safety															
Aligned with Land Use Planing															
Reduced Car Dependency															
Reduced Congestion															
Reduced operational & maintenance costs															
Supporting Active Travel															
Supporting Freight Terminals															
Facilitate the efficient and reliable movement of freight by sea															
Taxis to be zero emmissions by 2028															
Transport as a Digital Communications Asset															
Enhanced Park and Ride with Electric Charge Points															
Enhanced local, regional, national & International Links															
Supporting CCR Key Hubs & Corridors															
Facilitating Sustainable access to Cardiff															
All Key Settlements linked to Cardiff or Newport by Public Transport															
Improved access to and within Barry															
Improve walking and cycling links between Barry town centre, the Waterfront and Barry Island.															
Score	54	56	60	50	42	46	47	59	56	43	40	45	50	33	29
Other															
Meeting WBFG Goals and 5 ways of Working															
Establishing a Clear Identity															
Resilient															
Increased Pride															
Modern															
Promoted															
Protected															
Private sector leverage															
Future Proofed/Long Term Sustainability															
Placemaking															
Collaborative/Partnership working															
Openess and Transparency															
Supporting a Vibrant Culture & Language															
Increased Digital Infrastructure															
Supporting Cardiff to Develop its Capital Functions															
Establishing CCR as a Global Gateway															
Score	28	31	31	28	32	28	28	30	28	28	28	28	30	30	30
Total Score	151	165	169	90	138	110	126	155	138	111	93	92	143	109	94

In order to ensure the Barry Docks Transport Interchange scheme addresses the core issues faced and hence meets the national, regional and local, policy and strategy, objectives it aims to support, five scheme specific objectives have been identified, as follows:

Objective A - To accommodate increasing rail demand both to and from Barry;

Objective B - To improve access to/from rail services by sustainable modes and increase access to Park and Ride from Barry Docks;

Objective C - To increase access to current and emerging employment opportunities for all;

Objective D – To support ongoing and future economic development throughout the region; and

Objective E – Placemaking to establish Barry Docks as a key gateway, including the foundations for further station development phases.

In addition to the above, there are two overriding imperatives which will be taken into account:

- Equality, in relation to meeting the provisions of the public sector duties are set out in the Equality Act 2010 (Statutory Duties) (Wales) Regulations 2011. Although these imperatives will be discharged through an Equality Impact Assessment it is important that the principles of the equality legislation, guidance and the Wellbeing of Future Generations Act are fully considered throughout the scheme design and delivery process; and
- Climate change impacts, in the light of the declaration of a Climate Emergency by both the Welsh Government and the Council. This is likely to require that any climate impacts of a scheme proposal are fully assessed and that this is reported as part of the governance procedures. In practice, this will be determined through the WelTAG assessment set out in the Transport Case.

In addition to these core objectives there are also objectives relating to the delivery of the infrastructure improvements that will be adopted, as follows:

- To provide a cost-effective solution to identified needs;
- To ensure infrastructure improvements are affordable, within available funding;
- To ensure solutions are deliverable;
- To ensure improvements are sustainable;
- To take account of interdependencies; and
- To ensure value for money

4.6. Critical Success Factors

To assist delivery of the scheme objectives a number of Critical Success Factors (CSF's) are defined.

Table 12 - Critical Success Factors

Key CSFs	Broad description	Specific Assessments
Strategic fit and need (Strategic Case)	**How well the scheme:**	
	Meets the need of the surrounding communities, businesses and visitors now and into the future	Delivery of additional car park capacity to accommodate increasing demand for Park and Ride Improved facilities for buses and taxis to enable seamless interchange between these and sustainable rail services

		Improvement to walk and cycle infrastructure to improve active travel access to the station
	Fits with wider strategic vision, programmes and projects;	Delivers against the vision set out in the Cardiff Capital Region, City Deal & Vale of Glamorgan LDP and LTP Improvements to access points to enhance the stations gateway role and open up land around the station for future development
	Delivers against Welsh Government imperatives as set out in the Wales Transport Strategy and National Transport Finance Plan	Meets the ambitions, including: Encouraging increased use of sustainable modes; Improving sustainable links and access between key settlements and development sites; Increasing access for all; Supports public transport and active travel improvements between Cardiff & Barry and Barry and local regions.
Value for Money (Economic Case)	**How well the scheme:**	
	Maximises the return on the required spend (benefits optimisation) in terms of economy, efficiency and effectiveness from both the perspective of the local authority and wider society.	Wide ranging benefits Quantitative and Qualitative Transport appraisal undertaken Infrastructure proposals offering value for money
	Minimises associated risks.	High level risk identification and management in place To be developed further at WelTAG Stage 3
Potential achievability (Management Case)	**How well the scheme:**	
	Is likely to be delivered in view of the organisation's ability to assimilate, adapt and respond to the required level of change	Infrastructure improvements programmed within available timescale Procurement using viable processes Design & delivery in conjunction with TfW & TOCS, Bus and Taxi operators and other Stakeholders
	Matches the level of available skills which are required for successful delivery.	Design and construction adequately resourced
Supply-side capacity and capability (Commercial Case)	**How well the scheme:**	
	Matches the ability of suppliers/service providers to deliver the required improvements	Design and construction programmed within available timescale
	Appeals to the supply-side.	Will utilise existing contractors through existing Vale of Glamorgan Council and potentially TfW frameworks
	How well the scheme:	

Potential affordability (Financial Case)	Meets the sourcing policy of the local authority	Assessment against Vale of Glamorgan sourcing policies
	Demonstrates the availability/reliability of additional funding sources that form part of bid	Potentially Vale of Glamorgan Council, TfW, CCR and private sector
	Leverages the resources of the private sector to sustain the investment trajectory in the long term	To be explored further at WelTAG stage 3 and future development phases
Sustainability	**How well the scheme provides long-term sustainability in terms of:**	
	Managing and improving local air quality and noise, including from transport;	Comprehensive assessment based on both quantitative and qualitative appraisal to WelTAG standards
	Provides Sustainable Drainage (SuDS);	Unlikely SUDS can be provided due to underlying clay soil - TBC via the Council SUDS Team at FBC stage Will meet planning policies and Natural Resources Wales (NRW) requirements
	Provides flood resilience in the context of ongoing climate change;	Meeting Planning policies and NRW requirements
	Reduces greenhouse gas emissions, including from transport;	Comprehensive assessment based on both quantitative and qualitative appraisal to WelTAG standards
	Improving the overall health and wellbeing of the communities, including the provision of active travel facilities; and	Meeting requirements of Well-being of Future Generations (Wales) Act 2015 & Active Travel (Wales) Act (2013)
	Ensuring inclusion, allowing all community members to benefit from the investment	Meeting Planning policies and corporate plans (ie Vale of Glamorgan Well-being Plan, Healthy Travel Charter, etc)

4.7. Rationale for Intervention

A Barry Docks Transport Interchange will play a significant role in meeting national, regional and local policy and strategy objectives. In particular, considering each of the overriding objectives in turn:

4.7.1 Economic objectives

The table below illustrates how the proposed Barry Docks Transport Interchange will support the potential growth in rail demand expected as a consequence of housing and economic development within Barry, the Rural Vale and the wider Cardiff Capital Region. It indicates that all improvements will impact fully or to some extent on new demand for travel both to and from Barry. The exceptions to this are the car park measures and any housing or commercial development, which will support travel from Barry to employment and service opportunities in the wider area but not inward travel to Barry.

Table 13 - Relevance of Infrastructure Improvements to Growth in Rail Demand

Development Phase	Included in Barry Docks Transport Interchange												Included in Future		
Facilitating Growth in Rail Demand as a result of:	Additional Park & Ride (North)	Bus Interchange	Taxi Interchange	Council House Parking (relocated)	Electric Vehicle chargepoints	Improved Road Tunnel	Improved Pedestrian Subway	Improved Northern Access Point (walk/cycle)	Improved Pedestrian Crossing/s (Sth)	Improved Car Park Walking Routes	Improved Signage	Improved Lighting	Sustainable Link to Barry Island	Housing development	Commercial development
Population Change															
Population Growth															
Behaviour Change - Toward Increased use of sustainable modes															
Barry Town Development															
Town Centre															
Barry Waterfront															
Barry Island/Whitby Bay															
Economic Development Sites															
Rural Vale Development															
Cardiff Airport															
Enterprise Zone															
Wider Regional Development															
Economic Development sites in proximity to rail															
Other Economic Development sites															
Abstraction															
From Barry (Town) Station															
From Barry Island															
From Cars Travelling to Cardiff/Newport															
From Cars Travelling longer distances (ie London, Bristol, etc)															
Rail Service Improvements															
Increased frequency to Cardiff/Bridgend															
Total Score	20	28	28	12	27	24	27	21	24	25	26	25	24	9	9

Based on the modelling of potential demand we have undertaken, there is also expected to be some abstraction of existing demand from other Barry stations as a result of the improved facilities at Barry Docks, in particular the additional car parking. This abstraction is most significant from Barry Town due to its close proximity and location to the west of Barry Docks and that its car park is currently used to capacity. The modelling suggests there are also some rail users arriving by car to use Barry Town that currently park on street. It is expected these will switch to Barry Docks to use its car park, when this is expanded. In addition, the lack of any car park at Barry Island and the improved access to Barry Docks by bus is expected to encourage a small number of current users of this station to be attracted to Barry Docks. As Cadoxton is further east, despite its car park also currently being used to capacity, it is not expected any existing users of this station will travel west to Barry Docks, to then return east by rail.

We have ensured the additional car parking provided at Barry Docks provides capacity beyond that required for this shift in station use, as without that the improvements would not generate new benefits but simply move them from one station to another. However, it should also be noted that the shift in use from Barry Town to Barry Docks will also free up parking spaces on road and in nearby car parks at Barry Town, used previously by those that shift. It is very likely that these will be taken up by new users of Barry Town station. Therefore, the overall effect will be to enable increased use of rail services from both stations, in turn further increasing the benefits generated by improving Barry Docks. Further information on these additional benefits is provided in the qualitative benefits section of the Transport Case.

It is also the case that provision of additional car parking at Barry Town station is being considered by the Council, although there are no firm plans in place for this and hence it is not taken into account in the modelling. Were this to take place then it may be that some of those who transfer to Barry Docks to use its increased car park capacity would revert back to using Barry Town. However, this will simply have the effect of freeing up spaces in Barry Docks car park to accommodate even more new demand.

4.7.2 Environmental objectives

To address climate change, reduce emissions and other environmental objectives, a primary aim of the Barry Docks Interchange is to bring about modal shift from car use, to more sustainable modes. At present access to the station by sustainable modes is limited. In the case of buses there is only one service that stops within a reasonable walking distance of the station, the Council Supported Local Bus Service 88, which stops on Dock View Rd, but only on its journey out of Barry to Penarth. There is no bus that offers onward travel from the station to access the town centre or that can distribute rail users to other destinations in the town. The nearest point to access such services is the stop west of Barry Dock Station on Ffordd Y Mileniwm and adjacent to Morrisons Supermarket, which is used by a majority of Barry bus services as a major timing point. This stop is some 900 metres walk from the station, over double the maximum walking distance commonly considered acceptable to access a bus stop. This is a substantial barrier both to those seeking onward travel from Barry Docks to destinations within the town or its surrounds and to residents of Barry seeking to access the station who would potentially use a direct bus.

By providing a bus interchange at the station it is expected that operators will be encouraged to relocate the terminus for their services from Morrisons to Barry Docks. This will not only offer many Barry residents the choice of using a direct bus to the station and rail for onward journeys, for the first time, but also a distribution network from the station to enable rail users to access most destinations around the town. It will also remove any disruption caused at Morrisons by the number of buses currently laying over at this stop. The provision of a bus link will complete the 'first mile/last mile' element often missing when a sustainable alternative is sought to using the car. At present, without it, many residents seeking to travel to take up work opportunities, education, health or other services in Cardiff and its surrounds or around the airport/St Athans and many of those travelling to Barry and its surrounds for the same purposes or to access its visitor attractions, have no alternative to using their car to do so. It is intended to provide an EV charge point at the Bus Interchange proposed for Barry Docks. This will encourage bus operators to consider the introduction of electric buses in the town, further increasing the sustainability of the bus services available.

The above will be complemented by the provision of the Taxi Interchange. Taxis can fill the gaps where the bus network does not reach, is not available due to accessibility or service frequency or at the times bus services may be reduced, especially the evening and weekends. They also provide a door to door service for those that can't reach or use a bus due to mobility difficulties or their disability. As a shared vehicle they are more environmentally friendly than all owning their own car. There are also aspirations to make taxi's more environmentally friendly in the form of recent guidance on taxi provision from CCR and WG which will improve the sustainability of the local taxi fleet available. This in turn will be supported by providing for an EV charge point for taxis at the Barry Docks Taxi Interchange.

It is also intended to provide EV charging terminals within the Park and Ride Car Park to encourage and support the increased use of 'greener' electric vehicles by rail users accessing the station by car. At present there are no EV charging points provided within the residential areas to the north and east of Barry Docks station and addressing this is likely to prove difficult due to the density of housing and the nature of the terrain. As a consequence it is envisaged that by providing electric charging at the new car park, in the short to medium term, it may encourage local residents to take up EV's and we will see additional demand from residents using the station EV charging points to charge their cars overnight. It may in turn also impact their use of rail services, potentially increasing this.

It should also be noted that the local Greenlinks bus operation which is specifically targeted at meeting the needs of people who face mobility difficulties are keen to serve the bus interchange. Within Barry this offers a fully demand responsive door to door service for those unable to use conventional bus services which can include those seeking to access Barry Docks. Within the Rural Vale Greenlinks provides two community bus services linking both isolated and disabled individuals to key centres outside of Barry. Greenlinks have suggested they would be keen to explore both these services also serving the Barry Docks Transport Interchange before exiting the town to continue their provision to the Rural Vale.

Current access to the station for those seeking to use of active travel modes is similarly poor, especially from the north, east and west. There is an existing cycle route and reasonable footpath along Ffordd Y Mileniwm. However, there is a need to improve access from this to the pedestrian subway, to the station platforms and to improve the safety of this route for users. The proposed station improvements will achieve and hence establish the link required to facilitate active travel between the station and the Waterfront area, including both the

housing and commercial developments already in place and those proposed as these are extended along the Waterfront both adjacent and to the south east and south west of the station.

The current access to the station from Dock View Road, to the north of the station, requires significant improvement if it's to become attractive and encourage people to use active travel modes to get to and from rail services. At present both cyclists and walkers have the option of using an unkept access road, that follows a relatively steep gradient, to curve down to the pedestrian subway leading to the station platforms. The BT premises the road previously served are no longer in use and run down, lighting along the road is limited and it is generally uninviting, raising security concerns for users, especially in winter evenings when its dark by 16:00. The surface of the road is beginning to break up, vegetation to the sides is overgrown and there is substantial ponding outside the BT premises where the road curves before leading down to the subway.

For those approaching or leaving the station on foot there is also a set of relatively steep wooden steps leading from Dock View Road down the embankment to join the access road. Being wooden these steps become slippy in wet weather and although there are handrails provided the steepness of the gradient makes them difficult to use for many and impossible for anyone that has any kind of mobility difficulty, even slight. In recent months the steps have been cordoned off because of the dangers of using them and it is uncertain, without improvements, whether they can be opened up again for use by the public.

Improving this access to/from the north of the station offers the potential to link it to the town centre and the majority of residential and development areas in Barry which lie to the north, east and west, for users of active travel modes. It will also offer a direct link for others who may not be intending to use the rail services but require access by active travel mode between the areas to the north of the station, across the station confines, to the Waterfront to the south. Without such improvements the route is simply not fit for purpose and only the most determined of pedestrians and cyclists will be persuaded to use it and therefore sustainable modes to make the whole of their journey.

Other facilities for cyclists and pedestrians at the station are also lacking. At present there are only 10 spaces available for cycle parking and none of these are considered to offer the security for parking their bike that cyclists seek. Cycle and pedestrian routes within the station confines are not marked or well segregated from other vehicles using the station areas and there is no seating for those that may require this along the route of their journey or information on the options for onward travel. Overall, there is a need to improve signage and information to indicate the opportunities to make the first mile/last mile links required to encourage residents accessing the station and those travelling from elsewhere to do so by sustainable mode.

The more sustainable links are improved or provided, the more likely rail, a sustainable mode in its own right, can provide the basis for the whole journey to be made by sustainable means. Even where this is not the case the expansion of Park and Ride car park capacity will increase the opportunity for more residents to use rail, to make at least the greater majority of their journey by sustainable mode.

4.7.3 Social objectives

Critical to meeting the social objectives is the need to improve access to employment and training opportunities, social inclusion and equality, access to health services, improved well-being and quality of life.

The proposed Barry Docks Transport Interchange will facilitate access to a substantial number of increasing employment opportunities in Barry for residents of its surrounding areas and in the surrounding Rural Vale and the wider Cardiff region for residents of Barry itself. In addition, by improving links by sustainable modes both to and from the station it will also extend these opportunities to those who currently do not have access to or cannot afford a car.

One of the main reasons Vale College is seeking to relocate its academic services is to enable better access by sustainable modes to these. The current college campus is on the opposite side of the town centre to Barry Docks and requires those who might consider walking or cycling to it, from the station, to negotiate a significant uphill route. Direct bus access to the current college buildings is also not currently available from Barry Docks. By relocating its academic activities to the Waterfront area, the college will be more or less equidistant from both Barry Docks and Barry Town station, in each case establishing a walk/cycle distance from the station of around 1km. This will not only reduce the distance to the college using either mode but also, crucially, place the

College on a, more or less, level access with either station. That buses will also serve this location directly from Barry Docks will provide a further sustainable link to students arriving by train for their education.

Similarly, the College is developing its new vocational learning site in the enterprise zone alongside the entrance to Cardiff City International Airport, near St Athans. The site is around 3km from Rhoose station, which is located on the Vale of Glamorgan line, thus not withing a reasonable walking distance but it can easily be reached by cycle from the station. There is also an existing bus service that provides a link between Rhoose station and the airport that students will be able to use if they catch the train to access the site from Barry or other stations on the line. There are also proposals being considered to provide a direct rail link to the airport from Rhoose station, although it is not clear at this time if/when this may go ahead. Alternatively, the current 303/304 service will serve the new bus interchange at Barry Docks and provide a direct link to the vocational college site from there. This improved access to both proposed college sites will not only benefit existing students but also those who may currently be unable to take up its courses because of a lack of available or affordable transport solutions.

The main hospital for Barry residents is split across two sites, one within the town and the other, the second largest hospital in Wales, at Llandough. For any Barry residents seeking to access the Llandough site by rail the Barry Docks Transport Interchange will significantly enhance their opportunities to access its health services, by improving both bus and active travel links to the station. At present there is not a bus link from Cogan on the Vale of Glamorgan line, the nearest station to the hospital. However, there are aspirations to bring this about alongside the current expansion of hospital services at the site and it is possible this will be made more viable by the Interchange at Barry Docks. With the hospital only 1km distance from the station the alternative of walking or cycling from the station to the hospital will be feasible, but only for those whose medical condition allows this.

The hospital site in Barry is located alongside the Vale College site and in that context experiences the same access difficulties as this does currently. However, by providing a bus and taxi interchange at Barry Docks direct access by either mode to the site will be available for the first time for those coming from the surrounding areas to the hospital by rail. There are also plans to provide more of the hospital services, especially mental health services, at satellite locations in the town. Where these sites lie on the bus network, they will be available directly by bus from Barry Docks Interchange. Those that are located closer to Barry Docks than the current hospital site may also be made possible to access by active travel modes.

The increased opportunities to access employment, education and health services and to bring about inclusion for more vulnerable or less well-off groups in the population by improving Barry Docks will in turn also impact their well-being and quality of life. It is well documented that use of such modes has a bearing on productivity and this results directly from reducing the stress of travelling. Similarly, reduced stress is known to be directly related to improved feelings of well-being in general amongst the population. Increased opportunities to access a broader range of employment or training opportunities will also increase the chances of unemployed people to gain employment and address poverty, which in turn will have an impact on their quality of life and community participation.

4.7.4 Transport objectives

There are some significant congestion issues currently on roads to and from Barry, especially the main corridors to Cardiff and its surrounding area. There is also some limited congestion within Barry town itself and in the summer in particular on roads to Barry Island.

There are 3 main corridors between Barry and Cardiff

- Route 1 - Barry town centre to Cardiff Central via A4050 and Culverhouse Cross;
- Route 2 - Barry town centre to Cardiff Central via A4055 through Eastbrook / Cogan;
- Route 3 - Barry town centre to Cardiff Central via A4055 then B4267 Leckwith.

TfW have provided information from the SE Wales Transport Model that highlights the primary congestion hot spots along each of these corridors, as below:

- Route 1 – traffic is particularly slow on the approach to Culverhouse Cross then slow going into Cardiff;

- Route 2 – traffic is particularly slow from Dinas Powys through Eastbrook to the Leckwith Road, then slow going through to Cardiff;

- Route 3 – traffic is particularly slow from Dinas Powys through Eastbrook to the Leckwith Road but picks up again past the hospital, then slow again after the Leckwith Road roundabout.

Whilst not as significant, some limited congestion can also be found on these routes closer to Barry. On Route 1 traffic flows slowly through Wenvoe, around the junction of the A4050 with the A4231 and just outside of Wenvoe at the junction of the A4050 with St Andrews Road. Similarly, on Route 2 and 3 there is some congestion on the A4055 through Palmerstown, especially at its junction with the A4321.

One of the key aims of the Barry Docks Transport Interchange is to encourage those currently using their car to travel between Barry and Cardiff to consider switching to use of the more sustainable rail link. To achieve this additional Park and Ride spaces will provided to the north of the station platforms. With the current Park and Ride operating at capacity not only at Barry Docks but also at Barry Town these additional spaces are expected to attract some of those currently parking on the road at Barry Town to transfer to Barry Docks to use the train. However, there will also be new users attracted from amongst those currently travelling by car all the way to destinations in and around Cardiff. This reduction in those using their cars for the whole journey will contribute significantly to reducing congestion on the main corridors and in addition generate further journey, punctuality and emissions savings.

By providing the additional parking at Barry Docks to the north of the station platforms it will also address some of the congestion issues in Barry town. At present, to access the station car park, users have to drive through the town centre to access Ffordd Y Mileniwm and then the car park to the south of the platforms. Siting parking to the north enables a new station access road to be provided off Subway Road, which in turn can be accessed without entering the centre of Barry, at least for those from residential areas to the north and the east. Those from the west of the town, predominantly, already use Barry Town station and although some will transfer, needing to drive through the town to do so will limit the number that do this.

Providing EV charge terminals within the resulting car park areas will increase the opportunities to consider use of sustainable modes to access the station for onward journey by rail. This can be expected to lead to those currently using the station and those encouraged to switch to doing so considering how they can make their entire journey sustainable. For car users this might mean them purchasing an electric car which they will not only use for journeys to/from the station but other journeys as well, improving the sustainability of all their car travel.

4.7.5 Other Objectives

A number of other objectives will be met by the proposed Barry Docks Transport Interchange, as follows:

- Promotion/Establishing a Clear Identity – There is a Barry wide programme, Sense of Place, that is considering the identity of all attractions and places of interest in the town. The identity of the Barry Docks Transport Interchange will be aligned with this programme and enhanced by it, including signage to/from the station;

- Resilient/ Future Proofed/Long Term Sustainability – Together with the assessment of potential demand extending to 2036 and beyond, the materials and construction process applied to the station improvements will ensure the resilience and sustainability of the Barry Docks Transport Interchange;

- Modern/Place Making/Increased Pride – By creating a pedestrian and cycle friendly and generally more attractive environment around the station it will make using the station a much more pleasant experience for residents and visitors alike. With the bus interchange also being served by all bus services this improved ambience will be retained throughout the day, evenings and at weekends. In addition, the aim is to link the access to the station from both the north and south to create a through route between the town centre and residential areas surrounding this and the Waterfront area. This place making will significantly improve off road access through the improved environment at the station removing the need for residents to use the much less inviting and more convoluted route via Subway Road and its tunnel;

- Secure/Protected – The improved lighting with marked and signed pedestrian and cycle routes through the station surrounds, segregated from other vehicles, will significantly increase security and the perception of security at the site as well as the aesthetic and ambience of it. Similarly, increased use of the site will add to perceptions of safety and reduce the likelihood of anti-social behaviour;

- Collaborative/Partnership/Openness/Transparency – Substantial consultation has been undertaken to ensure proposals for the Barry Docks Transport Interchange take account of and meet the needs of potential users as well as the overall policy and strategy objectives of the Town Council, MCC, CCR, TfW and WG. Opportunities to link the proposals with the wider development aspirations of key stakeholders have been identified through this consultation and taken into account in developing the proposed options and high-level masterplan for the Interchange;

- Increased Digital Infrastructure – Infrastructure improvements will include provision of Wi-Fi in all station areas, provision of real time information at all interchange points and the development of digital signage to better inform both residents and visitors to Barry using the station;

- Supporting Cardiff to Develop its Capital Functions – By linking with the wider South East Wales Metro the Barry Docks Transport Interchange will provide a key node on the network serving both Barry residents and those travelling to the town. In turn this will increasingly enable residents to reach employment, education and other opportunities throughout the wider Cardiff Capital Region and others to travel from outside Barry to take up emerging opportunities there;

- Private sector leverage – Private sector funds will be drawn down to support those elements of the Barry Docks Transport Interchange scheme not directly associated with the station or its surrounds. Primarily, this will be achieved through the section 106 planning process and input of CCR and TfW to the provision of Car and Taxi EV charging terminals.

4.8. Case for Change

The need for sustainable, connected and inclusive transport solutions to support economic and housing growth, drive prosperity and tackle climate change is highlighted specifically by WG National, CCR regional and the Council's local policies and strategies and is also encompassed within the Well-being ACT, 2015. To facilitate this, improved bus, park & ride, taxi and active travel services are regarded as having a key role, especially in CCR where the plans for South Wales Metro are regarded as a cornerstone of the City Deal.

This is also reflected in the Vale of Glamorgan where Barry is a significant focus for Economic & Housing development, while outward commuting from the region is known to be high, especially towards Cardiff. As a result, transport demand in the region is increasing at a greater rate than the national average and this is expected to continue as further economic and housing development takes place. Adding to this in Barry is the development of visitor attractions, not only at Barry Island but also in terms of parks and landmarks such as the Barry Docks offices.

Barry Docks station is well placed to cater for this demand on a sustainable and inclusive basis. Bus and taxi services in the area have capacity now to accommodate increased demand and according to the Local Transport Plan this is expected to be the case into the future, assuming the proposals in their immediate and longer terms plans are taken up. However, if Barry Docks station is to undertake a role as a key gateway to/from the town it requires additional infrastructure to enable improved access by public transport and active modes and it needs additional car parking to facilitate increased park and ride. This is required ahead of development generating additional travel if Barry Docks Transport Interchange is to attract this new demand from the outset, rather than having to encourage people out of their cars or to shift to bus or active travel use from making their journey in other ways.

This business case presents the detailed case for these initial improvements and outlines the appraisal undertaken so far to condense the shortlisted interventions to a preferred intervention that can meet the objectives, which is affordable within the limits of available funding and is deliverable. It also outlines how the proposed intervention can establish the foundations for attracting input by developers and service providers to further improve the Barry Docks site, including provision of sustainable homes and complementary infrastructure, at a future development stage. This will further enhance the role of Barry Docks to become the gateway to Barry Town and provide the comprehensive Mobility Hub envisaged, in the medium to longer term.

Further work will be undertaken at WelTAG stage 3 to refine these proposals into an integrated package and fully quantify the benefits they will obtain, alongside establishing how they can be procured and managed. Detailed designs and more detailed costs for the initial improvements will also be provided at this stage, as well as exploring further the potential for match funding support. The preliminary high level designs for a masterplan of the vision for medium to longer term development of the station as a comprehensive mobility hub will also be refined.

4.9. Causal Chain and Logic Map

To assist in communicating the scheme to stakeholders and framing the appraisal, a causal chain is included below. To frame the scheme appraisal and assist in developing the monitoring and evaluation framework, a logic map is also provided following this.

Figure 23 - Barry Docks Interchange Scheme - Causal Chain

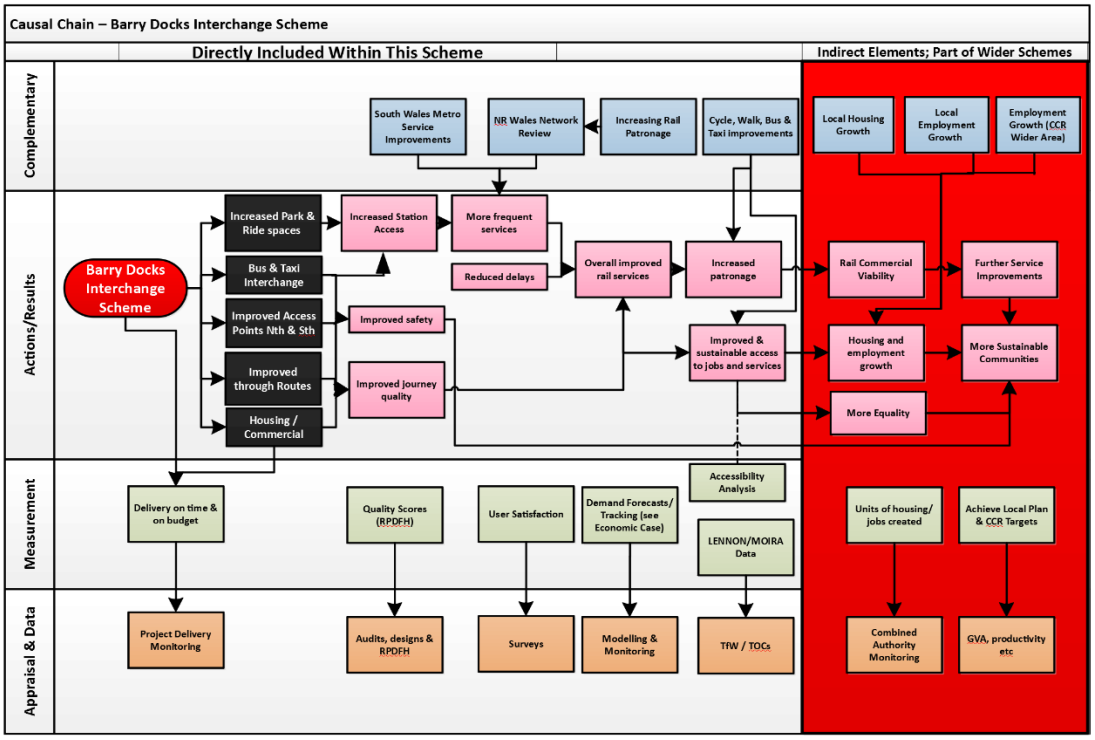
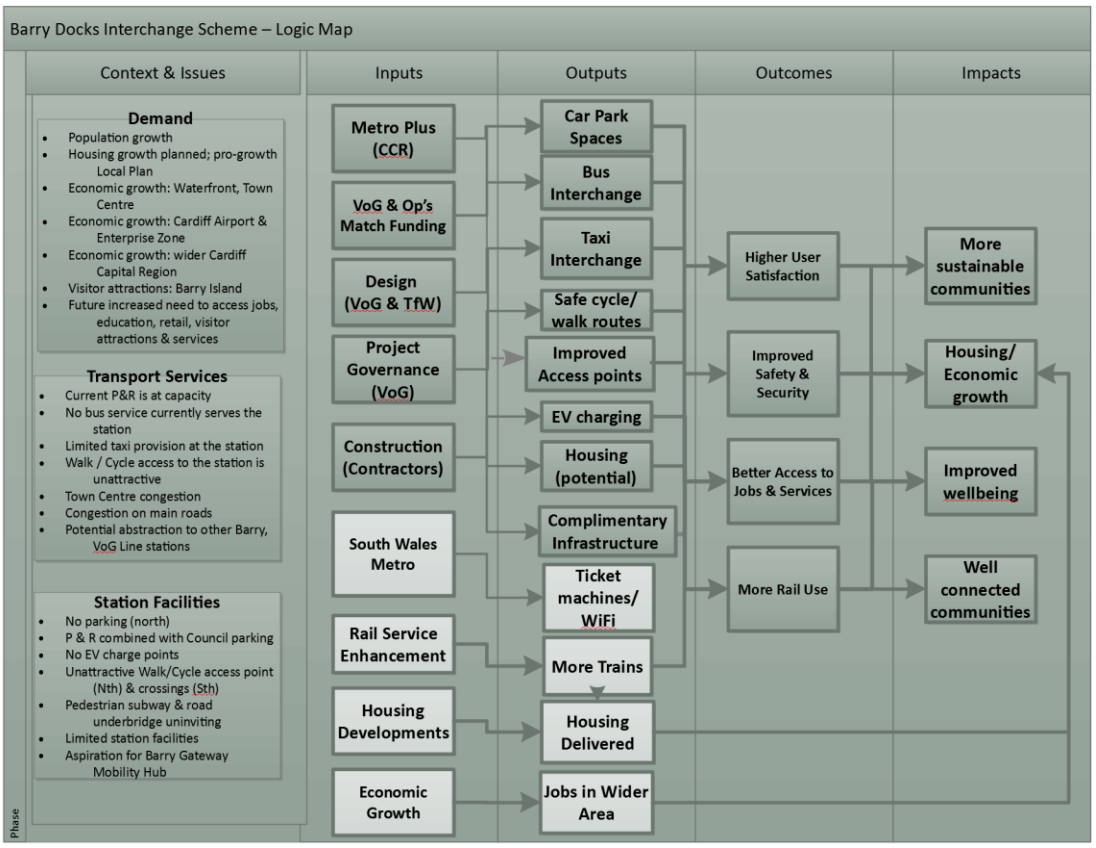


Figure 24 - Barry Docks Interchange Scheme - Logic Map



5. Financial Case

5.1. Introduction

The financial case concentrates on the affordability of the proposal, its funding arrangements and technical accounting issues. It presents the financial profile of the different options and the impacts of the proposed deal on funders' budgets and accounts.

5.2. Critical Success Factors

The Financial Case sets out the affordability of the scheme, based on available funds in relation to scheme costs. The Critical Success Factors (CSF) set out below are considered appropriate for the scheme:

- Ensuring the scheme can be delivered within available budgets;
- Can be delivered within the likely capital funding available;
- Revenue liabilities for the preferred option are affordable with current budgets;
- Compliance with public sector procurement regulations (including those affecting investment in the rail sector) for grant funded elements.

5.3. Cost Estimates

Cost estimates and associated risks for the different elements that make up the Barry Docks Transport Interchange scheme are presented in the table below, for each option. These estimated costs will be refined in the Final Business Case and can be expected to reduce. At this stage the total costs in real prices (2020) ranges from an estimate of £5.92m for Option 3 to an estimate of £7.76m for Option 2 including on-costs and 40% contingency on the capital cost elements.

Table 14 - Estimated Scheme Costs for each Option (includes all on-costs, fees and risk at 40%)

	Option 1 (£)	Option 1a (£)	Option 2 (£)	Option 3 (£)
Additional Park and Ride Capacity	1,086,050	1,086,050	1,086,050	1,086,050
Bus and Taxi Interchange	1,116,500	1,116,500	1,116,500	224,603
Improvements to Pedestrian Subway	70,000	70,000	70,000	70,000
Pedestrian and Cycle Route from Dock View Road	1,024,512	1,014,516	1,549,323	898,413
Improvements to the Tunnel on Subway Road	266,553	452,533	355,523	344,155
EV Charging Infrastructure, including Terminals	1,631,000	1,631,000	1,631,000	1,351,000
Other On-Costs	1,949,848	1,949,848	1,949,848	1,949,848
Total	7,144,463	7,320,447	7,758,244	5,924,069

Alongside the funds sought from the CCR Metro Plus, phase 1, Regional Transport Authority programme, the Council has set aside around £250K of section 106 funding from developments in the area surrounding Barry Docks to support the improvements, especially to Subway Road. There is also funding support envisaged from CCR and TfW for provision of EV taxi and car charging terminals within the interchange, respectively, with both in the process of developing programmes to support this across the region. While not included in the cost of the Interchange, Wayfinding signage to/from the north of the station is expected to be funded by TfW's Wayfinding Signage programme.

As further improvements to extend the station to become a comprehensive Mobility Hub are not envisaged until a later phase the costs for this, including Housing and Commercial development are not considered within this business case. However, the costs of purchasing the land on which to build the Interchange is included in the costs, although in reality it is likely the available land for both the Interchange and Housing/ Commercial development will be purchased as a whole once it is clear what housing/commercial development is possible at FBC stage.

5.4. On-going Scheme Costs, (renewals, maintenance, operation)

It is anticipated that the responsibility for operation, maintenance and renewals of any limited on-station elements will be borne by the station owner (TfW). Any need for provision to cover the costs of this have not been determined, are expected to be minimal and will be defined through consultation at the FBC stage.

TfW have plans in place already to cover the cost of providing an additional train service and upgrading the trains used on the Vale of Glamorgan line as part of the overall plan for the SE Wales Metro. Therefore, this cost has not been included in the scheme costs.

The majority of the scheme falls outside of the immediate station boundary and will be the responsibility of the Council. Provision will be made within their existing revenue budgets to cover the ongoing costs of maintaining the improvements, which include the additional car park capacity, bus interchange, taxi interchange and all associated infrastructure.

At this time, it is not intended to introduce a charge for parking at Barry Docks (or other Barry stations), so no income from this is included in the scheme costs.

5.5. Independent Cost Verification

Any requirement for independent cost verification will be defined through discussions with CCR and TfW at FBC stage.

5.6. Risk Assessment

The inclusion of 40% risk in the costs provided above reflects a higher than normal level of Quantified Risk (QRA) at this stage. This is because intrusive geotechnical works have not been possible due to environmental survey and subsequent limitations and so there is still some uncertainty about key cost elements. Consequently, with QRA being higher than usual, Optimism Bias (at OBC stage usually 15% for a project of this nature) has not been added in the Transport Case. As costs are further developed and QRA is normalised, OB will be introduced at an appropriate level in the Transport Case for the FBC.

5.7. Inflation Assumptions

The approach to inflation follows the recommendations as set out in WelTAG.

5.8. Funding Strategy

This will be derived through discussion involving CCR, TfW and the Council at FBC stage following a decision on the preferred option to take forward. It will cover budget/funding requirements for the scheme, including post-implementation monitoring and evaluation and take a account of both funding sought from the Metro Plus, Phase 1 Programme and any match funding identified.

5.9. Accounting Implications

This encompasses the impact on the Council balance sheets. It is assumed that the scope of this Business Case excludes consideration of the funding requirements directly covered by TfW and that this cost will not be passed on to the County or District Council

5.10. Section 151 Officer Letter

Any requirement for this will be raised with the Council at FBC stage

6. Transport Case

6.1. Introduction

Value for money is a critical element of the decision-making process for any proposal that involves the use of public resources. Achieving value for money can be described as using public resources in a way that creates and maximises 'public value'. Demonstrating value for money is the role of the Transport Case.

Public value is defined as the total well-being of the UK public as a whole. In a transport context, this covers all the economic (e.g. travel time, vehicle costs, tax revenues); social (e.g. health, safety, accessibility); and environmental (e.g. noise, air quality, landscape) impacts of a proposal.

The appraisal approach focuses on how different parts of the package will provide synergy, building up the benefits of the proposed car park, bus and taxi interchange, walk and cycle aspects. The aim is to demonstrate the economic and social benefits at a 'package' level.

The facilities' demand modelling and scheme costings required to quantify and monetise the economic impacts has been undertaken by Amey Consulting. Cost investigations have taken account of local conditions and precedents from elsewhere. The remaining cost variances shown in the Financial Case will be eliminated through ongoing detailed investigations.

The Transport Case follows the guidance given in 'WelTAG 2017, Welsh Transport Appraisal Guidance' and in particular the sections relating to Stage 2: Outline Business Case. Supporting evidence and details of the methodologies used to develop this Transport Case are included in a parallel 'WelTAG Impacts Assessment Report – Transport Case'.

This chapter also draws heavily on the advice and parameters contained in the Department for Transport's TAG and TAG Databook, version 1.13.1, July 2020, as referenced in WelTAG guidance.

6.2. Critical Success Factors

The core requirement of the Economic Case is to understand the expected value for money that the scheme is likely to deliver. In this respect, generic CSFs that could apply to any project are appropriate:

- Ensure that any approach provides an adequate return on investment, as determined in this case by Cardiff Capital Region and its Assurance Framework
- Maximise return on investment, striking a balance between the cost of delivery and the cost to the economy of non-delivery

6.3. Proposed Appraisal Methodology

The methodology for appraising the transport benefits that will derive from the railway station improvements is broadly in six stages:

- Calculate the likely level of baseline rail passenger demand at opening year of the scheme.

- Calculate future post opening 'exogenous' rail demand that will be generated by external factors such as population, jobs and services growth. This future demand might not be able to be satisfied if the new facilities are not provided, therefore the facilities generate important future benefits for these sources.

- Calculate 'endogenous' rail demand that will be generated by internal factors such as the proposed increase in rail frequency in December 2022. Again, endogenous demand may not be realisable unless the proposals are provided.

- Where possible assess 'modellable' demand for the new facilities. Modelled demand is that which can be computed on the basis of a potential change that a new facility can provide in the time or cost of a journey from its origin to its destination. A quicker, cheaper way of getting from A to B will attract users and it is the volume of this use that will be calculated.

- Also, assess 'induced' demand facilities. This is demand that cannot be modelled because a facility brings something other than an improvement to the time or cost of journey. Induced demand is assessed on the basis of empirical evidence, usually from elsewhere.

- Calculate the effect of opposing forces: Barry Docks Station is less than 2 kilometres from both Barry Station and Cadoxton Station, both of which therefore compete for future demand.

Once the sources of demand have been enumerated, societal benefits generated for and by the extra passenger demand can be calculated. Some of these benefits are economic and can be monetised whilst social and environmental benefits are qualitatively presented. Some so called 'Wider Economic Benefits' can also be monetised. A primary example is the uplift in value that providing new transport infrastructure can have on commercial and residential properties in the vicinity. These too can be classed as societal benefits.

Two important tools are used to calculate future passenger demand arising from the new facilities, these are:

- mathematical spreadsheet models that calculate changes in journey time and cost and the impact this might have on demand for the new facilities; and

- evidence of year on year rail passenger growth over the last decade or so and in particular growth that could be attributable to previous events such as the additional parking spaces that were provided at Barry Docks Station in March 2012.

Calculations of future demand need to be developed from a baseline figure. The Office of Rail and Road (ORR) publishes annual passenger 'entries and exits' for every UK railway station. Unadjusted totals for Barry Docks and other stations in the Barry area: Barry Island, Barry and Cadoxton, are shown in the table below.

Table 15 - Annual passenger entries and exits at stations in the Barry area from 2008-09 (un-adjusted)

	Barry Island	Barry	Barry Docks	Cadoxton	Total	Percentage change year on year
Year	**Thousands of entries and exits per year (Index: 2008 – 09 = 100)**					
2008 – 09	578 (100)	480 (100)	119 (100)	261 (100)	1438 (100)	-
2009 – 10	561 (97)	505 (105)	132 (111)	257 (99)	1455 (101)	+1%
2010 – 11	618 (107)	504 (105)	149 (125)	248 (95)	1519 (106)	+5%
2011 – 12	617 (107)	506 (105)	176 (148)	254 (97)	1553 (108)	+3%
2012 – 13	592 (102)	527 (110)	191 (161)	273 (105)	1583 (110)	+2%
2013 – 14	621 (107)	559 (116)	204 (171)	278 (107)	1662 (116)	+6%
2014 – 15	608 (105)	531 (111)	205 (171)	269 (103)	1613 (112)	-4%
2015 – 16	654 (113)	544 (113)	216 (182)	282 (108)	1696 (118)	+6%
2016 – 17	712 (123)	533 (111)	224 (188)	287 (110)	1756 (122)	+4%
2017 – 18	753 (130)	534 (111)	246 (207)	282 (108)	1815 (126)	+4%
2018 – 19	832 (144)	524 (109)	251 (211)	271 (104)	1878 (131)	+5%

The ORR station usage data is an estimated count using ticket data. Future demand and the calculation of benefits that will arise also requires information about the origins and destinations of passenger journeys. In this case baseline data is in the form of ticket information supplied by the Train Operating Company Transport for Wales (KeolisAmey). The information comes from the industry wide LENNON database - Latest Earnings Networked Nationally Overnight – and has been provided for 2018/19. This year will therefore provide the base year for forecasts.

The LENNON data is commercially confidential, so it is important to limit the amount of information published on it to that which is essential to develop the forecasts. In this case it is sufficient to establish the main destinations of rail journeys starting or ending at Barry area stations. Table 16 shows that the great majority of rail journeys from the Barry area go to Cardiff, followed by the Cardiff Capital Region (CCR) excluding Vale of Glamorgan (VOG) stations, then VOG (excluding Rhoose for Cardiff Airport), then Bridgend, Newport and the south west of England (Bristol).

The pattern is similar for rail journeys that originate elsewhere except that there are relatively fewer starting at Cardiff and more in the rest of the CCR, except for VOG.

Table 16 - Destinations and origins of rail journeys starting in the Barry area and starting elsewhere

	Originating in Barry area stations				
	BARRY	BARRY DOCKS	BARRY ISLAND	CADOXTON	Grand Total
BARRY	0%	0%	0%	1%	0%
BARRY DOCKS	0%	0%	0%	0%	0%
BARRY ISLAND	0%	0%	0%	1%	0%
CADOXTON	0%	0%	0%	0%	0%
BRIDGEND	2%	3%	0%	4%	2%
CARDIFF	82%	82%	87%	77%	83%
CCR	5%	5%	7%	6%	6%
London	1%	0%	0%	0%	0%
RHOOSE	1%	1%	0%	1%	1%
South West	2%	2%	1%	2%	1%
VOG	5%	5%	4%	7%	5%
Grand Total	100%	100%	100%	100%	100%
	Originating elsewhere				
	BARRY	BARRY DOCKS	BARRY ISLAND	CADOXTON	Grand Total
BARRY	0%	1%	0%	2%	0%
BARRY DOCKS	0%	0%	0%	1%	0%
BARRY ISLAND	0%	1%	0%	2%	0%
CADOXTON	1%	1%	1%	0%	1%
BRIDGEND	8%	6%	0%	5%	3%
CARDIFF	50%	46%	46%	50%	47%
CCR	14%	13%	45%	20%	33%
London	2%	1%	0%	1%	1%
North West	1%	0%	0%	0%	0%
RHOOSE	5%	7%	0%	5%	2%
South East	1%	0%	0%	0%	0%
South West	3%	2%	2%	1%	2%

VOG	13%	20%	4%	12%	9%
Wales - Cymru	1%	1%	0%	1%	1%
West Midlands	1%	1%	1%	0%	1%
Grand Total	100%	100%	100%	100%	100%

A combination of the 2018/19 ORR and LENNON percentage data provides a reasonably robust estimate of the number of baseline rail journeys.

6.4. Do Minimum Exogenous Demand

Before calculating future demand resulting from new facilities it is important to calculate the do minimum demand that will occur from other exogenous and endogenous factors including any:

- Increase in the local population;
- Change in jobs and services both locally and elsewhere, for example in the Cardiff area;
- Other railway improvements or enhancements such as service frequency.

There will be other factors that play a part but the above are likely to be the most important. The likely medium to longer term impact of the Covid pandemic on future demand is unknown at the moment and current advice is to apply the Covid sensitivity test that can be found in the Department for Transport's (DfT) Transport Appraisal Guidance (TAG) version 1.14.

The DfT's Exogenous Demand Growth Estimator (EDGE) model assesses growth in demand for rail travel based on exogenous factors such as employment, population and Gross Domestic Product (GDP). It uses the industry accepted method for forecasting demand based on forecasts of demand drivers and elasticities. The model is based on the National Trip End Model (NTEM) that was developed in 2011 and it contains annual forecast changes in rail demand after 2011 for all UK station to station flows. The data for Barry area stations was kindly provided the DfT. Forecast changes in demand for each of the stations in the Barry area are shown in Table 17.

When it was developed, EDGE took account of a wide range of factors including future land use developments. Since EDGE was built, Barry Waterfront has seen significant redevelopment for housing and support services such as retail. Anecdotally, and pre-Covid, the new flatted dwellings are of the type that will attract a high proportion of workers that are likely to use the train to commute to burgeoning employment opportunities in Cardiff. The correlation between the increasing number of new dwellings built near Barry Island and increasing use of the station shown in ORR data appears to be significant, although it is known that the LENNON ticket data shows there to be a higher number of journeys to and from Barry Island Station than is actually the case.

Table 17 - Forecast annual growth in passenger demand as in the EDGE model

	BARRY	BARRY DOCKS	BARRY ISLAND	CADOXTON
2019/2020	0.6%	0.5%	0.6%	0.7%
2020/2021	1.0%	0.9%	0.8%	1.1%
2021/2022	0.7%	0.5%	0.6%	0.7%
2022/2023	0.8%	0.6%	0.9%	0.7%
2023/2024	0.6%	0.4%	0.6%	0.5%
2024/2025	0.8%	0.6%	0.8%	0.8%
2025/2026	1.0%	0.8%	0.9%	0.9%
2026/2027	1.0%	0.9%	0.6%	1.0%
2027/2028	0.6%	0.5%	0.0%	0.7%
2028/2029	0.7%	0.6%	0.3%	0.8%

	BARRY	BARRY DOCKS	BARRY ISLAND	CADOXTON
2029/2030	1.1%	1.0%	1.0%	1.1%
2030/2031	1.0%	0.9%	1.1%	1.0%
2031/2032	-0.2%	-0.3%	-0.3%	-0.2%
2032/2033	-0.3%	-0.3%	-0.3%	-0.2%
2033/2034	-0.4%	-0.5%	-0.7%	-0.3%
2034/2035	-0.5%	-0.6%	-0.8%	-0.4%
2035/2036	-0.3%	-0.3%	-0.5%	-0.2%
2036/2037	0.2%	0.2%	-0.2%	0.3%
2037/2038	0.0%	0.1%	-0.4%	0.2%
2038/2039	0.5%	0.5%	0.0%	0.6%
2039/2040	0.4%	0.5%	0.0%	0.6%
2040/2041	0.5%	0.5%	-0.1%	0.6%
2041/2042	0.7%	0.8%	-0.1%	0.8%
2042/2043	0.6%	0.7%	-0.2%	0.8%
2043/2044	1.1%	1.3%	0.0%	1.4%
2044/2045	1.6%	1.9%	0.1%	2.0%
2045/2046	0.4%	0.5%	-0.3%	0.6%
2046/2047	0.4%	0.4%	-0.2%	0.6%
2047/2048	0.6%	0.7%	0.1%	0.8%
2048/2049	0.2%	0.2%	-0.4%	0.4%
2049/2050	0.3%	0.4%	-0.2%	0.5%

The annual year on year increase in rail demand at Barry Docks Station in EDGE is forecast to be a very low average of only 0.5%. This is considerably lower than the actual increase in recent years as shown in the ORR data above.

Consequently, the business case uses the ORR trend as the basis of future exogenous growth. After removing the likely 'induced' impact of additional parking implemented in 2012 (which is discussed below) and any 'outlier' years, exogenous demand is considered to have actually increased by an average of 6% per annum at Barry Docks Station in recent years.

The appraisal therefore assumes that 6% exogenous growth is sustained until 2049/50 when growth flattens. This is in line with TAG guidance. Note though that car-based demand is capped to the capacity of the car park and assumed to zero growth once capacity is reached. Options 1, 1A and 2 (308 parking bays) are expected to be at capacity in 2029 and Option 3 (371 parking bays) in 2035.

The 6% 'base' is varied from year to year using the variation in EDGE relative to its average of 0.5%. So, for example, if EDGE indicates an increase of 0.4% in one year then 5.9% is used in the appraisal.

6.5. Do Minimum Endogenous Demand

The rail frequency change proposed to take effect in December 2022 will increase the number of trains stopping at Barry Docks, Barry and Cadoxton from four to five per direction, per weekday daytime hour. The additional train will operate between Cardiff and Bridgend and vice versa, thereby doubling the frequency to Bridgend from one to two trains per hour per direction. Rhoose Station is on this line therefore connections will double

from Barry Docks to Cardiff Airport via Rhoose and Llantwit Major. It also makes the Enterprise Zone in the vicinity of the airport and at St Athanmore accessible.

Whilst there is known to be a high elasticity of demand for frequency improvements the 25% increase in trains will not generate 25% more passenger demand *per se*. The estimate of additional demand is considered to be more likely to be 15% and therefore this percentage is added to other sources of demand that are calculated for 2022/23. Once applied it is retained in future years at the same 15% level without any further growth or decline. This is because any change in demand in future years will be driven by the exogenous factors only. The effect of alternative percentages on endogenous demand will be tested in sensitivity tests in the Full Business Case (FBC).

There are no other known and committed future sources of potential endogenous growth at this time.

6.6. Modelled Future Demand

Sources of 'modellable' demand include:

- Increased use of rail services for journeys that currently use a bus to travel all the way from the trip origin to the destination and transfer to a journey by bus to the bus interchange, then by train to get to the destination. The most obvious and voluminous destination for this type of shift is in journeys to Cardiff.

- Existing Barry and Cadoxton station users who either park at the stations or on the streets nearby who, in future, use the extended car park at Barry Docks Station because there are more spaces and therefore it is easier to park in future.

- Use of Barry Docks bus interchange by bus users that currently interchange from bus to rail at Barry or Cadoxton stations.

- Use of Barry Docks bus interchange by taxi users that change to using the bus to the station instead.

Note that modellable demand does not include direct journeys by car from the origin to the destination that transfer to 'drive to Barry Docks Station – then park – then train' to the destination. This is because, *prima facie,* the one variable that changes (ie. the extra parking spaces), changes neither any time or cost component of the journey from origin to destination. Additional (free) parking simply improves the ease and convenience of parking at the station but these attributes are not simple time and cost components that can be modelled. Instead, this source of demand comes into the 'induced' elements discussed below.

The model that has been developed to support the business case shows that it is likely that some 'direct bus' journeys to Cardiff will change to 'bus – bus interchange – rail' journeys instead. It also shows that the geographical catchment area around Barry Docks Station for this types of change is limited because of the close proximity and competition that comes from Barry Station to the west and Cadoxton to the east. In other words, the time and cost for 'bus – rail' journeys are less than via Barry or Cadoxton for a relatively small geographical catchment area around Barry Docks.

The stimulus to these types of 'Bus – Rail' trips comes from the reduction in the time it takes to transfer between a bus and the railway station because at the moment this requires a lengthy, time consuming walk from the nearest bus stops at either Morrisons or on Holton Road. Bus service 88 stops outside the station in Dock View Road but it is relatively infrequent, and its catchment is limited because it only operates in one direction (eastbound) past the station. It is also an effective server of nearby competing Cadoxton Station.

Modelling has concentrated on journeys to the Cardiff area because they dominate rail trip destinations from the Barry area as shown in Table 16**Error! Reference source not found.**. 'Bus – rail' journeys could increase

to other destinations; however, it is likely that these will be small or very small in number given that baseline rail demand starts small. There are a number of associated issues with this:

- Unfortunately, bus patronage data is not available to show how many people travel to different destinations and therefore baseline information is not available to be able to predict 'direct bus' to 'bus – rail' transfer.

- In consultation, bus operators commented on the existing low volume of bus to rail transfer at Barry Station which is served by a number of bus services from stops directly outside the station.

- For bus travel to Cardiff Airport and the adjoining Enterprise Zone, the necessity to interchange from train to bus at Rhoose Station having already travelled by bus from an origin in the Barry area to Barry Docks Station, is likely to dissuade many people from choosing to use this as a journey. Bus service 303/304 which crosses much of Barry on its run between Cardiff, Penarth and Bridgend might continue to be the public transport service of choice for most to the Airport terminal and surrounding area!

6.7. Induced Future Demand

'Induced' demand will arise from providing additional parking and will most likely arise from providing the bus interchange, walking and cycling provision.

Car park related induced demand is additional to that which will be generated from exogenous and endogenous growth as well as demand that will transfer from Barry and Cadoxton Stations.

The volume of induced car park demand can vary widely. Fortunately, having only opened an extension to the existing car park at Barry Docks in March 2012 it is possible to identify the impact that extension appears to have had on passenger use. As discussed above, recent year on year growth has been around 6%. When this is taken account of in the ORR station usage data (Table 15) the remaining growth in 2012/13 and 2013/14 is probably the result of induced demand caused by the car park extension. This amounts to 7.5% in 2012/13 and a further 5.5% the following year. The total (13%) can then be assumed to be constant, with further growth in later years resulting from exogenous growth only. 7.5% and 13% are therefore assumed to the likely induced demand percentages in the two years after opening of future additional parking provision.

The bus interchange facility will also induce additional trips including 'bus – rail' and vice versa, 'bus – bus' and possibly 'cycle – bus' and 'taxi – bus'. It is not possible to quantify these trips but nevertheless they will have an economic value that can be assessed within the benefits. The overall volume and types of modellable bus interchange journeys are relatively small so induced demand is assumed to add a further 50% of users.

Proposed walking and pedal cycling measures within the site and in Subway Road will stimulate some induced demand too.

6.8. Opposing forces

Accessibility mapping shows that car journey times to Barry Docks Station are, in general, slightly longer than to Barry and Cadoxton stations because the town centre street network to the north is less permeable than that around the other stations. Excluding Subway Road, the distance of the nearest bridges to Barry Docks Station over the railway also has the effect of pushing traffic away from the station before it can approach the existing car park on its south side via FFordd Y Mileniwm.

These very localised issues would have little impact were it not for the close proximity of Barry and Cadoxton which effectively compete for demand. (Figure 25)

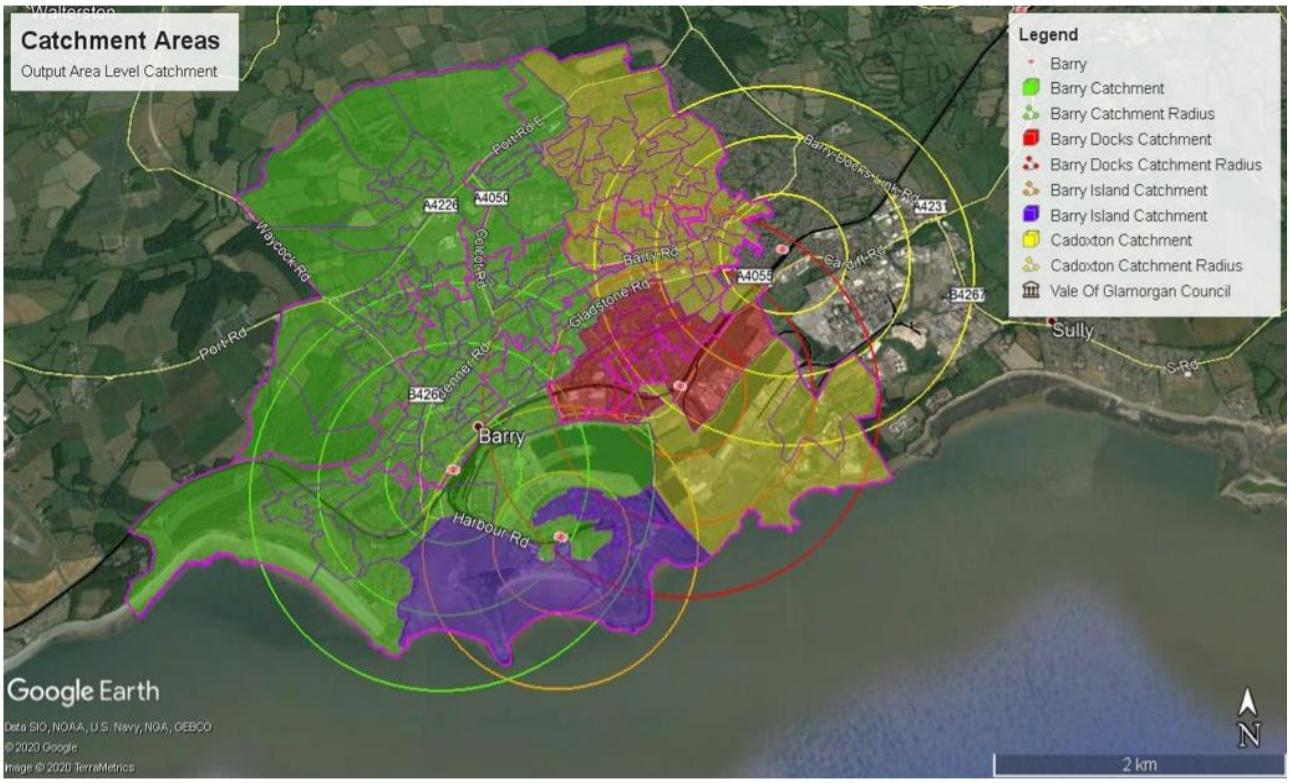


Figure 25 - Barry area stations catchment areas by car by Census Output Area level. Barry Docks catchment area is shown in pink.

The same is true to an extent for 'bus – rail' demand. In general terms bus service accessibility to Barry Station is better, especially from the west and north west side of the town. Similarly, Cadoxton is slightly more accessible than Barry Docks from most of the north and east of the town, even with the short distances required to walk from Cadoxton to its nearest bus stops.

For an interchange on the south side of Barry Docks the issue that reduces bus service accessibility is - as with access by car - crossing the railway line. Most bus services are likely to serve the station by extending from Morrisons to the interchange to then go back to Gladstone Bridge to carry on their routes. This eliminates walking time from Morrisons or bus stops in Holton Road, but it also slightly increases the overall time that passengers are on the bus.

Assuming that buses would use Thompson Road and Dock View Road to access an interchange on north side of the station, the on-bus journey time would be slightly less than for an interchange on the south side of the railway. The current long walking times would also be eliminated, as they would be associated with the interchange to the south of the station.

The overall impact is to make the bus interchange option on the north side slightly more attractive in terms of 'bus – rail' passenger demand.

The proximity of Barry and Cadoxton is also likely to encourage the transfer of some cars to Barry Docks because of the perception that parking has been become more convenient, even if the average journey time to get to Barry Docks Station is slightly higher. This potentially makes more spaces available at Barry and Cadoxton (which is still a useful way of increasing overall accessibility to rail), but it also means that because these are existing rail users it is not possible to claim economic benefits since these people are making the rail journey already.

6.9. Station Demand

The table below shows how the different components of demand build up. In the base (2018/19) there were around 1,138 trips a day through Barry Docks Station, by 2035/36 there are anticipated to be around 3 times more, with 3,460 trips. Some of the key results are as follows;

- The greatest increase comes from year on year exogenous growth. By 2035 this is expected to produce 1,860 additional trips.
- The increase in rail frequency is expected to add a further 229 trips per day.
- 112 rail passenger journeys a day are anticipated to come from existing rail users that currently park at either Barry or Cadoxton.

Table 18 - Demand components – Options 1, 1A and 2

Daily Travel Demand (Options 1, 1A and 2)							
		Mode	2018-19	2022-23	2024-25	2035-36	2049-50
Base		Car	319	319	319	319	319
		Bus	24	24	24	24	24
		Taxi	29	29	29	29	29
		Walk	759	759	759	759	759
		Cycle	7	7	7	7	7
		Total	**1,138**	**1,138**	**1,138**	**1,138**	**1,138**
Induced	Exogeneous	Car		86	136	523	1,051
		Bus		6	10	39	118
		Taxi		8	12	47	143
		Walk		204	323	1,239	3,748
		Cycle		2	3	11	34
		Total		**305**	**485**	**1,860**	**5,093**
	Rail Service	Car		-	64	64	64
		Bus		-	5	5	5
		Taxi		-	6	6	6
		Walk		-	153	153	153
		Cycle		-	1	1	1
		Total		**-**	**229**	**229**	**229**
	Parking	Car		30	56	56	56
	Bus IC	Bus		12	12	12	12
	Walking	Walk		8	8	8	8
	Cycling	Cycle		0	0	0	0
	Total (All Modes)			**355**	**790**	**2,165**	**5,398**
Direct bus' to 'bus - rail'		Bus		35	35	35	35
Shift from other stations	Parking	Car		112	112	112	112
	Bus IC	Bus		10	10	10	10
Shift from other modes to bus	Bus IC	Car		-7	-7	-7	-7
		Bus		22	22	22	22
		Taxi		-1	-1	-1	-1
		Walk		-14	-14	-14	-14

		Cycle		-0	-0	-0	-0
Total Additional Demand	**Non-Project Related Demand**			**305**	**714**	**2,089**	**5,323**
	Project Related Demand			**207**	**232**	**232**	**232**
	Total (All Modes)			**512**	**947**	**2,322**	**5,555**
Total Daily Demand			**1,138**	**1,650**	**2,085**	**3,460**	**6,693**

Table 19 gives the results for Option 3 with the bus interchange on the north side of the railway and additional net parking provision. By 2035/36 there are anticipated to be more than 3 times more trips than in 2018/19 with 3,541 trips.

Table 19 - Demand components – Option 3

Daily Travel Demand (Option 3)							
		Mode	2018-19	2022-23	2024-25	2035-36	2049-50
Base		Car	319	319	319	319	319
		Bus	24	24	24	24	24
		Taxi	29	29	29	29	29
		Walk	759	759	759	759	759
		Cycle	7	7	7	7	7
		Total	**1,138**	**1,138**	**1,138**	**1,138**	**1,138**
Induced	Exogeneous	Car		86	136	521	1,100
		Bus		6	10	39	118
		Taxi		8	12	47	143
		Walk		204	323	1,239	3,748
		Cycle		2	3	11	34
		Total		**305**	**485**	**1,858**	**5,142**
	Rail Service	Car		-	64	64	64
		Bus		-	5	5	5
		Taxi		-	6	6	6
		Walk		-	153	153	153
		Cycle		-	1	1	1
		Total		**-**	**229**	**229**	**229**
	Parking	Car		30	56	56	56
	Bus IC	Bus		12	12	12	12
	Walking	Walk		8	8	8	8
	Cycling	Cycle		0	0	0	0
	Total (All Modes)			**355**	**790**	**2,163**	**5,447**
Direct bus to 'bus – rail'		Bus		39	39	39	39
Shift from other stations	Parking	Car		191	191	191	191
	Bus IC	Bus		10	10	10	10

Shift from other modes to bus	Bus IC	Car		-8	-8	-8	-8
		Bus		24	24	24	24
		Taxi		-1	-1	-1	-1
		Walk		-15	-15	-15	-15
		Cycle		-0	-0	-0	-0
Total Additional Demand	**Non Proj Related Demand**			**305**	**714**	**2,087**	**5,371**
	Proj Related Demand			**291**	**316**	**316**	**316**
	Total (All Modes)			**596**	**1,031**	**2,403**	**5,688**
Total Daily Demand			**1,138**	**1,734**	**2,169**	**3,541**	**6,826**

6.10. Economics

Having identified future demand, the economics can be calculated. Economic benefits will be derived and monetised from a number of sources described in the following section:

- The economic value of new facilities to users: Physical aspects can be calculated through 'Willingness to Pay' calculations and non-physical aspects such as enhanced feelings of security or ease of access can be calculated on the basis of an equivalent amount of time 'saving' that is then monetised using a local value of time (VOT).
- The value of new facilities to non-users of the facilities and to wider society and the environment, for example, car drivers that continue to drive to their destination and get an improvement in journey time because there is less congestion on the roads because others have transferred; or the reduction in environmental impacts and road accidents. These are called Marginal External Costs (MECS).

6.11. Willingness to Pay

A monetary value can be attributed to passengers' use of new station facilities. These values come from sophisticated 'Willingness to Pay' (WTP) surveys which identify the maximum price at or below which a consumer will definitely 'buy' one unit of a product, in this case the average value that passengers put on different facilities.

Values are contextualised to the average price of a journey so, not surprisingly, the value of individual facilities is quite small, perhaps only a few pence per journey. Nevertheless, when aggregated across all users over the appraisal period their total value becomes much more meaningful.

Locally contextualised WTP values used in the appraisal are taken from Transport for London's 'Business Case Development Manual' published in May 2013.

It is customary to apply only half of the WTP value to demand that has been 'induced' by the facility and the full value for other users.

The second area of benefits relates to the extended car park. Quality off-street parking has a higher value to users compared to parking on-street. Quality parking implies a safer, securer environment both for the vehicle and the people using it. In the same way that WTP is used to value physical facilities, a 5 or 10 minute saving is typically used in rail appraisals as a proxy for the value of enhanced car parking provision. Time can be converted to a cost using 'Value of Time' (VOT) data from TAG.

6.12. Marginal External Costs

The third area of benefits that can be monetised are Marginal External Costs (MECs). A proportion of the new journeys made by train will be by people who would otherwise drive. As a result, there are savings in road traffic congestion, accidents, road maintenance costs, air and noise pollution. There are also economic losses in the form of reduced taxes to the public purse since less driving means less tax revenue on fuel. The more and longer the car journeys that would otherwise be made, the greater the savings. Governments have recognised the potential of MECs and the DfT has published TAG guidance to help practitioners calculate MECs without having to consider lots of different factors relating to the unique circumstances of their scheme. A relatively simple calculation of the anticipated reduction in car vehicle kilometres is all that is required.

MECs can be applied to the different sources of rail demand discussed earlier. Road distances to the main existing rail destinations are identified. It is assumed that in future the same proportion of existing and new rail trips will go to the same destinations. The total road distance saved as a result of car journeys transferring to rail is then calculated. In the case of the Barry area the majority (82%) of rail trips and therefore the road distance saving will be from short, average 16 kilometre, trips to and from Cardiff. This saving is off set by the drive to the station car park which, on average, is about 3.5 kilometres to Barry Docks Station.

Obviously some road to rail transfers are longer than the average distance to Cardiff, for example, there is rail demand for journeys to the valleys, Bridgend and Newport, however these longer distances are off-set by a comparable number of shorter rail trips to Cogan, Rhoose and other stations in the Vale of Glamorgan

The reduction in road kilometres needs to be adjusted to take account of car occupancy. TAG indicates that in Inter-Urban non-London locations, for every 100 rail passenger kilometres increase in demand the average reduction in car vehicle kilometres is around 30 kilometres because car occupancy is greater than one. This is therefore factored into the car kilometres reduction calculations used in the MECS.

Lastly, TAG contains different MEC values for different parts of the UK because of the differential impact a reduction in vehicles has on congestion, the environment, accident costs etc. MECs are higher in the south east of England, for example, because congestion is greater. Here, the Wales MEC has been applied to the core scenario. In recognition that this MEC includes rural areas, sensitivity tests will be undertaken that assume a higher level of MECs.

6.13. Other considerations

Economic benefits are calculated for 60 years after opening.

Benefits and costs are rebased on 2010 prices and the impacts of inflation are taken account of as per TAG guidance.

The split of journey purposes is important because it affects the Values of Time (VOT) used in the appraisal. The VOT for a rail commuter, someone travelling on business or an 'other' purpose has been extracted from the TAG databook and local data from TEMPro used to identify the split of local rail journey purposes. This indicates a typical split of commuter (46%), travel on business (11%) and other purposes (43%). The 'Market Price VOT' in 2020 is used for commuter and 'other' purposes, and Factor Price is used for business trips. The values are £9.95, £24.52 and £4.54 respectively. Applying the percentage volumes of each trip purpose in TEMPro to the respective VOT produces an average VOT of £9.17 per hour in 2020. This VOT is then adjusted for each year of the appraisal in line with deflation values in TAG Unit A.1.3.2.

6.14. The value of new facilities using Willingness To Pay (WTP)

London values for cycle, walk and bus interchange WTP values are estimated to be 35.6 pence, 22.7 pence and 41 pence respectively per user. Local VOTs are lower so each value is reduced by 30% in the appraisal. London values are shown in the following table:

Table 20 - Willingness to Pay values

Facility Improvement	WTP value used (pence/ pax)	Source: Business Case Development Manual, TfL, May 2013
Cycle parking	5.83	Dedicated surveillance cameras covering the cycle parking
	8.82	Good, bright, even lighting after dark
	6.16	Cycle parking area in excellent condition (in good repair, clean and litter free) and near to cycle servicing shop
Cycle surface	6.84	Even and smooth cycle surface and ride
	0.82	Cycle surface free completely free from debris
	7.14	No standing water on cycle surface when wet
Cycling total	**35.61**	
Pedestrian and cycle crossing	3.02	Pedestrian 'green man' crossing a few minutes' walk out of your way
Street security	1.03	Good, bright and even lighting after dark
	0.48	No litter, graffiti and fly-posting
Signage	17.38	Maps of the local area, information boards and signs to public transport and major attractions
Pavements	0.79	Pavement has no cracks and is even
Pedestrian total	**22.70**	
Bus stop/shelter	0.96	Excellent condition, looks like new
	2.74	Shelter very clean
	3.36	Timetable and bus stop flag illuminated
	1.68	No litter
	3.84	No graffiti at all
	1.55	Shelter giving protection from the rain and some protection from the wind
Bus stop security	6.96	CCTV recording at some stops
	4.91	Stop or shelter well lit
Bus station information	4.11	Countdown displays up to the minute bus arrival times, diversions and delays
	1.39	By typing in code shown on bus stop, receive information sent to phone about time of next bus and any service delays
	4.63	Stop with diagrammatic map of bus routes serving the stop
	4.52	Stop with map of local information / services

Bus Interchange total	**40.65**	

TAG says that the value of facilities should be halved for the portion of demand that is generated by providing the facilities. This is known as the 'rule of half' and is applied to the induced demand elements of bus interchange, walk and cycle facilities.

Applied to the demand figures identified earlier, the monetary benefit of the new facilities, in 2010 prices, adjusted for inflation, for the 60 Year appraisal period is:

- Bus Interchange (south of railway) Options 1, 1A and 2: £118,873
- Bus interchange (north of railway) Option 3: £128,308
- Walkways (assumed to be similar in each option): £250,305
- Cycling facilities (again assumed to be similar): £3,633

The value for walkways is the highest because they benefit all users of the proposed facilities including extended car park users.

6.15. New car parking provision – Equivalent time savings

Attractive parking provision is key to securing future increases in rail demand. Without good parking, growth is unlikely to materialise.

The VOT for local rail travellers, calculated above, is an average of £9.17 per hour (2020 value). If every existing and future car driver and passenger saves the equivalent of 5 minutes in security improvements and another 5 minutes in parking ease and convenience, the cost saving is £1.53 per person. This is only applied to outward journeys. Sensitivity tests consider the impact of alternative equivalent time savings.

Savings are calculated for the 60 Year appraisal period. They take account of car park capacity with growth capped in 2029 for the smaller net increase in parking spaces in Options 1, 1A and 2 and in 2035 for the larger increase in Option 3.

Resulting equivalent time savings related economic benefits in the core scenario are as follows:

- Car park extension Options 1, 1A and 2: £1,358,483
- Car park extension Option 3: £1,677,364

6.16. Marginal External Costs (MECs)

Table 21 gives the MECs for Options 1, 1A and 2 with the bus interchange on the south side of the railway station. Totals are in £millions discounted over the 60 Year period from 2021/22 to 2081/82, in 2010 prices.

Table 22 shows the MECs for Option 3 with the bus interchange on the northside of the railway.

The value of MECS is proportional to the volume of traffic removed from the roads, which in turn is proportional to car user demand. If car user demand is half that forecast the MECs will be half of those shown in the table.

Table 21 - 60 Year Marginal External Costs – Options 1,1A and 2 (£s)

Source of demand	Decongestion	Infrastructure renewals savings	Accidents	Local Air Quality	Noise	Greenhouse Gases	Indirect Taxation	TOTAL
Car park induced demand	224,213	3,134	43,299	7,173	2,647	21,259	-76,790	224,936
Car park yearly growth	400,598	5,582	77,108	12,696	4,714	37,707	-135,526	402,879
Bus interchange induced demand	68,989	843	11,600	1,697	709	6,303	-11,185	78,956
Bus interchange direct bus to rail	194,969	2,383	32,783	4,794	2,004	17,813	-31,609	223,136
Bus interchange change from bus to other rail station	11,212	137	1,885	276	115	1,024	-1,818	12,832
Bus interchange from taxi to bus to station	1,075	13	181	26	11	98	-174	1,231
Walking induced demand	11,832	145	1,989	291	122	1,081	-1,918	13,541
Cycling induced demand	108	1	18	3	1	10	-18	124
TOTAL	912,995	12,238	168,863	26,956	10,323	85,295	-259,038	**957,634**

Table 22 - 60 Year Marginal External Costs – Option 3 (£s)

Source of demand	Decongestion	Infrastructure renewals savings	Accidents	Local Air Quality	Noise	Greenhouse Gases	Indirect Taxation	TOTAL
Car park induced demand	242,470	3,386	46,648	8,025	2,851	24,515	-58,955	268,940
Car park yearly growth	443,960	6,178	85,116	14,575	5,202	44,665	-104,703	494,994
Bus interchange induced demand	68,989	843	11,600	1,697	709	6,303	-11,185	78,956
Bus interchange direct bus to rail	218,007	2,664	36,657	5,361	2,240	19,918	-35,345	249,503
Bus interchange change from bus to other rail station	12,294	154	2,116	309	129	1,150	-2,040	14,112
Bus interchange from taxi to bus to station	1,207	15	203	30	12	110	-196	1,382
Walking induced demand	11,832	145	1,989	291	122	1,081	-1,918	13,541
Cycling induced demand	108	1	18	3	1	10	-18	124
TOTAL	998,868	13,385	184,348	30,290	11,268	97,753	-214,360	**1,121,552**

6.17. Other Assumptions and Sundry Items

Parameters in TAG version 1.13.1 have been used. Version 1.14 will be used for the Covid sensitivity test. Market price adjustment has been applied with all benefits and costs rebased to 2010 prices.

An annualisation factor of 253 days per year has been used to reflect the relatively high proportion of work-related rail trips forecast in TEMPro for the Barry area. Use 253 days is also recommended in TAG.

For modelling purposes, baseline data comes from the LENNON ticket database as described above. The data does not provide any indication of spread by time period or journey purpose. A comparison of 2011 Census journey to work data with total ORR station usage and confidential LENNON data indicates that around 63% of rail journeys are likely to be commuter trips. This is higher than TEMPro data which suggests around 43% so consequently the core scenario average VOT will be low. A slightly higher value should be tested in sensitivity tests.

The spread of benefits is heavily weighted towards the Marginal Economic Cost element with the majority being decongestion benefits to those who continue to choose to travel by road. The biggest direct benefits are in car park safety and security.

6.18. Summary of Present Value Benefits (PVB)

Options 1, 1A and 2 have Present Value Benefits (PVB) of around £2.9m and Option 3 has £3.4m.

Table 23 shows the benefits for the car park, bus interchange, pedestrian and cycle facilities separately. Table 24 shows the split by the different sources of benefits.

The greatest benefits relate to the extended car parking. These are 3.5 to 4 times greater than the benefits from the bus interchange.

Car park benefits are higher in Option 3 because the net increase in parking spaces is greater. More parking provision means that more cars are taken off the road which in turn means that the Marginal External Costs such as decongestion benefits are higher. It also means that more car park users benefit from 'equivalent time savings' relating to security, convenience and accessibility to rail services.

Option 3 with the bus interchange on the northside of the railway station has the bigger benefits. The monetised benefits are bigger because here the interchange reduces the average time it takes to go by bus to Barry Docks Station by the most. This makes it more attractive for some 'bus – rail' passengers to use the new interchange instead of interchanging at Barry or Cadoxton stations. The main saving is in walk time from the current nearest bus stops at Morrisons and Holton Road. This time saving also results in some 'direct bus' journeys to Cardiff transferring to 'bus – rail' at Barry Docks instead.

Note that all bus operators said at stakeholder consultation that they did not favour serving a bus interchange on the north side of the railway station. The benefits assume they would serve it. If they do not, the BCR would reduce in Option 3.

Walking and cycling benefits are the same because the appraisal assumes the same number and amount of new pedestrian and cycling facilities in each option. Only trips that are induced by the new walking and cycling facilities are assessed. Pedestrian movements from the car park or the bus interchange to the station itself are ignored in order to reduce double counting.

	Options 1,1A and 2	Option 3
Car Park Benefits	£1,986,298	£2,241,229
Bus Interchange Benefits	£646,212	£719,949
Pedestrian Facilities Benefits	£263,846	£263,846
Cycling Facilities Benefits	£3,757	£3,757
Present Value Benefits Total	**£2,900,112**	**£3,428,847**

Table 23 Summary of Present Value Benefits by mode

	Options 1,1A and 2	Option 3
WTP values (2022/23 to 2036/37)	£372,811	£382,246
Car park equivalent time savings (2021/22 to 2081/82)	£1,358,483	£1,677,364
Bus to other rail stations changing to bus to Barry Docks interchange time savings	£211,184	£247,685
MECs (2021/22 to 2081/82)	£957,634	£1,121,552
Present Value Benefits Total	**£2,900,112**	**£3,428,847**

Table 24 Summary of Present Value Benefits by type of benefit

6.19. Costs, 'Benefit Cost Ratio' (BCR) and Net Present Value (NPV)

The Financial Case above shows the breakdown of costs in detail. At this stage the total ask in real prices (2020) ranges from an estimate of £5.92m for Option 3 to an estimate of £7.76m for Option 2, including all EV costs, on-costs including land purchase and 40% contingency on the capital cost elements.

The 40% reflects a higher than normal level of Quantified Risk at this stage. This is because intrusive geotechnical works have not been possible at this stage due to environmental surveys and subsequent limitations and so there is still some uncertainty about some key cost elements. Consequently, QRA being higher than usual, Optimism Bias (which at OBC stage is normally 15% for a project of this nature) has not been added. As costs are further developed and QRA is normalised, OB will be introduced at an appropriate level.

Although EV costs have been included in the financial case, at this stage, they have been excluded from the economic appraisal as guidance from DfT is awaited to enable the calculation of the benefits EV provision will generate. Including the EV costs in the calculations without including the value of their benefits would create a false picture of the Benefit Cost Ration (BCR) provided by the scheme. However, we understand guidance is pending and should be available to enable EV costs and benefits to be included in the economic appraisal undertaken at FBC stage.

The table below shows 2010 rebased Present Value Costs (PVC) which can be directly compared with the Present Value Benefits.

Option	**Present Value Costs (PVC): Low cost estimate (2010 prices)**	**Present Value Costs (PVC): High cost estimate (2010 prices)**	**Present Value Benefits (PVB)**	**BCR with low cost estimate**	**BCR with high cost estimate**
1	£3,693,781	£3,783,029	£2,900,112	0.79	0.77
1A	£3,811,681	£3,900,930	£2,900,112	0.76	0.74
2	£4,104,987	£4,194,235	£2,900,112	0.71	0.69
3	£3,063,757	£3,153,006	£3,428,847	1.12	1.09

Table 25 Present Value Costs, benefits and benefit cost ratio

The benefit to cost ratio (BCR) - calculated by dividing the PVB by the PVC - for the funding being asked of the CCR lies between 0.69 and 1.12 depending the option. Option 3 has lower costs and higher benefits giving it a slightly 'better' BCR. In the low cost estimate the monetised benefits balance the costs.

The Net Present Value of the benefits (which is the difference between PVB and PVC) is shown in the following table. A BCR of 1.0 would have an NPV of £0. A positive BCR would have a positive NPV.

Option	NPV (low cost estimate)	NPV (high cost estimate)
1	-£0.80m	-£0.88m
1A	-£0.91m	-£1.00m
2	-£1.20m	-£1.29m
3	+£0.37m	+£0.28m

Table 26 Net Present Values

6.20. Sensitivity Tests

Sensitivity tests will be developed and applied at the Final Business Case stage.

6.21. Wider Economic Impacts

Each option offers varying amounts of land for possible redevelopment for housing and each has the potential for 'land value uplift' caused by the development of the transport infrastructure. This land value uplift has an economic value that can be included within the BCR.

Consultant 'Steer' in its 'Local Economic Benefits of Station Investment Report, March 2018' draws on research by TfL that:

"suggests that there is a 10% premium for properties within 500m of stations, with the premium falling to 5% and zero at distances of 1,000m and 1,500m respectively. For commercial property, the relationship is less pronounced, and tends to be stronger for more established commercial centres with a higher degree of in-commuting by rail."

The 10% premium was used in London. The equivalent for Barry could be around 7.5% given that a relatively high proportion of rail trips are for commuter purposes to Cardiff.

Option 1 can accommodate 88 housing units, Option 1A - 56, Option 2 - 99 and Option 3 - 62 dwellings. These are envisaged as a mix of one- and two-bedroom apartments and townhouses that are typical of the sort built at Barry Waterfront in recent years. In Barry the purchase price of apartments currently averages around £125,000 and townhouses are around £230,000. Locating housing within very close proximity to Barry Docks Station may well increase this by 7.5%; ie by £9,000 for an apartment and £17,000 for a townhouse.

This means that the total land value uplift for new dwellings could range between the following, depending on the mix of types of housing:

- Option 1 - £792,000 to £1,496,000.
- Option 1A - £504,000 to £952,000.
- Option 2 - £891,000 to £1,683,000.
- Option 3 - £558,000 to £1,054,000.

These are current 2021 prices. However, to compare with other benefits in the appraisal it is necessary to adjust them to 2010 prices using the government's deflation rates found in TAG. 2010 prices would be as follows:

- Option 1 - £650,000 to £1,229,000.
- Option 1A - £414,000 to £786,000.
- Option 2 - £732,000 to £1,383,000.
- Option 3 - £459,000 to £866,000.

When theses prices are added to the other Present Value Benefits (PVB) and divided by the Present Value Costs, the BCRs for each option increase to the following. The two 'extremes' are shown, that is, the lowest BCR resulting from the high PVC estimate combined with the low land value uplift, and the highest BCR resulting from the low PVC estimate and high land value uplift:

- Option 1: Goes from 0.79/0.77 above to between 0.94 and 1.12.
- Option 1A: From 0.76/0.74 above to between 0.85 and 0.97.
- Option 2: From 0.71/0.69 to between 0.87 and 1.04.
- Option 3: From 1.12/1.09 to between 1.12 and 1.40.

Given the scale of transport infrastructure development it is unlikely to give a significant boost to local commercial business investment per se, however, the enhancements could benefit wider, broader packages of improvements. Although the proposals will not directly improve the routes between Barry Docks Station and the town centre they have the potential to act as a catalyst for improved linkages, aspired to by the Council and Barry Town Council, which could then spur on new commercial interest and consequently, land value uplift. The proposals will improve connectivity between the town centre, surrounding residential areas and Barry Waterfront area, although to what extent will depend on proposed improvements to routes within the Waterfront area coming to fruition. As well as positive regeneration leading to further land value uplift, these wider linkages will also bring environmental enhancements in terms of public realm, streetscaping and place making enhancements.

About 11% of Barry Docks Station demand in 2022/23 is expected to come from the transfer of people parking at or on the streets around Barry or Cadoxton stations. This is about 100 to 200 persons per day depending on the option (see Table 18 and Table 19). By transferring to Barry Station, parking spaces will become available at or near Barry Town and Cadoxton thereby increasing overall accessibility to the railway. If the spaces filled up and if the same rate of benefits at Barry Docks applied to these newly available spaces, the current BCR would rise from 0.77 to 0.85 in high cost Option 1 (for example), and from 1.09 to 1.21 in high cost Option 3.

Wider economic impacts include broader benefits to society. This scheme will enhance and increase sustainable accessibility and connectivity to jobs, services and education and support additional housing and economic development in the Barry area, as discussed in the Strategic Case.

6.22. Environmental Benefits

The station scheme produces Marginal External Cost savings as a result of there being fewer vehicles on the road. These monetary savings in air quality, noise and greenhouse gases are shown above as MECs.

An additional element, not included in the benefit cost calculations, is that relating to the provision of electric vehicle (EV) infrastructure. The expected costs of this are included in the Financial Case above. However, at present there is no guidance on how to value the benefits of EV infrastructure despite there being a strong national drive to increase EV infrastructure in order to support the introduction of EVs and the benefits these will bring. The DfT is expected to update TAG in February 2021 and more emphasis will be placed on valuing carbon reduction measures. As a result, we expect it should be possible to monetise EV benefits at Full Business Case stage.

6.23. Social and Cultural Benefits

The car park and bus interchange will improve access to the railway for a whole range of journey purposes including access to jobs and services in the wider region. They will also support further residential development in the Barry area.

Bus interchange facilities will add to bus journey quality and enhance the quality of multi-modal interchange.

Additional quality parking provision should enhance perceptions over security both in terms of personal security and the security of vehicles.

The MEC savings include accident savings, as shown above.

6.24. Public Accounts

With the bus interchange on the south side the funding requirement (excluding EV costs) ranges from £5.51m for the low-cost estimate for Option 1 up to £6.26m for the high cost estimate for Option 2.

The bus interchange on the north side requires funding (excluding EV costs) of between £4.57m and £4.71m for Option 3.

Public funding will be required for ongoing costs of maintenance and renewal. These have not been factored in as they are expected to be found from within existing the Council budgets.

Every option has a negative impact on indirect taxes. The main impact is from car users transferring to rail requiring less fuel and therefore contributing less to central government in VAT. There is no VAT on public transport. The value of this change can be seen in the MECs above.

There is a small positive impact on road infrastructure. Fewer vehicles mean that road wear and tear is reduced thereby reducing the need for renewals. The value of this can also be seen in the MECs.

6.25. Value for Money Statement

The Benefit Cost Ratio for options 1, 1A and 2 ranges from 0.69 to 0.79 and an NPV of minus £0.69m to minus £0.79m depending on the option.

The Benefit Cost Ratio for Option 3 ranges from 1.09 to 1.12 and an NPV of around +£0.28m to +£0.37m.

These calculations each include 40% risk and exclude any potential for land value uplift. As we progress to FBC stage and in particular surveys are undertaken to clarify the opportunities to provide housing/commercial development alongside the interchange, then risks will be reduced, and we will become more confident in the land value uplift available. Both will have the effect of increasing the BCR and this is expected to become positive in all cases. Including EV costs and benefits at FBC stage is also expected to improve the BCR's available for each option even further, assuming the benefits will outweigh these costs.

Options 1, 1A and 2 have the potential for much higher BCRs through land value uplift generated from providing the transport infrastructure. The same level of uplift may not be realisable for Option 3 due to its smaller number of housing units.

There are a wide range of benefits generated by the Barry Docks Transport Interchange scheme:

- Economy – Economy and Regeneration
- The measures will encourage and support development and housing in the area.
- The new facilities (especially the bigger car park) will support improved access rail services which will, in turn, provide additional access to education, jobs and services elsewhere.
- Improving the area at Barry Docks Station could act as a catalyst to improving the linkages to the town centre and between the town centre and the nearby parts of Barry Waterfront.
- The facilities will lead to a reduction in traffic congestion and accidents especially on the approaches to Cardiff.

- Environmental – Reductions in emissions
- Reduced traffic will lead to a reduction in greenhouse gas emissions, noise and improvement in air quality.
- Environmental – Landscape/Townscape

  The areas surrounding the station could be improved and the scheme lead to an increase in environmental quality of the streetscape in the wider area.
- Social – Security of users

  The improvements will be designed with personal security in mind and the increased usage will enhance this further

The scheme benefits are summarised in the Appraisal Summary Table below.

Table 27 - Appraisal Summary Table

Appraisal Summary Table

Date produced:	13th January 2021	Contact:

Name of scheme:	**Barry Docks Station**	**Name**	John Dent
Description of scheme:	Additional parking provision, new bus - rail interchange, on site pedestrian and cycling improvements	**Organisation**	Vale of Glamorgan Council
		Role	

Impacts		Summary of key impacts	Assessment			
			Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Tempro forecasts suggest that business use is by a relatively small percentage (11%) of rail passengers in the Barry area. Discounted MECS for all users amount to £0.98k (options 1,1A,2) or £1.12k (option 3)	**Value of journey time changes (£)** **Net journey time changes (£)** 0 to 2min: NA; 2 to 5min: NA; > 5min: NA	Moderate benefit	£0.91 million (options 1,1A 2) or £0.99 million (option 3) (decongestion benefit)	
	Reliability impact on Business users	Additional car parking will ensure that business users can more reliably get a parking space at as future demand increases.		Slight benefit		
	Regeneration	Spur to wider area economic regeneration especially Barry town centre and that part of the Waterfront near Barry Docks		Moderate benefit		
	Wider Impacts	Potential residential land value uplift in options 1,1A and 2		Moderate benefit		
Environmental	Noise	Reduced road traffic.	Value of noise MECs for 60-yr period is shown on right	Slight benefit	£0.010 million (options 1, 1A, 2) £0.011 million (option 3)	
	Air Quality	Reduced road traffic	Value of air quality MECs for 60-yr period is shown on right	Slight benefit	£0.027 million (option 1 1A 2) £0.030 million (option 3)	

	Greenhouse gases	Reduced road traffic	Change in non-traded carbon over 60y (CO2e) Change in traded carbon over 60y (CO2e)	Slight benefit	£0.085 million (option 1 1A 2), £0.098 million (Option 3)	
	Landscape	No impact		Neutral		
	Townscape	Overall scheme will increase the attractiveness of the local area		Slight benefit		
	Historic Environment	No impact		Neutral		
	Biodiversity	No impact		Neutral		
	Water Environment	No impact		Neutral		
Social and Cultural	Commuting and Other users	A new bus interchange, newly designed car parking areas, improved walkways and cycleways will ensure that commuters and others can get overall journey benefits for their train journeys.	**Value of journey time changes (£)** Moderate benefit **Net journey time changes (£)** 0 to 2min / 2 to 5min / > 5min	See decongestion benefit above		
	Reliability impact on Commuting and Other users	Additional car parking will ensure that commuters and others can more reliably get a parking space at the station as future demand increases.		Slight benefit		
	Physical activity	Walkways, cycleways and cycle spaces will ensure more people opting to use sustainable modes and encourage more physical activity.		Moderate benefit		
	Journey quality	Improved facilities will give the users various options to access the station.		Slight benefit		
	Accidents	Reduced traffic accidents	Value of accidents MECs for 60-yr period is on right	Slight benefit	£0.169 million (option 1, 1A 2), £0.184 million (option 3)	
	Security	Secure and safe off street car parking provision to cater for additional future demand	Worth about half of the 'time-saving equivalent' benefits calculated above	Slight disbenefit	£0.68 million (option 1 1A 2) or £0.84 million (option 3)	

	Access to services	Additional car parking will help ensure access to the station by car who are travelling to access services elsewhere.		Slight benefit		
	Affordability					
	Severance	Will increase walk and cycle connectivity between the wider town centre and Barry Waterfront		Moderate Benefit		
	Option and non-use values	Non-use value considered to relate mainly to value of decongestion benefits since non users will benefit from quicker journey times		Moderate benefit		
Public Accounts	Cost to Broad Transport Budget		Capital costs currently include 40% risk contingency.		Option 1 1A 2: from £5.51m to £6.26m. Option 3 from £4.57 to £4.71	
	Indirect Tax Revenues	Reduced tax revenues resulting from loss of fuel duty, VAT on fuel etc.	Value of Indirect Taxes MECs for 60-yr period is on right	Slight adverse	-£0.26 million (option 1 1A 2), -£0.21 million (option 3)	

6.26. Options Appraisal

How well each scheme option meets the national, regional and local policy and strategy objectives, how deliverable each is and their value for money is key to establishing which should be the preferred option to carry forward for detailed design, further economic appraisal and delivery planning at FBC stage. At this time we are unable to finalise the economic appraisal that will identify the true BCR of each option due to further survey work being required to establish housing options and reduce risks in costs, as well as EV benefits not yet being possible to quantify/value and further work being required to firm up land value uplift. However, the options appraisal should not be based on the BCR calculations alone, as this just forms a part of assessing the value for money of each option. To place the BCR in context and reflect the impact the options have on the issues that exist the appraisal also needs to take account of the strategic case and in particular the 5 scheme specific objectives, 2 imperatives and the 6 scheme delivery objectives identified within this.

All scheme options meet almost all of the national, regional and local policy and strategy objectives identified, as outlined in the strategic case. In terms of the scheme specific objectives all options will accommodate increased rail demand (objective A), improve access to rail services (B), increase access to employment (C) and support economic development in the region (D). However, while options 1, 1a and 2 also meet objective E, placemaking, option 3 does much less to achieve this. All the former propose the bus/taxi interchange to the south of the station and car park extension and housing to the north. This makes full use of the available space and joins up the north of the site with the south improving not only access to the station platforms from either direction but also the route across the site, linking the town centre and residential areas in the north with the Waterfront developments. It also enables a comprehensive bus interchange to be constructed, accommodating the bus bays and infrastructure sought by operators and by its circular nature enabling a focus on passenger facilities within its centre. This clearly meets the vision for Barry Docks to form a gateway to/from Barry and will aid its promotion as such. The approach also takes account of the aspirations for further development phases including provision of business, active travel and other passenger facilities and in the case of option 2, offers the greatest potential for housing/commercial development on site.

Whereas, Option 3 locates both the car park extension and bus/taxi interchange to the north of the station platforms. It is notable that this still leaves space remaining for some housing/commercial development, albeit at a lesser scale than options 1 and 2. However, by concentrating facilities to the north it does little to improve the southern access to the station or to link areas to the north of it with the Waterfront development to the south. By stretching out the bus/taxi interchange along the proposed new northern access road it actually creates a new barrier to crossing the station confines rather than removing the barriers to this. The interchange provided is obtained at a lower cost than that to the south but the layout proposed doesn't provide the comprehensive facilities sought by operators and for passengers, offering no focal point for additional passenger facilities or the space to develop these at a future phase. Option 1a by utilising the new access road to provide drop off points has similar issues of reduced capacity for housing/commercial development but as this retains the bus interchange to the south, the other limitations faced by option 3 are not encountered.

The key differences in deliverables between the options that propose the bus/taxi interchange to the south and option 3, that proposes this to the north, are highlighted in the table below.

Table 28 - Key Differences between Interchange North or South

Interchange to the North	**Interchange to the South**
Lowest Cost	Comprehensive interchange
Largest car park capacity	The largest housing/commercial development capacity
Shortest journey time for buses and cars	Most attractive to bus operators
Limited improvements to station access from the south and no active travel links across the site	Improved active travel links north, west and south and across the site
Makes less of an impression as a gateway	Barry Docks clearly presents as a gateway to Barry
Limited scope for future development	Greatest scope for future development

That the interchange to the north is achieved at lower cost is primarily a function of not having the cost of re-constructing the existing car park (including the re-development on the new internal space created by the southern option), together with the lesser facilities offered within a bus/taxi interchange to the north. Also, while it offers a shorter journey time to access the station than the options to the south, all operators have suggested they would not divert their services to it in this location and would prefer it to the south. An interchange to the south will also mean buses would be less likely to congregate at Morrisons in the future and operators would be able (utilising the interchange) to consider future provision for the Waterfront as the development of this extends further east.

The greater car park capacity offered by locating an interchange to the north is significant as this will do most to take cars off the road and encourage park and ride to access employment opportunities and other services, in particular between Barry and Cardiff and its surrounds, where roads are most congested. However, it also has a direct impact on the scope for housing and commercial development on site with option 3 offering only around two thirds the housing of options 1 and 2. Option 1a which adds drop off points to the northern access road but retains the interchange to the south offers both the least housing and the lower number of car park spaces. Assuming that many buying houses located at the station will do so in order they can access rail services without needing to use their car and a house occupancy rate of around 2.2, additional housing on site could effectively make up for much of the reduction of 63 car park spaces from the south of the station due to the provision of the interchange there. In addition, that occupants of these homes will no longer use their car to access the station will not only reduce congestion between Barry and Cardiff but also on roads within Barry.

In the table below each of the individual options are considered against each of the scheme specific objectives, key imperatives and the delivery objectives. The table uses a RAG analysis to score the options with green indicating the objective is fully met scoring 2, amber indicating the objective is partially met scoring 1 and red indicating the objective is not met, scoring 0. To assist in understanding the judgements made for each option we have also provided below a table summarising their potential outputs in terms of car park spaces, housing, potential costs and high-level estimates of their BCR (both with and without land value uplift included). These outputs together with the key differences shown in Table 28 above are all taken into account in making the assessment.

Table 29 - Key outputs of scheme options

	Option 1	**Option 1a**	**Option 2**	**Option 3**
Car Park Spaces	308	308	308	371
Housing Units	88	56	99	62
Cost	£7.1m	£7.3m	£7.8m	£5.9m
BCR	0.79/0.77	0.76/0.74	0.71/0.69	1.12/1.09
BCR (inc LVU)	0.94/1.12	0.85/0.97	0.87/1.04	1.12/1.40

Table 30 - RAG Analysis of Scheme Options

Scheme Objective	**Option 1**	**Option 1a**	**Option 2**	**Option 3**
A. Accommodate increasing rail demand				
B. Improve access to/from rail services				
C. Increase access to current and emerging employment				
D. Support ongoing and future				

economic development				
E. Placemaking inc. the foundations for further station development				
F. Equality				
G. Climate Change				
H. Cost effective/VfM				
I. Deliverable				
J. Affordable				
K. Sustainable				
L. Takes account of interdependencies				
Score	23	19	22	19

It is clear from this overall analysis that the differences between options are relatively marginal. However, scores do indicate that Option 1 – a Bus/taxi Interchange to the south (in this case without any development) and Option 2 - Interchange to the south with scope for housing/commercial development including up to 99 housing units, offer slightly better overall strategic benefits and value for money than Options 1a and 3.

What, ultimately, tips the balance in favour of Option 1 (without housing) and 2 (with housing) is the capacity for further development and greater focus on sustainability and inclusion they will offer. Both options offer greater scope for housing and commercial development to take place alongside the transport interchange than other options under consideration. Whether this further regeneration opportunity is taken at this stage (Option 2) or as a 2nd stage (Option 1) is yet to be finalised, although due to funding timelines it appears most likely it will be the latter. Regardless, such development will make a significant contribution towards the establishment of the comprehensive mobility hub at Barry Docks that is the ultimate vision of the Council. Housing on site would include social provision and mean anyone taking up residency had direct access to all modes of sustainable transport for the journeys they need to undertake, negating the need for car ownership. Commercial development will allow for provision of a cycle and business hub to be incorporated into the interchange as envisaged, while also making the station environment more attractive in general, by increasing the available facilities, including the potential for further community facilities to be provided.

Locating the bus/taxi interchange to the south of the station establishes it as a distinct facility in its own space, emphasising its role as the gateway between the station and the town. It takes away some car park spaces, potentially replacing these with housing and as a result, gives greater prominence to the bus/taxi interchange over the Park and Ride car park. It also offers greater support for active travel by improving access to the station platforms from the north, the south and the west, as well as establishing a direct active travel link between the town centre and residential areas to the north of the station and the developments taking place along the Waterfront to the south.

By placing the focus on use of sustainable modes options 1 and 2 also offer greater capacity to achieve inclusion and equality, with those excluded more likely to be able to access these modes than they are to own or have access to a car. Increased inclusion will, in turn, lead to greater opportunities for vulnerable groups to access jobs, training and services, via the rail network. This will be particularly relevant to post-Covid recovery.

This placemaking will clearly do much to improve the overall image of the station and assist in promoting it as the sustainable gateway for the town sought by the Local Development Plan. Options 1 and 2 will also put in place the foundations for future development that can best facilitate further use of sustainable modes in the future, for example by adding cycle hire facilities or a combined cycle and business hub, etc at the centre of the bus/taxi interchange. Whereas, locating the interchange to the north alongside car parking,

while retaining only car parking to the south of the station platforms and nothing more, risks the image of the station remaining car centric and limiting future development to only the north of the station site. In the case of the latter, for example, this would locate buses in the wrong place to serve future developments along the Waterfront from the interchange, as these emerge.

Based on the above, it is proposed Options 1 and 2 should be considered indicative of the preferred option for further examination at FBC stage, either including some housing/commercial development to the north or not, depending on the outcome of further surveys and investigations it has not yet been possible to undertake. However, this will be firmed up at FBC stage and a final decision on the preferred option made, once we can establish the additional information required. This will include the completion of all geotechnical surveys, adjustments to costs once we have these and consequent reductions to the level of risk included in the costs, refinement to land value uplift calculations and the inclusion of these benefits, as well as both EV costs and benefits, in the economic appraisal of each option.

7. Commercial Case

7.1. Introduction

The commercial case provides evidence on the commercial viability of a proposal and the procurement strategy that will be used to engage the market and procure the necessary services for delivery. It should clearly set out the financial implications of the proposed procurement strategy. It will present evidence on risk allocation and transfer, contract timescales and implementation timescale as well as details of the capability and skills of the team delivering the project and any personnel implications arising from the proposal.

Given that much of the works will be undertaken within the station confines on land surrounding the platforms already owned by the County Council or that they intend to purchase, the procurement processes will be governed largely by the processes of the Council. Consultation over the process has been undertaken with CCR as the primary funder and TfW as the station owner to ensure it also complies with their requirements.

The Commercial Case will be developed further at Full Business Case stage.

7.2. Critical Success Factors

The Commercial Case establishes how the proposals could be procured. Relevant CSFs for this case are:

- Ensuring that any option can be procured, delivered and operated as required;
- Ensure the scheme can be delivered using current engineering solutions;
- Long-term operational and maintenance liabilities are considered acceptable;
- Ensuring the scheme can be procured through feasible procurement routes;
- Compliance with public sector procurement regulations (including any affecting investment in the rail sector) for grant funded elements.

7.3. Output Based Specification

The output-based specification for the Barry Docks Transport Interchange envisaged at this stage is summarised below. However, all designs for the Bus and Taxi Interchange will be refined and finalised at FBC stage. Similarly, the Station Master planning exercise will be finalised at FBC stage, once geotechnical surveys are available. At this stage the key elements that make up the output-based specification for the Barry Docks Transport Interchange are identified below.

7.3.1 Additional Park & Ride capacity

Provision of an additional car park to the north of the station offering 67 additional parking bays and also accommodating 63 bays relocated from around the Docks Offices to make way for the bus and taxi interchange in this location. Within the car park 12 bays will be designated for use by disabled people. There will also be 14 EV charging points provided. A footpath from the car park to the pedestrian subway and via this to the station platforms will be provided adjacent to the car park. This will be signed, marked and well lit. Future CCTV provision will be catered for with appropriate ducting installed to enhance security for all users of the car park.

The car park will be accessed off the highway by a new access road from either Subway Road or Dock View Rd. This will include a footpath for pedestrians alongside it, while cyclists will be able to use the carriageway. The road will be signed as an access route to the station and well-lit for security purposes. Benches will be provided at intervals along it for those walking to/from the station who need or wish to rest along the way. Signage to the access route and car park will be provided in the immediate area.

The preferred designs will be finalised at FBC stage. However, it is possible that a drop off point/layby will be incorporated into the new access road, located as close as possible to the pedestrian subway via which the

station platforms can be accessed. Potentially, this will also include a taxi drop off and bus drop off point as well, as long as this can be incorporated without impacting significantly on the scale of housing/commercial development that can be undertaken. Space will be retained to the north of the new road and north west of the pedestrian subway, to enable the housing/commercial development envisaged as a future development stage.

7.3.2 Provision of a new Bus and Taxi Interchange

A Bus Interchange is recommended to the south of the station platforms in the area in front of the Docks Offices (see Figure 19). The Bus Interchange will provide circa 4 bus bays for use by all services, including EV charging ducting for all to be so equipped. Bays will be located at the roadside around the perimeter of the Interchange, enabling passengers to board or alight directly onto a new footpath leading directly to/from the pedestrian subway to the station platforms. It will also mean buses are not required to reverse out of the bus bay into the road but can pull up directly into a bay and then exit it directly onto the road around the Interchange, a much safer manoeuvre. Each bus bay will be provided with a shelter, seating, lighting, cabling for real time service information and ideally, Wi-Fi for use by passengers waiting for their bus. The footpath will circumnavigate the entire perimeter of the Interchange. A Taxi Layby/Rank will also be provided alongside bus bays, located close to the access to the pedestrian subway. This will have the same facilities as for bus bays

Buses will access the Interchange from the existing roundabout on Ffordd Y Mileniwm, alongside other vehicles, before turning left to follow the access road to the Docks Offices which will be retained and run around this, as now. At the south east corner of the Docks Offices buses will turn right into the Interchange perimeter road which will be restricted for use by buses and taxis only and operate one way. Buses will follow the road round the Interchange to enter a bus bay then exit back onto the access road, just beyond the pedestrian subway, before exiting the Interchange via the Ffordd Y Mileniwm Roundabout. A separate access route to the Interchange will be provided off Ffordd Y Mileniwm for cyclists and pedestrians, as well as improved access from the roundabout. An informal pedestrian crossing will be provided to the central area across the access road enabling direct access to the pedestrian subway leading to the station platforms. Sheffield stands for cycle parking will be provided at the entrance to the pedestrian subway.

Within the centre of the Interchange there will be an area to accommodate a range of business, retail and community hubs which will be lined with seating and other facilities suitable for passengers waiting or consuming food/drink. This area will also include cycle parking in the form of Sheffield stands and/or Cycle Lockers. Two further pedestrian crossings will be provided, one at either end of the facilities, to enable users to safely cross the Bus and Taxi only road to access the facilities, access the council office or walk/cycle directly across the central area. The entire area will be landscaped and well lit.

The central area of the bus/taxi interchange will also provide capacity to incorporate a cycle hire facility, cycle hub and business/community hub at a later development phase to form a more comprehensive mobility hub and enhance the role of the station as a gateway to Barry Town.

7.3.3 Improvements to the pedestrian subway

The current pedestrian subway is functional but in need of some improvement to make it a more inviting and secure route through to the station platforms. The subway interior will be refurbished and lighting within it will be upgraded to improve its aesthetic, security and the perception of security. Cabling for provision of CCTV at a later development phase will be reviewed during discussion with Network Rail at the detailed design stage.

At this time the ramp leading from the subway to the station platforms is just beyond the acceptable gradient for wheelchair users and others with mobility impairments. It is not envisaged this will be altered as part of the proposed Barry Docks Transport Interchange phase. However, how this can be addressed will be considered as part of the longer-term vision for future development to a comprehensive mobility hub.

7.3.4 Pedestrian and Cycle route from Dock View Road

The current pedestrian and cycle route between the pedestrian subway and Dock View Road will be completely upgraded. A new segregated footpath and cycle route will be provided that follows the current

alignment of the old road serving the derelict BT premises, down the embankment, to join with the pedestrian subway. The surroundings to the route will be landscaped and seating, lighting and signage provided. Steps down the embankment from Dock View Road will not be retained, with all pedestrian and cycle users directed down the new route. Whilst this will necessarily slope to address the drop in height from Dock View Road to the Subway it will be constructed to ensure it complies with guidance in order to meet the needs of disabled people and others with mobility difficulties.

7.3.5 External Signage

A separate project is considering the need for Wayfinding signage for Active Travel users on roads leading to stations in CCR and this will put in place signage for Barry Docks.

7.3.6 Improvements to the tunnel on Subway Rd

Improvements will be made to the road tunnel under the railway on Subway Road. These will include improvements to its retaining walls as necessary, refurbishment of the interior to improve the aesthetic, refurbishing the road surface, improving the pedestrian and cycle route through the tunnel and upgrading lighting. Consideration is also being given to signalising the entrances to the tunnel to require vehicle traffic through it to only travel in one direction at a time. The Council is also expected to adopt Subway Road to ensure ongoing maintenance.

7.3.7 Consideration of a link to Barry Island

The 96 Bus serving the Bus Interchange will provide a direct link by bus from Barry Docks to Barry Island. It will also continue to be possible for rail users to use the improved access along Ffordd Y Mileniwm to access the heritage railway to Barry Island from near the Morrisons supermarket in Waterfront Retail Park. Further consideration will be given to improving this link at future stages of development.

7.4. Procurement Strategy and Sourcing Options

The approach to procurement will need to take account of any imperatives of the rail industry, as defined by TfW and Network Rail, alongside those of CCR. This will be defined following further consultation with each of these organisations.

Procurement of works beyond the station boundary will be governed by the procurement and sourcing imperatives of the Council and will be defined following further consultation with them. Currently two traditional routes to procurement for the Council can be identified, namely;

- Framework Contract; and
- Standalone Competition.

Procurement through a framework may offer benefits in terms of procurement timescale and potential efficiency savings for a programme of similar works (although this scheme is not part of an ongoing programme of work packages). This option could also benefit the project since a Contractor could be engaged early to enable the design team to work closely with the Contractor, similar to Early Contractor Involvement (ECI), in order to mitigate construction risks early in the process. However, with this approach there is also a risk of excluding a Contractor more experienced in managing the key construction risks particular to this scheme.

A standalone procurement process offers a robust tender process that will aim to ensure the most suitable Contractor is selected but will incur greater costs associated with the preparation of the tender documents and administering the tender process. The risk of an unsuitable Contractor being awarded the contract is reduced by adopting a restricted tender process.

The table below outlines the advantages and disadvantages of Framework and Standalone Competition routes to Procurement.

Table 31 - Routes to Procurement

Procurement Route	Advantages	Disadvantages
Framework	▪ Reduces the procurement process and time which may be advantageous for this scheme ▪ Quality checks have already been carried through a framework tender process, again reducing time and cost ▪ Further benefits are realised where there is a programme of work through efficiency and cost savings, lessons learnt etc. Although this is unlikely to be a significant advantage for this option	▪ May exclude contractors that could potentially offer benefits not offered by the framework contractors ▪ Framework providers may not bid as competitively as those in a standalone contract
Standalone Competition	▪ Competitive tender process provides reassurance that a competitive tender price has been achieved. ▪ Opportunity for a wide range of contractors to be invited to tender. ▪ Tender process provides reassurance that a robust process is followed to select the most suitable Contractor to undertake the work.	▪ Tender process can be lengthy and costly depending on type of contract. ▪ Risk that an unfamiliar Contractor winning the tender based on price but does not deliver to required performance criteria.

7.5. Procurement Options

The following procurement options are available:

- Traditional;
- Design and Build (D&B); and
- Early Contractor Involvement (ECI).

A traditional approach will not allow the project to benefit from early contractor input placing more project risk on the Council. Whilst the desired level of build quality may be achieved, this may result in cost escalation due to expensive changes and failure to mitigate key construction risks. Traditional approaches are not recommended on the basis that they do not support an integrated team methodology and collaborative relationships.

A pure D&B contract is a viable procurement option. This procurement option has benefits by transferring all the design and construction risk to the Contractor. However, the result of transferring the design risk to the Contractor is that the Council has far less influence over the design and thus there is greater risk that the quality of the construction suffers as a consequence. The transfer of risk under a D&B contract can also result in unrealistically high tender prices. There is also increased risk of cost escalation as instructed changes can be expensive.

An ECI approach balances risk and provides for good construction risk management by early contractor involvement in the design. However, ECI will involve more upfront costs for early contractor input, although the expectation is that these are adequately recovered through savings in risk mitigation and value engineering. Contractor design costs can be controlled by implementing a cap. There is also a risk with ECI that the Contractor would allocate more risk costs to the works when finalising the prices and this is difficult to assess. This could be addressed by incentivising the Contractor to value engineer the design tendered

price through a pain/ gain share mechanism during the detailed design. This may also increase the accuracy of risk allowance in the tender prices. ECI may also offer benefits to construction programme optimisation.

It is likely that this scheme could attract a significant number of tenderers through an open competitive tender process. Given the associated project risks, it is important that the most suitable Contractor with experience in managing these risks is selected.

Based on this, a restricted tender process is considered the most appropriate if a standalone competition route is adopted. However, it is envisaged that all options for procurement will be fully assessed at the next WelTAG stage and a more detailed procurement strategy will be finalised within the Final Business Case.

Payment and Charging Mechanisms and Pricing Framework

It is likely that any works within the station, although not currently envisaged, would be commissioned by TfW from their existing delivery partners. All other works, (ie all works envisaged at this stage) will be outside the station boundary and will be commissioned by the Council through their existing framework/s. It is also possible through negotiation with TfW that the Council take responsibility for commissioning and managing all works, regardless of whether they are within station confines or not.

The payment mechanism will determine how payments to the private sector party likely to be responsible for delivery are calculated and is fundamental to the contract by putting into financial effect the allocation of risk and responsibilities between the commissioning organisation and the private sector party. This is expected to use an output delivery-based structure where payments are based on the delivery of designated deliverables at a pre-determined timescale. It is not yet clear whether any deductions will be applied where the deliverables are not provided in the time expected and this will be defined once the scheme specification is complete at FBC stage.

7.6. Risk Allocation and Transfer

The risk allocation approach is expected to pass over the construction risks to selected private sector providers, where these can be controlled or managed by these providers, enabling them to price delivery with confidence. This approach helps to achieve value for money as certain private sector organisations have more experience and are therefore better equipped to manage and mitigate certain risks.

The Revenue Risks will be defined once the design stage is complete, with the current preliminary designs defining the likely revenue implications (e.g. operational and maintenance costs) and these will be refined further at WelTAG Stage 3. Revenue responsibilities and risks will also be finalised at Stage 3, allocating these primarily to the Council or if appropriate TfW.

The approach towards managing risk is defined in more detail in the Management Case.

7.7. Contract Length and Management

This will be defined following finalisation of the output-based specification and reported fully at Stage 3.

8. Management Case (Delivery Case)

8.1. Introduction

The management case assesses whether a proposal is deliverable. It tests the project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance.

The management case sets out a clear and agreed understanding of what needs to be done, why, when and how, with measures in place to identify and manage any risks. It sets out a plan to ensure that the benefits set out in the economic case are realised and will include measures to assess and evaluate this. The project and programme are expected to have a risk management plan, proportionate to its scale.

The Management Case will be finalised at Stage 3.

8.2. Critical Success Factors

The core requirement of the Management Case is to set out how the scheme can be delivered in terms of management, governance, risk management, stakeholder involvement and the realisation of expected benefits. CSFs for this case include:

- Ensuring a sound approach to planning, delivery and risk management;
- Ensuring that any management imperatives set by the rail sector are met; and
- Deliverable within the timescale during which funding is likely to be available

8.3. Overall Approach to Project Management

The Council will manage the overall delivery through their procedures including the final design, costing and delivery process. In doing so they will consult with CCR and TfW regarding their imperatives, including working with TfW and Network Rail on any aspects of the improvements that impinge on rail infrastructure or land. An outline of how the Network Rail GRIP process will be applied, if this is found to be necessary, will be reported in the WelTAG Stage 3, FBC report.

8.4. Project Governance

As indicated above, the governance of the project will be driven by the Council's procedures and ultimately the requirements of CCR as the funding body.

8.5. Governance, organisation structure and roles

It is envisaged delivery of the scheme on the ground will be the responsibility of the Council, including the scheme concept and objectives. The Scheme Sponsor and the funding is sought primarily from the Metro Plus, Phase 1, Regional Transport Authority (RTA) Programme.

An overview of the governance structure which stems from the responsibilities is provided in the figure below.

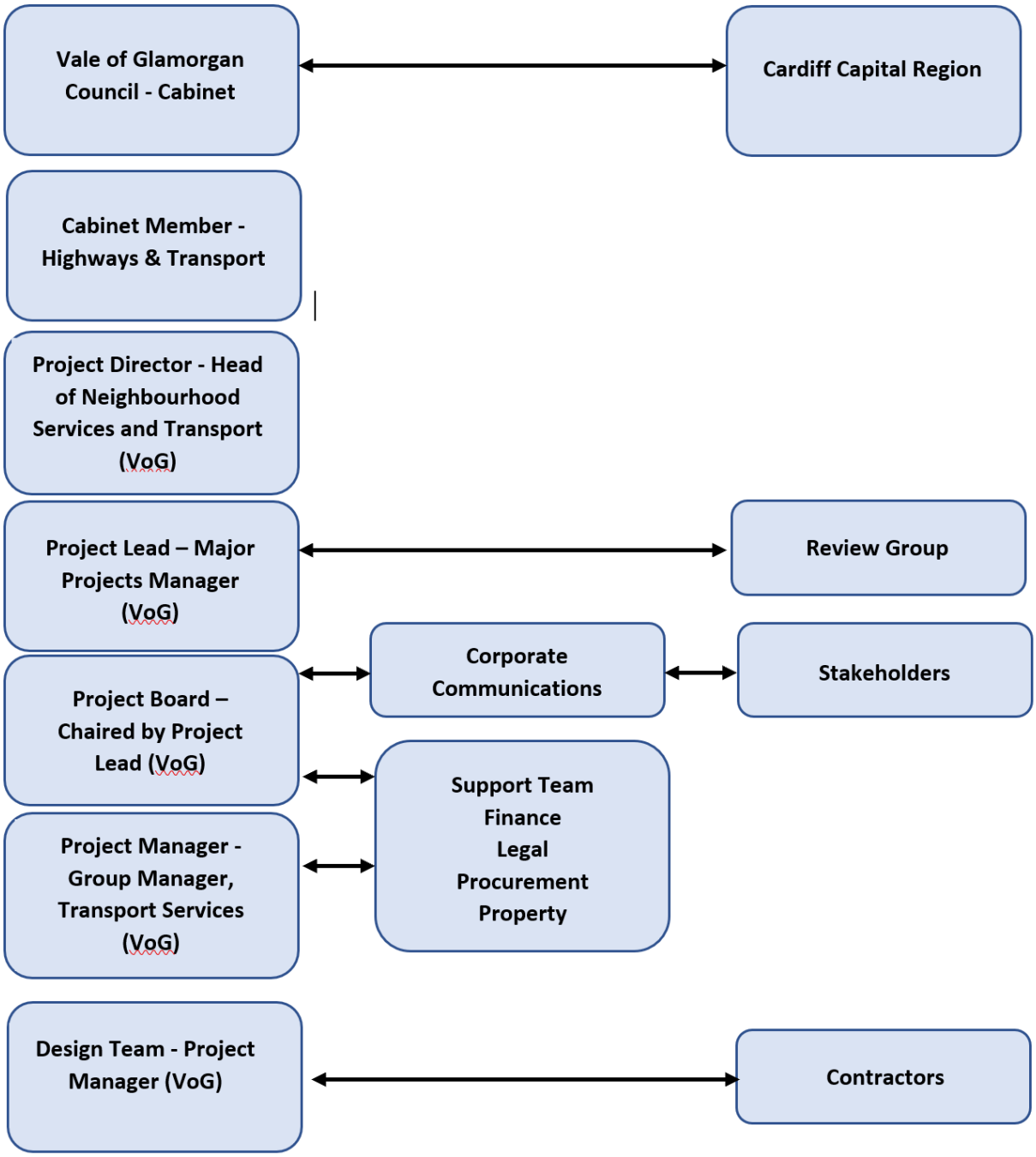


Figure 26 - Project Management Structure

8.6. Programme and Project Reporting

An overall project programme will be prepared, through discussions between the Council, CCR, TfW and Network Rail, to implement and monitor delivery of the project and this will be reviewed and updated on a regular basis by the Project Manager. Regular progress meetings will be held as the scheme develops, with progress reports prepared in advance for review with the Client.

8.7. Programme of Scheme Delivery

The delivery programme is subject to a number of unknowns, making it difficult to prepare a detailed plan at this stage. An initial programme, commencing with submission of this business case and running to January

2023 is provided below. However, this may change as the detailed appraisal, design, procurement and management process is progressed towards scheme delivery and implementation at the FBC stage.

Key milestones in the delivery of the scheme include:

- Stage 2 WelTAG reporting - Mid January 2021;
- Stage 3 Business Case completion - Mid- July 2021 (based on Geotech and drainage CCTV site works being undertaken w/c 10th May and 17th May respectively and allowing for results to be fed into the detailed design process and to undertake some form of Public consultation);
- Reporting of Stage 3 Business case to Cabinet of the Council - Mid-July 2021 (required to gain approval under Contract Standing Order and Financial Regulations, plus approval will be sort for planning submissions and land negotiations);
- Planning submission made – end of July 2021 (assume 12 weeks for determination);
- Finalise design, responding to planning conditions and sufficient for tender purposes (dependent upon Stage 3 WelTAG contract approach agreed) - 8 weeks;
- Advertising the contract tender via Sell2Wales will follow on from the approval of the scheme, via the planning process, agreement on land acquisition and land transfer contract and any approvals required by Transport for Wales and Network Rail;
- Assuming planning approval within 12 weeks - 22nd October;
- Issue tender packages - w/e 29th October (assume 4-6 week turnaround);
- Mid-term clinic (ie Mid-November – to review of bids), require tenders returned – sometime between 26th Nov & 10th Dec;
- Report to Cabinet indicating preferred contractor – Early / Mid December 2021;
- Contract award via Letter of Intent by mid-January 2022 following procurement standstill period;
- Contract negotiation and contract provision - March 2022;
- Contract mobilisation by contractor - Contract start date mid to late February 2022 (Dependant on vegetation having being cleared prior to Feb 22, Bird Nesting season and Slowworms being relocated prior to Oct 21 to March 22 hibernation);
- Contract Construction programme, circa 18/24 months (subject to ecology matters being resolved in advance and stakeholder agreement on design issues including Suds drainage provisions and approvals) - Contract completion August 2023.

8.8. Assurance and Approvals Plan

At a practical delivery level, the Council and their agents will be responsible for project assurance and approvals and therefore this will be managed in accordance with their standard processes and guidance. More detail on this will be incorporated in WelTAG Stage 3 following discussions with CCR, TfW and Network Rail.

In relation to the approvals for the project to go ahead, this lies with the CCR and is governed by its Assurance Framework and WelTAG guidance. More detail will be sought within WelTAG Stage 3.

8.9. Contract Management

At WelTAG Stage 3, outline arrangements for contract management will be developed through discussions with the various interested parties and these will be finalised, enabling procurement of contractors to take place, assuming funding is agreed.

8.10. Risk Management Strategy

An active approach towards risk management will been taken, based on the normal processes and procedures of the Council and its partners and taking account of GRIP as necessary.

8.11. Purpose and Approach

The Risk Management Strategy will be designed to identify the risks associated with the proposed scheme, mitigate these as far as possible and to put in place risk pricing and contingency mechanisms to address remaining risks.

8.12. Risk Management Procedure

The overarching responsibility for risk management in terms of delivery lies with the Council and is based on their normal corporate management standards. Any additional level of risk resting with TfW and Network Rail will be combined with that of the Council and reported at WelTAG Stage. The processes to be applied are as follows:

8.12.1 Identifying risks

Risks are identified through Risk Workshops held as part of the design process, informed by stakeholder engagement. Risks are identified as 'generic' (i.e. relating to the project as a whole) or 'specific' (applicable only to one or more of the specific interventions).

8.12.2 Assessing risks

Impact and likelihood of risks is established through the Risk Workshops, using a matrix which identifies impact (high, medium, low) and likelihood both without and with mitigation. Risks assessed as remaining 'high' or 'medium' following mitigation on the basis of this combined ranking are detailed within the Risk Register and will be actively managed throughout and following implementation of the scheme.

Where such remaining risks are quantifiable, they are subject to Quantified Risk Assessment and taken into account in the costs of the scheme.

Unquantified costs (e.g. political risks to funding) are managed on a non-quantified basis as part of the overall Project Management arrangements.

8.12.3 Planning Risk Action

Risks will be continually reviewed as the project progresses, via the Project team who will recommend actions to the Project Board and monitor outcomes.

8.12.4 Implementing Actions

Actions to be taken to address risks identified will be the responsibility of the Project Team and relevant Project Manager (Director, Lead, etc, as appropriate).

8.13. Communication of Risks and Attendant Actions

Communication of risks will be managed through the structure set out in Figure 26 - Project Management Structure. Any additional communication with stakeholders will be determined by the Project Board.

8.13.1 Records

Recording of risks (and maintenance of the recording) is through the Risk Register, the current version of which is provided below. Maintenance of these records is the responsibility of the Project Manager.

8.13.2 Reporting

Risk Management reports, based on the updated Risk Register, will be through the structure detailed in the project management structure.

8.13.3 Timing of Risk Management Activities

Risk Management will be undertaken as part of the general Project Management activity. Reports on risk will be a standing component of reports to the Project Board.

8.13.4 Roles and Responsibilities

The designated Project Manager for the scheme as a whole is responsible for identifying and reviewing risks and incorporating these into the Risk Register and reports to the Project Board.

The Project team is responsible for reviewing reports from the Project Manager/s and reviewing the Risk Register to identify and report any issues requiring action by the Project Board.

The Project Board is responsible for authorising any actions outside of the Project Managers' remits, including onward communication to stakeholders.

8.14. Risk Budget

The risk budget relating to the scheme delivery will be calculated using a QRA process compliant with GRIP and will be incorporated within the scheme costs set out in the Financial Case at FBC stage.

8.15. Contingency Plans

The Project Board is responsible for developing, initiating and managing any contingency plans to address risks which the risk management process identifies as requiring such action.

8.16. Planning Powers and Consents

The Planning Powers and Consents required for the scheme will be developed at WelTAG Stage 3.

8.17. Communications and Stakeholder Management

8.17.1 Stakeholder Consultation Framework

A Stakeholder Consultation Framework has been established and is appended to this business case. The stakeholders to be consulted on the scheme as it is progressed can be classified in the following categories:

- Primary Stakeholders – Organisations / individuals that have both direct and high impact / interest on the outcome / delivery of the project. These organisation / individuals are also directly impacted by the construction works; and
- Secondary Stakeholders – organisations / individuals who are not directly impacted and have medium / low interest in development of the project. However, these organisations may have a high impact on the outcome. These include Statutory Environmental Bodies (SEBs), such as the Environment Agency and bodies such as Network Rail, who will have a high influence on the scheme approvals, but do not have any direct impact or involvement.

This approach helps to prioritise stakeholders, third parties and other interested parties, based on their impact and likely contribution to the project, hence allowing a more effective and focused approach when addressing issues. Many of the risk items identified in the Project Risk Register will only be mitigated or closed through continued dialogue with key stakeholders.

Due to the potential impact of the scheme on local residents there is a risk of objections. In order to mitigate this early stakeholder engagement is necessary. A range of communication techniques are used to engage with all stakeholders, the local community and interested parties. These include:

- Face to face virtual meetings;
- Telephone consultation;
- Email and social media; and

- Open forum (not in current circumstances).

A high level of community engagement has been sought to understand the current activities of those represented by stakeholders so we are aware of the potential interactions between these and the station and can contextualise comments made. Where appropriate this has included establishing current levels of use of the station, any barriers to this and the potential for the scheme to remove these and/or increase demand. We have also established any future development or change to current activities envisaged by stakeholder in order to identify the impact this may have on patterns of demand. We then explored the specific views of stakeholders on the proposals for a transport interchange. This included seeking their views on the 3 options (A to C) for the locations of the infrastructure proposed, their thoughts on the infrastructure itself, including the form this should take and the need for any complimentary infrastructure or supporting services to encourage take-up. Finally, we explored the implications of Covid-19 both for current activities and future development plans, including the timeline stakeholders are working to for returning to a 'new normal' and what they thought a 'new normal' might look like, where this was known.

When introducing the consultation, each stakeholder was informed of the timeline Amey had been asked to work to and that this encompassed two WelTAG stages; ie an Outline and Full business case. Each was also made aware that the work was intended to support a funding bid to the CCR Metro Plus, phase 1, Regional Transport Authority Programme. On completing the consultation, it was made clear to each stakeholder that designs were not available to consider at the time. However, that these would be shared for comment at FBC stage.

It is envisaged that consultation at the FBC stage will be undertaken by emailing each of those who have participated in one to one consultation. Design drawings will be distributed to stakeholders via this email together with a brief set of questions to obtain views on these. The designs will also form the basis of wider consultation with local residents and the wider public. This will be pursued through use of an online website and survey. Further one to one consultation with key stakeholders will also be undertaken, as necessary, at FBC stage.

A substantial number of different organisations have been consulted to date. Feedback from this consultation is summarised below.

8.17.2 Consultation Feedback

Cardiff Bus

Cardiff Bus are the administrator for Plus Bus in Barry. Based on ticket sales they are aware that very few people currently arriving by rail at either Barry Docks or Barry Town transfer to bus to continue their journey. Their current services to Cardiff do compete to some extent with the rail service. However, the choice of whether to use bus or rail often depends on where people live or work in relation to the route or station, while cost is also an issue for some. Cardiff Bus would like to see a bus interchange provided closer to the town centre, alongside other bus priority improvements. In terms of the scheme options, they would prefer the interchange located to the south, in the area alongside the Docks Offices. They thought this location offered the better scope to build and develop an interchange in the form and of the scale proposed. It was also considered that an interchange here may encourage services to extend from Morrisons to the station. However, Cardiff Bus have concerns about their current services using it as the time penalty for doing so will impact schedules. Any interchange will require good facilities for passengers, including shelters, seating, lighting, information, etc and should be built in such a way as to minimise the need for buses to reverse and to ensure passengers can alight/board safely. Were an interchange provided to the south of the station then priority access would be required for buses, to ensure they did not get caught up in car traffic accessing the site to park, causing service delays. Up to 4/5 bus bays within the interchange would be adequate.

New Adventure Travel (NAT)

Within Barry, NAT provide the 304 service which is inter-worked with the 303 to provide a service from Cardiff through Barry residential areas and via the town centre and Morrisons to Bridgend. The service is partially subsidised by the Council. The service passes Barry Town (but not Barry Docks) station where it is

accessed by a relatively small number of rail users seeking destinations, primarily beyond the town (Hospital, Rhoose, Cardiff, etc). The service also passes Cardiff International airport, although few passengers currently use it to access this. NAT do not regard the service as competing with the rail service to Cardiff or the Airport as running times are significantly greater than rail. NAT would much prefer to see a bus interchange located to the south of Barry Docks station. Were the interchange provided here NAT would extend the (partially subsidised) 304 bus from Morrisons to serve it, at least for a trial period and given the Council's permission to do so. NAT believe the interchange should include all standard infrastructure (shelters, seating, lighting, safe pathways, CCTV, RTI, etc). They would also be keen to see toilet facilities provided (for both drivers and passengers) and noted that seating within bus shelters can attract anti-social behaviour and would wish to see consideration of how this could be addressed. NAT would prefer bus bays at the interchange not to require buses to reverse into or out of them, for safety reasons. Hybrid buses are used to provide the 304 and electric buses are operated elsewhere in the group so EV charging at the Interchange would be welcomed, although the distance of the 303/04 route may prohibit use of electric buses on this until the range of these can be improved. If a bus interchange were to be provided north west of the station NAT would not run the 304 into this, as it would divert the service away from the residential areas (to the north) it currently serves, resulting in reduced patronage.

Greenlinks

Greenlinks currently provide an, entirely subsidised, door to door service throughout Barry and the rural vale, alongside two subsidised demand responsive services:

- G1 - Monday to Friday, St Athan to Cowbridge and Bridgend, villages based on demand;
- G4 - Thursdays only, rural vale to Cardiff.

Services focus on meeting the needs of those that have limited or no access to a bus due to their location or a mobility impairment. The majority of passengers are from rural vale which is sparsely served by conventional bus and are mostly older people seeking access to health, shopping or organisations/groups. Only the Door to Door service currently serves Barry town and within this area most passengers have a mobility impairment. Requests for journeys to/from the station are rare. However, Greenlinks would use any interchange at the station provided and requested by door to door users. They would also be prepared to consider extending the G1 and/or the G4 to serve the station.

Greenlinks thought it wouldn't make a significant difference to them whether a bus interchange was located to the north or south of the station. There was potentially a case to suggest that locating the interchange to the south would be best as there was existing access to the site and greater space to build an interchange. However, from Greenlinks perspective it was simply important it could readily access the interchange and that it included facilities to enable safe unloading and to address the mobility impairments of their passengers. In particular, this should include a bay for Greenlinks use, suited to unloading passengers as close as possible to station access routes and away from other buses (bearing in mind wheelchair lifts are located at the rear of Greenlinks vehicles). Any bay should also enable vehicles to drive through rather than having to reverse to exit the bay. The bay would not need to be allocated exclusively for Greenlinks use and could be either a bay also used by other buses or by taxis/PHV's.

Important facilities required alongside this include clearly marked and well-lit safe footways to the station platforms that are suitable for wheelchair users, a reduced gradient to the ramp between the subway and station platforms to bring this within DDA standards and toilet facilities. It was noted that Greenlinks had in the past been based at the Docks Offices to the south of the station, before it moved to the Alps, its current base. Also, that purchase of an electric minibus was under consideration for future use. With provision of EV charge points being a key consideration for the station it was possible a return to the Docks Offices base could be beneficial to both Greenlinks and the station upgrade.

Taxi Association

Current taxi services focus on schools, airport, train stations (circa 10%) and the town centre, including 2 ranks there. Also, some demand for commuters to Cardiff, especially when other (rail/bus) services become crowded and for access to key events (ie Rugby, concerts, etc). The representative consulted mentioned that the previous Park and Ride improvements has enhanced access to Barry Docks, but Dock View Road

access is not great due to the narrow road and many bends. Taxi operators encourage passengers to use the southern entrance, but this increases client costs (by plus 1/2 mile maybe). Barry Docks and Barry Town are the two stations they serve most often.

The Association suggested their preferred choice for the location of a Taxi Interchange would be the Northern Access route, off Subway road (near hind garage and BT officer), as this gives customers the best and closest option for access to the station. MM noted the steps are closed/boarded off now and no longer in use, so this access would need to be improved. In terms of infrastructure for a taxi interchange at Barry Docks, taxi operators would like Amey to take into consideration how taxi driver wants to drop off people as close as practically possible, with minimum fuss due to the town being a relatively congested area in terms of transport (in some times more than others i.e. rush hour). The most important factor is the ease of access. Overall, the taxi interchange vision is no different to a bus interchange: A shelter where people can wait safely shielded from the weather and so their vehicles can get in and out easily. No telephone is needed as most bookings are either via mobile or app (30%) and phone booths tend to invite vandalism etc. It was important to have signage from the station to where the bespoke taxi rank is, information at the shelter to provide phone numbers of companies/name of station/ taxi rank number, etc/maps, for practicality. The association would very much like to work with the council in relation to any type of incentive which is mutually beneficial – ie joint ticketing.

There are no electric vehicles in the taxi fleet at present. The association has had discussions with providers of EV vehicles – which flourish in Cardiff (flat city), but EV vehicles don't work well with Barry's gradient/hilly nature. All for the technology but needs to be affordable and meet daily requirements for a taxi (circa 200/300 miles).

Keolis Amey

Keolis Amey had no strong preference for the interchange options under consideration. As the current car park was always full (pre Covid), an increase in car park/park and ride capacity was essential for future growth, regardless of where the interchange was located. Alongside this, provision for EV charging points was considered important, not only for cars but also bus and taxi. The bus and taxi interchanges proposed would also help in generating increased rail demand for journeys both to and from Barry. Access for active travel modes will be equally important, especially post Covid. Keolis Amey has no funds available to support improvements at Barry Docks. The station is regarded as functional and little other additional station infrastructure is considered necessary, although a 'pop up' café would be useful. It was noted that it would be important to improve access for disabled people via the ramp from the subway to the station platforms. This would be preferable to and less costly than considering a footbridge from Dock View Rd to the station. Keolis Amey also mentioned it would be supportive to the business case to include developments, such as 'Milk and Sugar' meeting hubs at the station both in general and to address the situation post Covid. Were a 'Cycle Hub' to also be provided these might usefully be accommodated within this.

Vale of Glamorgan Council, Town Centre Regeneration Officer (TCRO)

In the overall vision for regeneration of Barry, Barry Docks is regarded as one of two key Gateways to Barry town. The other being the Gladstone Road regeneration area (western gateway) which is currently in the process of being developed. The availability of the CCR Metro Plus, phase 1 Regional Transport Authority programme provides the opportunity to progress the Barry Docks element (eastern gateway). This process of identifying funding sources that can advance different elements to bring about the overall vision for Barry is necessary across the town. In this context there are some elements of development that will link to Barry Docks for which funds are available, such as that for development of the Quays at the Waterfront. Whilst other elements are aspirational but do not yet have funding identified that can support them, such as improved active travel links from Barry Docks to the town centre or residential areas surrounding it, although the recent provision of the Thompson Street footbridge provides a part of this. Together with the Quays its provision also demonstrates the Council's desire to link the town centre to the Waterfront development, which the proposed improvements to Barry Docks can facilitate both through improved active travel links via the pedestrian subway and vehicular links via Subway Rd.

Vale of Glamorgan Council, Public Transport Manager (PTM)

The Vale of Glamorgan PTM believed the bus interchange should include all the normally expected infrastructure (stops, shelters, seating, lighting, RTI, safe walk ways, etc). The need for buses to reverse within the interchange should be minimised. An initiative to provide a flexi/demand responsive bus service to/from Newport station in place of the current conventional timetabled bus was highlighted as a potential initial response to Covid capacity considerations for public transport. It was thought a similar initiative might be tested in Barry. It was also noted that it was always envisaged that the Next Bike scheme currently being trialled between Penarth and Cardiff could be extended to Barry Docks, once the pilot is complete.

Cardiff Airport

Prior to Covid-19 the airport had been experiencing significant growth in patronage (up to 1.7m passengers p.a) and released a Masterplan in 2018 outlining plans to extend the airport and also diversify their activities into cargo, training and other areas. In turn this is aligned with further development proposed for the area around the airport in the form of the Bro Tathan business park and Gateway Development Zone, including the Giga Battery Plant, alone expected to employ 3,000/4,000 people and a new site for Vale College focussed around vocational training.

Most passengers and employees currently travel to the airport and surrounding developments by car, either their own or receiving a lift from a friend/relative, taxi, etc. The airport would like to encourage greater use of public transport, but current links are considered limited (1 train/hr from Barry/Bridgend, T9 express bus between Cardiff airport and Cardiff with limited stops and the 303/304 Cardiff/Bridgend service). The additional rail service proposed by TfW from 2023 will address this to some extent. They would also like to see improved active travel links to the airport from surrounding areas, in particular Rhoose, although this would realistically only be relevant to employees and at present there are no specific plans for what such a network may look like.

Vale College

The current campus is on Colcot Road approximately 1.4 miles / 30 min walk from the train station and an entirely uphill route. The catchment for students extends from Cardiff to Bridgend and all locations between. There are plans for two new campuses to replace the above - one for the southern IQ quarter on the waterfront (proposal for college campus and a primary school), and the second site just to the north of Cardiff airport (within the Enterprise Zone). The former will have a more academic and the latter a vocational focus. Part of the reason for the move, in particular to the Waterfront site, is to improve access. Improvements to Barry Docks and in particular locating the interchange to the south of the station, will facilitate this.

The deadline for delivery will be 2023 or early 2024, assuming everything goes according to plan for both sites. The College would welcome any transport improvements to the airport as these would also serve the airport campus, which will be located just at the entrance to the terminal. At present there are no travel plans in place or transport plans for the two proposed campus sites. Students don't tend to walk from trains to the current college site in Colcot Road, primarily due to the steep gradient between the two. In general students tend to use buses more so than rail. Bus links to the current site are regarded as poor, with limited service frequency being a particular issue. It is thought that most students (circa 75/80%) currently travel to the college by car, some catch a bus but very few cycle or walk unless they live locally.

That improvements to Barry Docks will also improve access between residential areas to the north and the Waterfront to the south will also encourage greater use of active travel modes by students living in the town. A cycle hub at the station offering cycle hire (bike and e-bike to address issues of the gradient), would be welcome. Taxis are also an attractive option for students, especially where taxi sharing can be facilitated. Cost is a barrier to rail use by students with no discounted tickets or travel card available for students in Wales or via the TOC. The college currently provide eligible students with a pass for use on bus services and would like to be able to offer similar for rail use.

Job Centre Plus

Barry Town's Job Centre noted that Cardiff and the Airport, including St Athan Enterprise Zone and Aston Martin centre are the main sites for employment for the area. Barry town is also relevant but not as

significant for employment and training as the above. The rail link is considered very important to the Job Centre and its clients. In the context of the rural vale the availability of park and ride from the station is also key and for job centre clients it is important this remains free of charge. Train services to Cardiff are frequent from Barry but only once an hour from the surrounding area, meaning connections can be limited. Off peak services are also limited, affecting options for take up of shift work opportunities. However, with little difference in cost and rail offering a faster journey time, this is generally the favoured public transport mode for access to employment/training outside of Barry.

British Cycling, Wales

British Cycling Wales considered the routes around Station reasonable, with the NCN on millennium way to the south; good routes around waterfront and on segregated path. The gradient to residential areas north of the station was recognised as a barrier to cycling in these areas and routes to the town centre from Barry Docks are considered narrow/tight for combined cycle and vehicular use. There was little preference between the three options for the location of the transport interchange from a cycling perspective.

Barry Ramblers Society

Barry Ramblers had no preference as to the siting of the bus interchange. However, they offered the comments below:

- The current Council car park is often full, so any new parking should also be for visitors or workers at the Docks Offices, not just train users;
- The new parking area should be larger than any space lost in the current council car park;
- The bus interchange and car park need to be on the same level.

Transport for Wales

Most bus routes serving Barry terminate at Morrisons or in the town centre and are commercial. Many of the routes run through to Cardiff and are scheduled accordingly, but there may be little scope to extend even (for example) the relatively short distance from Morrisons to the Docks Station without the additional running time impacting on the schedules to the extent that additional buses are required to maintain the timetables. The other downside is the impact on existing passengers. However, in principle the provision of a bus interchange at Barry Docks will be welcome and locating this to the south of the station will be preferable to locating it to the north. TfW had discussions a few months ago with Cardiff Bus about multi modal ticketing. They are developing a pilot with Stagecoach in Caerphilly, for a bus / train ticket which will be based on ITSO smart cards (aimed at weekly / monthly tickets) and are keen to do similar on mobile ticketing. Discussing this with Cardiff Bus they suggested there may be opportunities to pilot this at Barry Stations.

Barry Town Council

A consultation was arranged with the members of Barry Town Council Planning Committee. In general, the committee supported the proposed improvements to Barry Docks, considering the location of an interchange to the south of the station the preferred option. Committee members were keen to see active travel routes improved both for access to the station and to improve the link between residential areas and the Waterfront to the south. They also sought assurance that what is provided would not distract from the Grade 11* listed status of the Docks Offices and the views of this from the town.

An email received following the consultation from one of the committee members, who is also a member of the Council, highlights some further issues for consideration at FBC stage, including:

- The priority for Barry Docks station is to operate as a gateway to Barry – getting people to the town and around the town;
- Need for environmental improvements in and around Barry Docks station to make passengers feel valued and safe. Current station feels run-down and abandoned, particularly in the dark and later at night;

- This requires integration of rail/bus services serving the whole of Barry. Consideration of bus coverage and frequency. Shift Morrisons bus 'terminus' eastwards to Barry Docks station;
- Any development (including housing) should not obscure views of Barry Dock Office from the town and be in proportion with views of the town from the Waterfront or Barry Island. The original building was a central focus which dominated the landscape, and should continue to do so;
- Franchise within the grounds of the southern car park will give an impression of a hub area being in use from early morning until late at night, as well as serving both travellers and Dock Office staff;
- Introduction of parking north of the railway station and south of the railway station may give the area a vehicle-heavy vibe;
- Likely to fit well with cycle travel along the south of Barry, but not so well integrated with areas further north;
- Requires prominent signage for town centre for pedestrian and cycle users, including upon reaching Dock View Road.

Alzheimer's and Autistic Society

The three options for location of a bus interchange were discussed. However, the location was not of concern. The key issues in terms of disability were in ensuring good access for with those with limited ability and wheelchairs. In term of things important to those with both Alzheimer's and Autism it's about consistency, reliability and that they are not faced with the unexpected or sudden changes. It would be useful if the station could be 'manned', although it was recognised this is unlikely for the near future due to the size of Barry. Access for all was the key – ie if services were made accessible to those with disabilities then they would also be good for all others to use. In the case of autism, this required consideration of the needs of those lacking confidence to ask, those who might struggle to communicate, those with sensory issues, good signage, speaker announcements/RTI display boards etc - Clarity of next train coming, where go and what train will do, if something goes wrong; where the bus comes from and where to get it from if/when trains are cancelled were all important.

Over 50'S Forum

The forum representatives consulted believe a bus interchange at Barry Docks will help older people to use the train and its location was less important than it being made available. An interchange near the town centre and residential areas, north/north east, would be favourable (ie to the north west of the station), although to attract existing bus routes then an interchange to the south might be better. It would be very important the interchange included good quality shelters for people to wait and proper seating (not slanted), real time information and bus/train timetables and good quality lighting. The representatives mentioned that the pedestrian subway can be off-putting, and this is why their members don't use rail to travel at night. The general appearance and lighting at Barry Docks needs to be improved.

It was noted that wheelchair capacity on buses is limited and as a consequence most will wheelchair users take a taxi to a station. A taxi interchange nearer to the station would be useful in this context. Similar, to the bus interchange, it should also include a shelter, seating, lighting, etc. In terms of pedestrian and cycle routes, they thought some would walk/cycle, especially due to the number of residents in the nearby area, including older people. A gradual ramp up to the station platforms would be more useful. Currently there are no landings, but there is a useful hand rail. More signage and markings would be helpful to set out safe walking and cycle routes. The forum strongly asked for no signs to be obviously directed at "older" people (i.e. old lady/man with a stick sign) as this offends some. Instead perhaps a generic warning sign for crossing/indication of appropriate routes, that would address the needs of all.

Sight Cymru

Both consultees supported the interchange proposals. Whether the bus and taxi interchange were located to the north or the south of the station was of little consequence. However, wherever it was it should offer easy, well signed, lighted, safe and secure access to the station. All infrastructure and access routes within the station confines should be accessible to those with disabilities and if this is achieved it will ensure access for all. The current pedestrian subway does not offer a particularly welcoming or attractive environment and

that you have to turn at a right angle from this to go up the ramp to the station platform can pose particular difficulties for those with sight difficulties. Better lighting within the subway will be important as will signage to indicate where you need turn to access the ramp. For those with sight difficulties this could include the use of brail signage or marking (arrows) on walls and textured paving at the bottom of the ramp and access points to the subway, to indicate their presence.

It's also notable that there are no disabled parking bays available in the current car park and that to get to the platform from the Park and Ride area it is necessary to walk down a ramp at its entrance/exit, to then turn through 180 degrees in order to access the subway and then turn right to go up the ramp to the platform. Again, this route is circuitous and not signed currently and this should be addressed. The current access from Dock View Rd also needs significant improvement. The steps down from the road are steep and have recently been closed off, preventing their use. The road down past the old BT building is poorly surfaced and foliage is overgrown, creating hazards that someone with a sight difficulty may not spot. There is no signage from Dock View Rd to indicate the route takes you to the station or repeat signage that can be followed to lead you to the platforms or vice versa. A pedestrian crossing (Pelican crossing) directly opposite the station access point would also be useful. This should include facilities at eye level for use by those with sight difficulties. Furthermore, there needs to be clear indication of the steep slope that needs to be negotiated to get from the station to these areas.

Within any new interchange information provision will be critical. This should include real time information for both buses and trains (on vehicle and at stops), including audible as well as written information displays. There is a need for seating, lighting, help points, clearly marked out safe pedestrian and segregated cycle routes. Colour contrasted signage and brightly coloured arrows (on road or walls) indicating routes from the platform to destinations both north and south would also be helpful.

Tourist Information and Barry Sense of Place

Both consultees welcomed the potential improvements to Barry Docks station, although neither had a particular preference for the location of the bus/taxi interchange. It would be important in constructing the interchange that its impact on the Docks Offices, as a grade 11* listed building, was considered. The Interchange should not interrupt the view of the building or distract from it in any other ways.

With both consultees being from the local area they were of the opinion that TfW misunderstood the role of Barry Docks as the main station for the town, noting that when rail services encountered delays TfW would often choose to miss out Barry Docks and stop trains (from Cardiff or Rhoose) at Barry station only. This was believed to frustrate many passengers who would then need to walk further, than they would from Barry Docks, to access the town centre or its surrounds, where they lived. It was also noted that information and signage from Barry Docks to the town centre was poor. This was not an issue for local people. However, for visitors it was difficult to identify the best route to where they might like to get to and improved signage would address this. It was considered that alongside signposting parks and heritage sites from the station there should be signage to Kings Square, the Library and Holton Rd as the main shopping street. The most obvious route using Thompson Rd was not the best route to these locations. Other through routes should be improved.

There is some work being undertaken by the Town Centre Regeneration Officer to consider Wayfinding and signage, focussing on all 4 stations in Barry and pedestrian movements to/from these. Funding is thought to be available to provide improvements and it will be guided by the design tools being produced by the Sense of Place programme. In particular this proposes use of standard colours, fonts and background graphics to denote common routes, attractions, sites, etc and thus ensure continuity of design across the town. This toolkit should be considered for use in the design of signage, etc at Barry Docks.

In general, it was considered that the town required greater provision of bus services, with consultees noting that more services were available in the past. An interchange at Barry Docks was considered a step towards this. It could be useful to have a shuttle bus to run between the interchange, the town centre and Barry Island that would also connect users to other buses in the centre/Kings Square.

8.18. Risk Register

The current Risk Register (15/12/2020) for the scheme is provided below.

Table 32 - Outline Risk Register

New Ref	Date Added	Risk Description	IR Likelihood	IR Impact	IR Risk Score	Current controls in place	RR Likelihood	RR Impact	RR Risk Score	Direction of Travel	Risk Owner	Date Reviewe	Timesca	Latest Period Comments	Consequences	Minimum Ev	Minimum Cost (£1000)	Expected Eve	Expected Cost (£1000)	Maximum Eve	Maximum Cost (£1000)	Risk Stat	Further Actions Required	FA Due	Progress of FA	FA & Risk Status Comments	FA Owner
1. Strategic / Political / Policy																											
	23/03/2020	Covid-19 pandemic - Coronavirus causes delays to project site work/visits/meetings	5	5	25	All staff to adhere to Government policy. Amey Covid-19 Policy to be followed and site survey work to be reviewed in line with this and enhanced safe systems of Work and Risk Assessments which must be signed off before any site survey work is allowed. Current Government Policy is to be reviewed prior to any planned visits.	5	4	20	Decreased	VOG/Amey	28/10/2020	Medium	SSOW still required, has not stopped site meetings, however local Lockdown in place currently for 2 weeks so review again after this period.	Delays to scheme	Slight delay-1-2 months	0	Slight delay-1-2 months	0	Longer delays 3 months +	0	Open	Monitor of national and local Covid measures in place at time	ongoing			
	23/03/2020	Project sign off / stages with VOG Commitee	1	5	5	John Dent reports to Project Board as and when required.	1	2	2	Decreased	VOG	28/10/2020	Medium	Working well to date, no issues.	Delay to scheme	Slight delay-2 weeks	0	Slight delay-2 weeks	0	Longer delay-1 month	0	Open	Maintain Project Board reporting	ongoing-client programme/dates			
2. Economic / Financial / Management																											
	23/03/2020	Withdrawal of future scheme funding(Construction) by Cardiff City Region	2	5	10	Meeting held by the Project Strategic Board in which Clare Cameron confirmed CCR key inputs required to meet funding criteria.	1	5	5	Decreased	VOG	28/10/2020	Medium	Clare Cameron at last client meeting 23/10/20 so being kept informed on project and feeding back her issues/requirements	Scheme cancellation	No issues	0	No issues	0	VoG cannot progress scheme	350	Open	Regular Strategic Group Meetings to be held to keep CCR informed and monitor funding situation	Next meeting date TBC			John Dent (VOG) and Tony Cahill (Amey)
	23/03/2020	Failure to meet scheme funding submission deadline	1	5	5	Resources in place from Amey &Turley and VOG confirmed TFW have indicated funding deadlines will be more flexible due to Covid-19 situation. Actual contractural programme deadline is March 2021 due to delay in appointment.	2	5	10	Increased	Amey/VOG	28/10/2020	Medium	Due to the presence of Slow worms, the planned Geotechnical work cannot be undertaken until early summer 2021. Therefore client instructed assumptions on ground conditions to be made to maintain current programme date.	Loss of funding and delay of scheme	Delay in progress	0	Minor delays but funding kept	0	Scheme postponed and loss of funding	350	Open					
	25/03/2020	The capital cost of the scheme increases as a result of factors uncovered in the geotechnical and environmental surveys	3	3	9	Table top exercise being undertaken prior to survey work. Risks to be reviewed following site walkovers and completed reports. Mitigation to be undertaken during design phase to reduce any issues/impacts and then revise cost estimate accordingly so any additonal funding needed can be requested to Cardiff City Region via VOG.	4	4	16	Increased	Amey/VOG	28/10/2020	High	Slow worms confirmed present on site. Mitigation is to translocate them to a suitable site, unlikley there will be sufficent space within the scheme site. They cannot be collected and relocated until April 2021 as now hibernating. Cost to be factored into estimate of works. No Geotechnical work can be undertaken, so we will need to make worse case scenerio assumptins an cost appropriately.	Increase in design and scheme costs.	Increase in costs and longer programme	60	Increase in costs and longer programme	60	Increase in costs and longer programme	100	Open					
3. Statutory Process / Legal / Land acquisition																											
	23/03/2020	Network rail BAPA required for Environmental and Geotech surveys, delay to programme	5	3	15	Liasion with NR undertaken and BAPA application made, other areas of workbeing progressed.	5	2	10	Decreased	VOG	28/10/2020	Medium	BAPA in place, all site visits now require a Network Rail COSS person(s). Procedure now well established by all parties.	Need to ensure NR COSS is available prior to arranging any site visits on land north of station and that all SSOW are submitted to NR for review prior to any site meeting being confirmed.	Additional cost in preparing documentation and NR liaison	0.5	Additional cost in preparing documentation and NR liaison	0.5	As design progresses to Preferred option, BAPA involvement will increase due to possible effect on NR Assets	15	Open					
	23/03/2020	Restrictions placed on land access within Rothesay Land stopping survey work and delay to possible design work	5	2	10	Discussions underway with Land Agents Cooke & Arkwright (C&A), will delay survey work on the two areas (tennanted) for now following their instruction not to enter land / contact tennants.	5	2	10	Remains the same	VOG	28/10/2020	Short	No change	Increase in survey costs as a separate visit will be needed to complete areas	delay	2	delay and increase in cost (estimate)	2	no access allowed at all restricting design to the north-west of the railway station	100	Open					
	23/03/2020	Land acquisition not agreed with landowner for North of Barry Docks Station	1	5	5	VOG have discussed possible land uses / purchase with C&A last year, Landowner supportive and study will inform on options and likely uses etc..	1	2	2	Decreased	VOG	28/10/2020	Medium	No change	Scheme cancellation or alternative land needed for new park and ride car park	No issues	0	minor delay due to agreeing purchase price	2	Delay to scheme as replacement land needed and agree purchase	50	Open					
	25/03/2020	Planning permission refused	2	5	10	VOG Planning Team to be consulted for pre-planning advice and VOG PM to keep them informed on progress/reports etc..so that any concerns can be addressed early in the design process	1	4	4	Decreased	VOG / Amey	28/10/2020	Medium	No change	Scheme would need to go to appeal or be revised based on comments	No issue	0	No issue	0	Scheme postponement or cancellation	350	Open					
	03/06/2020	Subway Road currently not adopted Highway, need VOG to adopt for scheme to progress	5	3	15	Amey have raised issue with VOG, who confirm correct status. Will either adopt shortly or within future land purchase from Rothesay Company and owners of Subway Road to the south of the tunnel (believed to be the Port Authority)	5	1	5	Decreased	VOG	28/10/2020	Medium	No change	Whilst it appears Subway Road has operated as a public highway there is a legal issue with it being in private ownership so needs to be adopted.	No issue	0	May require to be purchased, existing retaining wall would then be VOG's responsibility and needs some repairs currently	20	May expose more serious faults in the wall, existing street lighting requiring upgrade	100	Open					
	08/07/2020	Land acquisition involves Compulsary Purchase Order (CPO), Statutory process could delay scheme by 12-18 months depending on if an appeal is forthcoming and crucially result in losing funding.	2	5	10	VOG may pursue a CPO process in tandem whilst undertaking land purchase by negotiation (confirmed by JD 26/06/20 in progress meeting)	2	5	10	remains the same	VOG	28/10/2020	High	No change	Risk to funding being awarded as could lose CPO, go to appeal, causing further delay and loss of funding stream due to funding programme restrictions etc... 12-18month process if appealed.	No issue, land purchase agreed	0	Possibly some delay to land purchase agreement/price, minor design review/programme review needed	25	CPO required	100+	Open	Ongoing dialogue by VOG with landowner(s) and reporting back to the Project Team				
4. Design / Technical / Preparatory works																											
	23/03/2020	Statutory Undertakers Diversionary / Improvement Works-Major works could cause delay to the programme and increase costs	3	4	12	Liaison with Statutory Undertakers authority at the earliest opportunity, following the process set out in NRSWA and liasion with VOG NRSWA Manager	2	4	8	Decreased	Amey / VOG	28/10/2020	Short	No change, currently completing layout options so will shortly be issuing C3 notices.	Possible roadspace issue and delay if any proposed stats works cannot be co-ordinated with scheme to be constructed or undertaken in advance	No delay	0	No delay	0	Major issues and delay to scheme	20	Open					
	23/03/2020	Topographical survey / as-built drawing of council car park not available in Autocad format	5	2	10	Amey to prepare fee estimate for additonal topo survey	1	3	3	Decreased	VOG	01/07/2020	Medium	Tony Cahill tried to contact Atkins on 3 occasions to confirm if topo available but no response. Agreed with John Dent 20/04/2020 to prepare cost for additonal topo.	Delays to commencement of design works	delay in progress	0	No significant impact, working on other aspects of scheme to maintain progress	0	Delay and staff unable to work	10	Closed	Design work commenced.				
	23/03/2020	Design work potentially undertaken in advance of site-based information being available. Risk of increased costs due unforeseen ground conditions and topo etc	3	3	9	Topo survey to be planned but not yet carried out, have utilised Lider data to provide indicative sketch layout for car park, to maintain progress on project. Recent Environmental feedback confirms no Geotechnical ground work can be undertaken until Slow worms have been relocated. Design to utilise 'assumptions' for ground conditions.	5	3	15	Increased	Amey/VOG	28/10/2020	Medium	Topo being planned for pre-christmas period with EcoW present on site to manage minor de-veg work. Geotechnical assumptions to be drafted and agreed with client.	Whilst Topo can confirm boundary/area and hence confirm max number of spaces available, the lack of Geo information is a high risk and will require 'worse case' scenerio's in terms of costing up design/works costs.	Use Desk top survey info to produce assumptions for agreement with client	15	Use Desk top survey info to produce assumptions for agreement with client	15	Major changes to project cost estimate due to 'worse case scenerio'-poor ground conditions	100	Open					
	23/03/2020	Delays to investigations esp. GI, due to restrictions on land access	3	2	6	Programme to be reviewed on regular basis to reduce impact where feasible. Recent Environmental feedback confirms no Geotechnical ground work can be undertaken until Slow worms have been relocated. Design to utilise 'assumptions' for ground conditions.	5	3	15	Increased	Amey/VOG	28/10/2020	Medium	Client wants to maintain progress and aim for early 2021 completion so wants 'assumptions' based on expected/worse case scenrio for land conditions/issues	Delays to design	minor delay	20	minor delay	20	Geotech work confirmed cannot be undertaken until early summer, so assumptions to be made.	20	Open					
	23/03/2020	Safety Audit response requires design changes / unprogrammed work (not budgeted for).	1	3	3	Experienced design team familiar with audit process, may consider pre-Stage 1 RSA to highlight any initial concerns.	1	1	1	Decreased	Amey	28/10/2020	Medium	No change	Late changes to design or Exception report being produced delaying programme and increasing cost estimate	No changes	0	No changes	0	Minor changes	5	Open					
	23/03/2020	Exact details of stats locations are not known and trial pits may be required in advance to provide SU's info in order to calc an accurate cost for diversion or upgrade works.	3	3	9	Obtain C3 stats enquiry to determine presence of stats and organise possible trial holes and then if diversions needed obtain C4 estimates	2	2	4	Decreased	Amey	28/10/2020	Medium	No change	Additional diversion costs	No stats required diverting	0	Minor stats diversions needed	40	Significant diversions needed	100	Open					

5. Environmental																											
	25/03/2020	Habitat survey unable to be carried out at the most suitable time of year due to delays in getting land access approval leading to possible delay in scheme delivery	5	2	10	Some assumptions are likely to made, and RAMs will be provided prior to any construction works - and surveys carried out at a more suitable time	3	1	3	Decreased	VOG	28/10/2020	Medium	Reptile / Amphibian survey successfully undertaken in September 2020, limited Bat survey undertaken also. Confirmed no bats in area, Slow worms present north of station, and in hibernation now until March 2021.	risk n/a	No delay	0	No delay	0	12 month delay	50	Closed					
	23/03/2020	Environmental investigations reveal the presence of protected species on the site, leading to changes to methodology for topo survey, further specialised species surveys and delay to overal programme. Possible advanced works needed ie badger sett to be relocated, and additional mitigation work within the overal design..	3	4	12	Environment Team to advise topo survey team on any restricted areas, Amey PM to review implications, find solutions etc...and action plan prepared together with programme implications.	5	4	20	Increased	VoG/Amey	28/10/2020	Medium	Advised JD following reptile survey. Awaiting report.	Additional costs to deal with any environmental issues found, mitigation works to be included into design	No issues found	0	Slow worms found and lizard. Mitigation required involving translocation, minimum period 30 days, could be a max of 90 days	50	Major protected species found, ie badger sett, bat roosts requiring extensive design input and mitigation works	80	Open	Report to advise on minimum area need for translocation and consultation with County Ecologist as doubtful suitable area within site extents will be available.				TC LJD
	23/03/2020	Invasive species e.g. Japanese Knotweed encountered on site - delay to works and additional costs.	2	2	4	Environmental assessment required prior to any survey works, invasive species to be removed under RAMS and to an approved facility.	2	1	2	Decreased	VOG	28/10/2020	Short	None found in land to the north of the station, however access refused for the area west of Subway Road, and Garage sales plot. Need to be assessed in future.	Additional costs, and advanced work needed	None found -No additional measures	0	Minor spraying or clearance required	5	Significant removal required to licenced facility	20	Open					
	23/03/2020	Tree Preservation Orders in place for trees on site	3	3	9	Confirm whether TPO's are present and discuss with Tree preservation officer on way forward. Designer will seek to minimise environmental impact on scheme and include a landscape proposal.	3	2	6	Decreased	VOG	28/10/2020	Short	To be checked once preferred scheme identified. No trees of any note within area north of station platform.	Delays to scheme, changes to design	No delay, no TPO's or agreement reached with Tree Officer	0	No delay, No TPO's	0	TPO's present, increase in cost to mitigate	5	Open					
	23/03/2020	Instrusive Geotechnical works (Workstage 4) cannot be undertaken until vegetation has been cleared on the overgrown Rothesay Land to the east,(this may not be the whole area but possibly a vehicular route through with specific areas cleared). Bird nesting season will determine when vegetation can be cleared along with confirmation of any protected species ie bats and any roosts within trees. Will also require landowner permission.	3	3	9	Slow worms confirmed present following Reptile survey. No Geo works possible until early summer 2021. Only minor de-veg allowed for topo survey and to be directed by a EcoW. Ensure an Ecologist conducts a nesting bird survey no more than 48 hours prior to clearance and that an Ecologist is present on site during the clearance as some vegetation may need to be retained in the short term to support species found on site. The designer will be liaising with C&A to ensure permissions are obtained for clearance works.	5	3	15	Increased	Amey/VOG	28/10/2020	Short	Minor de-veg allowed only for topo survey due to Slow worms.	No Geotech works can be undertaken.	Minor de-veg work, revise PCI Pack to reflect reduced scope	25	Minor de-veg work, revise PCI Pack to reflect reduced scope	25	Minor de-veg works cost higher due to poor weather/ground conditions	40	Open					
	21/04/2020	Embankment survey may need localised vegetation removal	3	3	9	Ensure an Ecologist conducts a nesting bird prior to clearance and that an Ecologist is present on site during the clearance. The designer will be liaising with C&A to ensure permissions are obtained for clearance works.	2	3	6	Decreased	Amey/VOG	28/10/2020	Medium	Only minor de-veg allowed due to Slow worms	May need to undertake survey at specific locations if vegetation cannot be removed	Survey limited	0	Survey limited	0	Survey deemd not feasible causing 'assumptions' to be made in costing	20	Open					
	17/04/2020	Contaminated land	3	3	9	Existing records reviewed but on site testing will be required to confirm any contaminates and appropriate treatment.	5	3	15	Increased	Amey/VOG	28/10/2020	Medium	No Geo intrusive works allowed until ealry summer 2021 due to Slow worms.	Have to assume contaminated land	Assume some area contaminated, increase works cost	50	Assume whole area contaminated, increase works cost	100	Extensive work required to decontaminate land	150						
6. Stakeholder Management / Consultation																											
	21/04/2020	Covid-19 pandemic - Coronavirus and current restrictions / policy causes an impact on our ability to communicate with Stakeholders / General Public in person at share events / exhibitions etc... reducing the options to social media only.	5	4	20	Situation changing weekly, first Steering Group meeting held via TEAMS, however public consultation will need careful consideration in due course as project progresses and the Covid-19 situation changes. Possible postal consultation may be the only option.	5	4	20	Remains the same	Amey/VOG	28/10/2020	Medium	Main stakeholder consultation going well in current Covid restrictions, larger public consultation will need to be reviewed going forward as Covid restrictions tightening up currently.	Scheme programme extended until satisfactory consultation can be undertaken with the public to gain support/feedback.	Does not occur	0	Delay expected, however postal consultation feasible but costly.	50	Postal option not considered acceptable, delay to allow face to face public exhibition / share events	100						
	17/04/2020	Following consultation, the design needs reassessment / ammending due to issues raised	2	2	4	Ensure early consultation with key stakeholders. Develop a communication plan to engage with the public and ensure local issues / problems (such as good access, cycle parking facilities) can be incorporated into the design where possible.	1	2	2	Decreased	Amey/VOG	28/10/2020	Medium	no change	Design changes required thereby causing delay and additional cost	No changes required to the design of the scheme. No delay	0	Minor changes required to design of scheme.	5	More extensive changes required to the design	20	Open					
	17/04/2020	Ineffective comms strategy in the public domain (assuming Covid-19 not applicable)	1	3	3	Strategy to be discussed by Strategic Group and implemented with relevant personnel	1	2	2	Decreased	Amey/VOG	28/10/2020	Medium	Comms working well given current Covid restrictions. About to commence Layout option drg consultation.	Increased resource / fee to deal with ongoing issues	Does not occur	0	Existing resource / fee adequate	0	Additional staff resource needed	10	Open					
	22/04/2020	Bus Companies will not support proposals with a service either with current bus fleet or new electric fleet	2	4	8	Initial feedback via Cardiff City Deal is positive, however until the WelTAG work has progressed and we have confirmation of the likelyservice / fleet requirements and have discussed with the bus companies the risk remains	1	4	4	decreased	Amey/VOG	28/10/2020	Medium	WelTAG feedback to date is local companies will support, only Cardiff not	Only additional park and ride car park can be provided with improved accessibility and cycling provisions, and as a result the economic case reduced and possibly funding not forthcoming.	Does not occur	0	Possibly no electric fleet but provision to be made within design / works for future proofing facility.	TBC	Cannot progress scheme based on poor WelTAG score	350	Open					

8.19. Statutory Undertakers

Where necessary, statutory undertakers will be engaged as early as possible in the design process so that potential risks to programme and cost can be minimised.

8.20. Benefits Realisation Plan

The benefits stemming from the scheme itself are relatively straightforward, relating to the provision of improved facilities for rail users, providing in turn journey quality benefits. When combined with the planned train service improvements, this will entail a significant overall improvement in the rail services available. This is shown in the Causal Chain and the Logic Map provided in the Strategic Case.

Whilst the realisation of the direct benefits stems only from the scheme itself, the benefits from the train service improvements are not within the gift of the scheme. Achieving these complementary and synergistic benefits requires the actions of TfW. Further benefits linked to housing/commercial development are reliant on developers and businesses.

The benefits realisation management plan herein provides details of how the benefits process will be applied to the scheme. It describes the tasks, resources, time frame and approach to each step of the framework.

8.21. Benefits Management – Seven Phase Approach

In defining and preparing the BRP, we have used a seven-stage approach which is integrated with the development of the Business Case as a whole.

8.22. Business Case Benefits Reconciliation

Within this part of the process, the following steps have been taken:

- Definition of scheme objectives, the benefits which stem from these and how these link to stakeholder requirements (as set out in the Strategic Case);

- Categorisation of scheme inputs, deliverables, benefits and impacts as inputs, outputs, outcomes and wider impacts, as set out in the Logic Map;
- Reconciliation of scheme benefits with the development of the Business Case and the five Cases, especially the Economic Case and the modelling being undertaken to quantify the benefits;
- The outcome of this reconciliation process will be reported in the detailed tables of inputs, outputs, outcomes and wider impacts in the monitoring and evaluation framework (MEF) to be developed at FBC stage.

The key category in relation to benefits is the 'outcome' level – ie what the scheme achieves in itself, along with 'wider impacts' which reflect the enabling role in relation to economic development.

8.23. Benefits Ownership

Assignment of benefits ownership should be as follows:

- The directly attributable benefits (outcomes) should be owned entirely by the Council, as set out in the MEF;
- Wider impacts should be managed and owned by the Council, as set out in the MEF.

8.24. Benefits Activity Plan

8.24.1 Outcome Benefits

Table 33 - Outcome Benefits Activity Plan

Benefit	Rationale	Five Case Model Categories	Link to MEF
Higher User Satisfaction	The provision of the new facilities is expected to provide a measurable improvement in satisfaction. However, this will be improved further through the implementation of improved train services, requiring co-ordination of the two aspects	Reflected in the Economic Case as part of the Cost Benefit calculation	This will be measured before and after the implementation of the scheme.
Improved Safety and Security	The scheme is expected to improve both perceived and actual safety and security for station users	Reflected in the Economic Case as part of the Cost Benefit calculation	This will be measured before and after the implementation of the scheme.
Better Access to Jobs and Services	The provision of the new facilities is expected to provide measurable improvements in accessibility. However, this is only in relation to the 'journey quality aspects for the scheme itself. This will be improved further	Quantified in the Economic Case and detailed in the Strategic Case	These changes will be measured using GIS-based Accessibility mapping tools and potentially through user surveys.

	through the implementation of improved train services, enabling Accessibility Mapping tools to demonstrate the combined improvement		
Increased Rail Use	The scheme in itself is expected to generate more rail use although this complemented by the train service improvements.	Reflected in the Economic Case	Will be measured through TOC LENNON/MOIRA data

8.25. Wider Impacts and Complementary Actions

The wider impacts which are supported or enabled by the scheme cannot be delivered, measured or reported in isolation. They are part of wider programmes linked to the development plans for the area, the broad regional strategic growth strategy and wellbeing strategies.

The benefits stemming from these can only be achieved through partnership working. The table below indicates how such benefits can be realised.

Table 34 - Wider Benefits Activity Plan

Benefit	**Rationale**	**Five Case Model Categories**	**Link to MEF**	**Complementary Actions to Achieve Benefits & Other Factors**
More sustainable communities	The availability of good train services, complemented by rail station improvements, will encourage people to seek employment and services in the wider area, improving the local economy, whilst also encouraging the use of environmentally sustainable travel modes	Part of Strategic Case. Not directly taken into account in the BCR calculations in the Economic Case but contributes to the final VfM Category	This will not be measured directly as part of the scheme monitoring but would be tracked as part of the wider network efficiency monitoring	Other local highway schemes Strategic highway schemes Public transport investment Growth (jobs and housing) Sustainable travel plans Cycle network development
Housing and economic growth	The scheme is designed to make travel more attractive and subsequently to make housing developments more attractive, as well as encouraging	Part of Strategic Case and taken into account in the BCR calculations in the Economic Case	This will not be measured directly as part of the scheme monitoring but would be tracked as part of the wider CCR monitoring plan	Developments in the area Planning consents granted

Benefit	Rationale	Five Case Model Categories	Link to MEF	Complementary Actions to Achieve Benefits & Other Factors
	engagement in wider area jobs and services.			
Improved wellbeing	Improved travel opportunities will improve access to jobs, training, services (including healthcare) and social opportunities – providing a contribution towards employment and wellbeing.	Part of Strategic Case. Not directly taken into account in the BCR calculations in the Economic Case but contributes to the final VfM Category	This will not be measured directly as part of the scheme monitoring but would be tracked as part of the wider monitoring by the Council	All social, economic (including education and training), environmental and healthcare initiatives
Well-connected communities	Increased rail services with improved access will significantly increase the range of destinations, and therefore opportunities for residents	Part of Strategic Case. Not directly taken into account in the BCR calculations in the Economic but contributes to the final VfM Category	This will be measured and reported through GIS-based Accessibility mapping and potentially passenger/user surveys	Integration, including bus, taxi and cycle, as well as walking routes to the stations

8.26. Baseline Measures

These will be detailed within the MEF, encompassing input, output, outcome and wider impacts elements

8.27. Benefits and Wider Change

The delivery of station improvements in themselves will not trigger significant economic or social change. However, they will lend significant support to bringing about this change and alongside the placemaking function of Barry Docks Transport Interchange will facilitate ongoing housing and economic development.

8.28. Go Live Activities

The nature of rail station improvements indicates that in general, customers are tolerant of inconvenience when they understand that this is part of a positive change. Clear communication before, during and after the change is essential. Once implemented, the user satisfaction will improve, and patronage will rise over time. This will continue as train services improve. This will be reviewed as set out in the MEF.

8.29. Post Implementation Benefits Tracking

These will be set out in the MEF at FBC stage

8.30. Monitoring and Evaluation

A Monitoring and Evaluation Framework (MEF) will be prepared at FBC stage which sets out the approach to measuring the effectiveness of the Barry Docks Transport Interchange Scheme, encompassing input, output, outcome and wider impacts levels. The MEF will be implemented at stage 4 - Construction

9. Conclusion

Based on the work undertaken to produce this business case, it is proposed Options 1 and 2 should be considered indicative of the preferred option for further examination at WelTAG Stage 3, either including some housing/commercial development to the north or not, depending on the outcome of further surveys and investigations it has not yet been possible to undertake. This will be firmed up at WelTAG Stage 3 and a final decision on the preferred option made, once we can establish the additional information required. This will include the completion of all geotechnical surveys, adjustments to costs once we have these and consequent reductions to the level of risk included in the costs. In addition land value uplift calculations will be refined and included in the monetised benefits, as well as both EV costs and benefits being added to the economic appraisal of each option.

Appendix A: Policy & Strategy Context

National Context

Wales Spatial Plan, 2008

The 2008 version of the Wales Spatial Plan updates that originally adopted in 2004 and is the overarching planning framework for Wales. Barry Docks Station is located in the South East Wales region (Capital Network) for which the plan outlines the following vision:

'An innovative skilled area offering a high quality of life – international yet distinctly Welsh. It will compete internationally by increasing its global visibility through stronger links between the Valleys and the Coast and with the UK and the rest of Europe, helping to spread prosperity within the area and benefiting other parts of Wales.'

Three priorities are identified for the region:

- The area will function as a networked city region, on a scale to realise its international potential, its national role and to reduce inequalities;
- A fully integrated high-quality transport system is necessary for this to happen. Over the 20 Year horizon of the Wales Spatial Plan, all the Area's key settlements should be linked to Cardiff or Newport by suitable high capacity public transport;
- The success of the area relies on Cardiff developing its Capital functions, together with strong and distinctive roles of other towns and cities.

Improvements to Barry Docks Station will contribute directly to the proposals for a fully integrated, high quality transport system in the form of an interchange hub. It will also help to achieve the priorities by better linking the station and its surrounding areas to the wider Vale of Glamorgan and Cardiff Capital Region, including Cardiff, Newport and the Valleys.

Planning Policy Wales (Edition 10, Dec 2018)

Planning Policy Wales, Edition 10 (2018) has been developed specifically to take account the Well-being of Future Generations (Wales) Act 2015 and incorporate its objectives into the planning process.

To support the delivery of the Wellbeing goals, Planning Policy Wales Edition 10 focuses on four key themes that contribute to Placemaking. These four themes and their deliverables are summarised in the table below

Table 2 - Planning Policy Wales - Key Themes

Key Theme	Deliverables
Strategic & Spatial Choices	Good Design Promoting Healthier Places The Welsh Language Sustainable Management of Natural Resources Strategic Planning Placemaking in Rural Areas Managing Settlement Form
Active & Social Places	Transport Housing Retail & Commercial Centres Community Facilities Recreational Spaces

Productive & Enterprising Places	Economic Development Tourism The Rural Economy Transport Infrastructure Telecommunications Energy Minerals Waste
Distinctive & Natural Places	Landscape Coastal Areas Historic Environment Green Infrastructure Biodiversity Water, Air, Soundscape and Light Flooding De-risking

Five outcomes are also identified, which highlight the sustainable features to be used as a starting point for plan makers and decision takers and therefore, considered at the earliest possible opportunity:

- Creating and Sustaining Communities;
- Growing Our Economy in a Sustainable Manner;
- Making Best Use of Resources;
- Maximising Environmental Protection and Limiting Environmental Impact; and
- Facilitating Accessible and Healthy Environments.

This study considers the transport hierarchy and appraises several options for each element of the Barry Docks Station infrastructure proposed. All options shortlisted meet one or more of the wellbeing goals (see below) and take account of the 5 ways of working the Wellbeing Act promotes. In this context, they will also help to achieve the key themes and outcomes sought by Planning Policy Wales Edition 10. For example, improved public transport routes will contribute to the transport and transport infrastructure deliverables of the Active & Social Places and Productive & Enterprising Places themes, respectively and in turn to the outcome of Facilitating Accessible and Healthy Environments.

Planning Policy Wales (Edition 11, February 2021)

Planning Policy Wales was updated with the publication of Edition 11 by WG in February 2021. This builds on Edition 10 and in particular adds a section on Placemaking. This highlights Placemaking Wales as an initiative to support the implementation of placemaking in Wales. The project is being led by the Placemaking Wales Partnership – a multi-disciplinary group representing professions and organisations involved in shaping the built and natural environment in Wales.

A Placemaking Wales Charter has been developed to reflect the collective and individual commitment of these organisations to support the development of high-quality places across Wales for the benefit of their communities (dcfw.org/placemaking/placemaking-charter/).

The Charter includes six placemaking principles that those who sign-up agree to promote as part of their support for placemaking.

People and community

The local community are involved in the development of proposals. The needs, aspirations, health and well-being of all people are considered at the outset. Proposals are shaped to help to meet these needs as well as create, integrate, protect and/or enhance a sense of community and promote equality.

Location

Places grow and develop in a way that uses land efficiently, supports and enhances existing places and is well connected. The location of housing, employment and leisure and other facilities are planned to help reduce the need to travel.

Movement

Walking, cycling and public transport are prioritised to provide a choice of transport modes and avoid dependence on private vehicles. Well designed and safe active travel routes connect to the wider active travel and public transport network and public transport stations and stops are positively integrated.

Mix of uses

Places have a range of purposes which provide opportunities for community development, local business growth and access jobs, services and facilities via walking, cycling or public transport. Development density and a mix of uses and tenures helps to support a diverse community and vibrant public realm.

Public realm

Streets and public spaces are well defined, welcoming, safe and inclusive with a distinct identity. They are designed to be robust and adaptable with landscape, green infrastructure and sustainable drainage well integrated. They are well connected to existing places and promote opportunities for social interaction and a range of activities for all people.

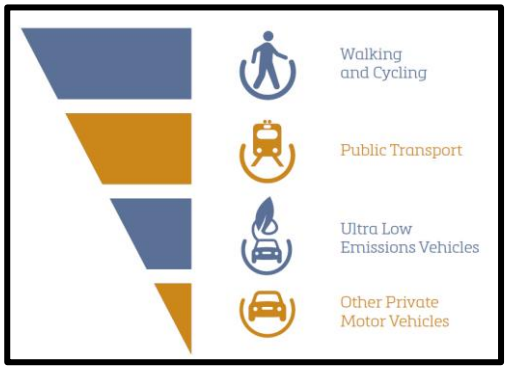
Identity

The positive, distinctive qualities of existing places are valued and respected. The unique features and opportunities of a location including heritage, culture, language, built and natural physical attributes are identified and responded to.

A Placemaking Guide has also been published with further guidance on the principles of placemaking and how they can be applied in practice (dcfw.org/placemaking/resources/).

In relation to transport the new guidance outlines how the planning system should enable people to access jobs and services through shorter, more efficient and sustainable journeys, by walking, cycling and public transport. It suggests that by influencing the location, scale, density, mix of uses and design of new development, the planning system can improve choice in transport and secure accessibility in a way which supports sustainable development, increases physical activity, improves health and helps to tackle the causes of climate change and airborne pollution.

It also identifies the Sustainable Transport Hierarchy for Planning, placing sustainable transport modes ahead of the use of private motor vehicles, as follows:



The Wales Transport Strategy is identified as providing the strategic policy framework for transport related activities in Wales, with a new Wales Transport Strategy currently being developed and expected to be published in 2021. This will set out the long-term vision for transport over the next 20 years, as well as five-year priorities.

Well-being of Future Generations (Wales) Act 2015

The Well-being of Future Generations (Wales) Act aims to improve the social, economic, environmental and cultural well-being of Wales and ensure those working to do so take a more joined up approach. The Act requires public bodies such as local authorities, health boards and government agencies to place long-term sustainability and quality of life at the forefront of their thinking, and to work with each other, key stakeholder organisations and the general public to prevent and tackle the problems they face.

The Act was established following an extensive consultation, led by WG, known as the National Conversation and passed into law in April 2015. It puts in place a number of statutory duties that the bodies referred to in the Act must undertake. This includes a requirement for publishing a Wellbeing Statement, Annual Reporting and Responding to the Future Generations Commissioner. The Act also establishes Public Services Boards (PSBs) for each local authority area in Wales, each of whom must undertake a wellbeing assessment of their area and prepare and publish a plan (The Local Well-being Plan) setting out their objectives and the steps they will take to meet them. That the duties are met is overseen and supported by the Auditor General and the Future Generations Commissioner for Wales.

To create a more sustainable Wales, public bodies must work towards seven Well-being Goals and enact the five Ways of Working listed below.

The seven well-being goals are:

1. A globally responsible Wales;
2. A Wales of vibrant culture and thriving Welsh Language;
3. A Wales of cohesive Communities;
4. A more equal Wales;
5. A healthier Wales;
6. A resilient Wales; and
7. A prosperous Wales.

The Act puts in place a 'sustainable development principle' which tells organisations how to go about meeting their duty under the Act. In the Act, any reference to a public body doing something "in accordance with the sustainable development principle" means that they must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. The five ways of working identified by the Act to underpin this principle are:

1. Integration;
2. Involvement;
3. Collaboration;
4. Long Term; and
5. Prevention

As all infrastructure improvements under consideration for this study aim to support sustainable and/or active travel, in some form, they all positively address the Wellbeing of Future Generations Act goals and in particular goals 3 to 7. The five ways of working are also addressed, as follows:

Long Term – any option shortlisted for Barry Docks Station will address long term aims through its appraisal against future trends and wider issues. For example, the emerging impact of the removal of the Severn Bridge tolls and the new Local Development Plans for the study area have been considered, as have future technologies that may be widely adopted;

Prevention – each chosen option aims to address one or more of the current problems occurring or prevent them getting worse. A number of problems accessing Barry Docks Station have been identified and the objectives and interventions established are specifically designed to mitigate these.

Integration – At WelTAG Stage 1 (Strategic Outline Case), the focus is on the strategic context for the improvements proposed and how interventions can be packaged to support this, including consideration of the MCC Wellbeing Objectives. At WelTAG a Stage 2 (Outline Business Case) other organisations' wellbeing objectives and the impacts upon these will need to be considered.

Collaboration – Key Stakeholders from a number of different bodies, including the County Council Review Group and TOC's, have been engaged during the course of this Stage 1 WelTAG process to ensure that collaboration on addressing the identified problems is achieved and each shortlisted intervention addresses a range of stakeholders needs.

Involvement – Key Stakeholders, including rail passengers using Barry Docks Station, have been engaged both in order to identify the problems of accessing Barry Docks Station and to identify potential solutions. This engagement will continue and expand to others at future WelTAG stages to provide feedback on the shortlisted options.

Prosperity for All: The National Strategy, 2017

The National Strategy sets out four key themes:

1. Prosperous and Secure

- Support people and businesses to drive prosperity;
- Tackle regional inequality and promote fair work; and
- Drive sustainable growth and combat climate change.

2. Healthy and Active

- Deliver quality health and care services fit for the future;
- Promote good health and well-being for everyone; and
- Build healthier communities and better environments.

3. Ambitious and Learning

- Support young people to make the most of their potential;
- Build ambition and encourage learning for life; and
- Equip everyone with the right skills for a changing world.

4. United and Connected

- Build resilient communities, culture, and language;
- Deliver modern and connected infrastructure; and
- Promote and protect Wales' place in the world

The improvements proposed for Barry Docks Station will support theme 1 by enabling sustainable growth and combatting climate change whilst also addressing regional inequality and promoting fair work by enhancing opportunities to access employment. The active travel initiatives included within the proposals will promote good health and wellbeing for users and as all proposals relate to sustainable modes all will contribute to healthier communities and better environments.

Theme 4 is supported by proposals aiming to improve access to rail services serving the station, delivering modern and connected infrastructure. These rail services offer direct connections to key employment, retail and service centres including the Cardiff Capital Region to the west, Bristol and the West of England combined authority region to the east and Gloucester and its surrounds to the north west.

Prosperity for All: Economic Action Plan: 2017

The National Strategy is underpinned by an Economic Action Plan also produced by the Welsh Government (WG). This has the aim of growing the economy inclusively, spreading opportunity and promoting well-being within Wales. Its stated vision is 'inclusive growth, built on strong foundations, supercharged industries of the future and productive regions'.

Reflecting the National Strategy, the Economic Action Plan focusses on the following objectives:

- Supporting people and businesses to drive prosperity;
- Tackling regional inequality and promoting fair work;
- Driving sustainable growth and combating climate change;
- Building ambition and encouraging learning for life;
- Equipping everyone with the right skills for a changing world;
- Delivering modern and connected infrastructure; and
- Promoting and protecting Wales' place in the world.

The interventions proposed for Barry Docks Station will support the economic plan in much the same way as the National Strategy by improving access to the station and the rail services it offers, for all. Inequality and fair work will be addressed by improved access to employment. Sustainable growth and combatting climate change will be supported by the increased use of sustainable transport modes generated and modern and connected infrastructure will be provided by the proposed initiatives and their integration. By linking the communities of south east Wales and Southwest Gloucestershire to the station and through its services, to economic development in Cardiff, Bristol, Gloucester and their surrounds, the scope for people and businesses to drive prosperity in the region will be enhanced.

Wales Transport Strategy, One Wales: Connecting the Nation, 2008 (and emerging)

The current Wales Transport Strategy was established in 2008. This sets out 5 key areas that WG aim to progress:

- Reducing greenhouse gas emissions and other environmental impacts;
- Improving public transport and better integration between the different types
- Improving links and access between key settlements and sites
- Enhancing international connectivity; and
- Increasing safety and security

In February 2013, WG considered the issue of a formal review of the Strategy and concluded the WTS should remain extant. In July 2015, the National Transport Finance Plan (NTFP) was published as a response to calls for greater clarity on the financing and the timing of the transport interventions coming forward from

a consultation on a Draft National Transport Plan. Following this internal WG consultation across its departments identified the following key transport issues:

- Sustainable access to tourist sites;
- Connections to superfast broadband and using transport as a digital communications asset;
- Transport's contribution to decarbonisation;
- Noise and air quality;
- Ensuring our infrastructure is resilient to climate change;
- Providing access for all;
- Reliable and affordable access to education; and
- Alignment between land use and planning.

Work to update the strategy is ongoing with a two-tier approach to its replacement proposed, consisting of an overarching policy statement supported by a number of thematic policy statements. The overarching policy statement will set out how transport will work to bring about the four key themes and deliver against the priority areas set out in the National Strategy. This WelTAG stage 2 study considers the existing Wales Transport Strategy. However, the study acknowledges that there is an emerging Wales Transport Strategy, which if available, will be considered at WelTAG Stage 3.

The goal of One Wales: Connecting the Nation is, 'to promote sustainable transport networks that safeguard the environment while strengthening the country's economic and social life'. The proposed Barry Docks Station Improvements Scheme supports this goal by promoting the use of sustainable modes to link housing and economic development in locations surrounding the station with that in the Cardiff Capital region, the West of England and Gloucestershire, via rail. The proposals also provide specific support to the key issues identified in 2008 and 2013, in particular by:

- Encouraging increased use of sustainable modes that will improve air quality and reduce greenhouse gas emissions and other environmental impacts, including noise;
- Improving sustainable links and access between key settlements and sites, including enhanced access to international connectivity via airports in Cardiff and Bristol; and
- Increasing access for all, including young people, disabled people, those on low incomes and other vulnerable groups.

National Transport Finance Plan, Updated 2018

The National Transport Finance Plan recognises that Transport has a critical role to play in improving Wales' economic competitiveness and access to jobs and services. To this end, it identifies WG's proposed investment in transport infrastructure and services for the period from 2015 to 2020. However, it also makes clear it is not a policy document and does not seek to prioritise the schemes it identifies.

The Plan recognises that the maximum benefits from transport will be experienced if excellent national and international connections exist, providing access to markets, employment, education and services. Under RI11/12 the Plan (2018) makes a specific reference to Work with the Department for Transport to develop the rail infrastructure enhancement schemes identified by the Secretary of State for Transport and the Chancellor in the 2017 Autumn Budget, including improvements in journey times between: Swansea and Cardiff; South Wales, Bristol and London. There are also several references in the plan to support for the South Wales Metro.

Llwybr Newydd: the Wales Transport Strategy 2021

The current Wales Transport Strategy, 'Our strategy to shape the future of transport in Wales' was published in March 2021, just as this Outline Business Case was being completed.

Three priorities are identified in order to make the strategy happen:

1. The need to bring services to people in order to reduce the need to travel;
2. The need to allow people and goods to move easily from door-to-door by accessible, sustainable and efficient transport;
3. The need to encourage people to make the change to more sustainable.

A new sustainable transport hierarchy will give priority to meeting the demand for travel by walking, cycling and public transport ahead of private motor vehicles. A detailed five-year national transport delivery plan and regional transport plans will tailor transport delivery to the needs of every part of Wales. Four cross-cutting delivery pathways will ensure commitments on decarbonisation, equality, integrated journey planning and the rural offer, whilst nine mini-plans show how each mode and sector will deliver. The strategy will be monitored to enable WG and transport authorities to be held to account.

A more detailed analysis of the Transport Strategy will be undertaken at WelTAG Stage 3. However, it is clear from our initial analysis that the Barry Docks Transport Interchange will contribute significantly to the objectives of the strategy.

Network Route Study, Network Rail, March 2016

Every 5 years Network Rail (NR) undertakes a review of potential future demand for rail services and based on this sets out its 5 year and longer-term aspirations for the network. It last undertook this exercise for services in Wales and between Wales and the rest of the UK in 2016. The subsequent route study report identifies those services Network Rail would like to see increased in order for others to consider how funds might be sought to bring about the service improvement/s.

The review is an evidence-based study, focussed on existing rail lines and developed collaboratively with the railway industry, with funders and with stakeholders. It assesses how demand for rail will grow in response to changes in the economy, socioeconomic changes, environmental considerations, sustainability, social value and value for money; i.e. macro-economic factors, such as distribution of employment, income and homes, micro economic factors, such as the cost of travel by car and rail, car ownership, and competition between modes, demographics, such as population, age of population and household composition, consumer tastes, such as the use of travel time and travelling alternatives and the supply of travel opportunities, such as rail generalised journey times and punctuality. Overall strong growth in demand is forecast reflecting both the fact that patronage in Wales has almost doubled over the past 10 years and that economic and housing development going forward is expected to continue to drive this trend.

As an exemplar of this growth, the study highlights increasing patronage on the Valley lines and the Cardiff/London line which is expected to experience the most growth in patronage between 2013 and 2023 (34%) and the 2nd greatest growth between 2023 and 2043 (142%). The report also forecasts growth for commuting into Cardiff City Region will increase by 68% by 2023 and 144% by 2043. This will support plans to upgrade the station at Barry Docks to facilitate the increase in demand at the station and the Valley lines in general.

Overall, the Network Route Study, clearly confirms, on the basis of detailed quantitative analysis (albeit not Barry Docks Station specific), the expected development growth and resulting increase in rail patronage envisaged for SE Wales by the national and regional policy and strategy documents summarised above and below. It also confirms that there are medium, and long-term rail aspirations to 2030 to accommodate the proportion of this growth that will arise at Barry Docks Station, with a new bus interchange with rail. The proposals for infrastructure improvements at Barry Docks Station are a necessary part of the improvements needed to facilitate this increased rail patronage in a timely and sustainable manner.

Active Travel (Wales) Act (2013)

The Active Travel (Wales) Act was passed by the National Assembly of Wales in 2013 and aims to secure new and enhanced active travel routes and facilities, improving provision for walkers and cyclists across Wales. The Act requires Local Authorities to map existing active travel routes and regularly monitor active

travel facilities / routes to review where improvements and/or new routes are required. Part of this process requires Local Authorities to provide annual reports outlining how much routes are used.

WG ministers have identified those built-up areas with a population greater than 2,000 people in which the Active Travel Act will apply. In Barry the council have produced an Integrated Network Map for Active Travel as required by law, which is approved by Welsh Government. Investment in delivering the infrastructure improvements proposed for Barry Docks Station will complement and enhance the local Active Travel network.

Regional Context

The Cardiff Capital Region (CCR) City Deal is a £1.28 billion programme expected to achieve a 5 percent uplift in the region's GVA by delivering a range of programmes to increase connectivity, improve physical and digital infrastructure and improve regional business governance. The 'deal' covers all 10 local authorities within south east Wales, including The Vale of Glamorgan.

One of the key aspects of the deal is the improvements to connectivity within the region and support for new infrastructure that it offers. It includes a commitment to spend £1.2 billion on the Capital City Region infrastructure, levering in up to 25,000 new jobs and an additional £4 billion of private sector investment. Both the UK and Welsh Government are contributing £500 million to the Capital City Region Investment Fund respectively, while the ten local authorities will contribute a minimum of £120 million over the 20-year duration of the Fund.

Within Barry, the CCR City Deal has proposed new employment sites connecting Barry to other areas in and around the Vale, such as the St Athans Enterprise Zone, of which Barry residents are likely to want access to via rail. Furthermore, the creation of a Housing Investment Fund entitled 'Homes for all the Region' is set to bring forward up to 2,800 homes for the region, with at least 50 per cent of the fund targeted at the areas of lowest economic competitiveness. This will attract residents to employment opportunities at economic developments in Barry, of which an integrated transport system will greatly support – such as the proposals at Barry Docks Station.

To achieve improved transport connectivity one of the main priorities is the delivery of the South Wales Metro. £738million of the City Deal fund has been pre-allocated for the project, split between the Valley Lines Electrification programme and the wider South Wales Metro scheme. The Metro is regarded as the "cornerstone" of the City Deal and a Regional Transport Authority has been set up to manage its implementation.

The south east Wales Metro includes proposals for improvement to the public transport network across south east Wales. As part of the Wales and Border Franchise, KeolisAmey, the train operating company (TOC) are tasked with implementing the Metro proposals.

Cardiff Capital Region, City Deal in collaboration with Welsh Government and Transport for Wales has identified a proposed £50 million programme of local transport schemes to support the implementation of the South Wales Metro. Phase 1 of this 'Metro Plus Regional Transport Authority (RTA) Programme' will see each Local Authority within South East Wales receive, on average, a £3m share to implement schemes in their area.

The programme of schemes proposed include:

- The creation of 'interchanges' that incorporate all modes of transport, acting as key hubs for travel;
- Enhanced Park and Ride facilities, complete with electric charging points; and
- New and extended Metro networks that will open up and enable improved access to new and existing activities for work, training, education, culture, retail and leisure.

Phase 1 of Metro Plus will see a £15m investment from Cardiff Capital Region City Deal, with a potential co-investment of £15m from Welsh Government. The remaining £20m will be sourced through local developer contributions, private sector investment and other contributions such as Council capital funds (in the form of match funding). Programme delivery will commence in 2019 and be complete by 2022.

Various schemes are proposed as part of Phase 1 of Metro Plus across the ten local authorities including the subject of this study, the Barry Docks Interchange – which includes the development of a new bus and rail interchange at Barry, complete with bus bays, provision for taxis and an extension to the existing Park and Ride site.

Transport for Wales (TfW) is a not for profit company owned by Welsh Government, established to oversee operation of the passenger line franchise throughout Wales and is the brand used by Keolis Amey as the TOC contracted to provide the services. The Operator and Development Partner (ODP)Agreement between the two, established through the recent tender process, includes an action plan for the service and station improvements sought by 2024.

Proposed improvements relevant to SE Wales include:

Services

2019

- New train assembly starts at factory in Newport.
- Provide ticket machines at all South Wales Metro stations by April 2019.

2020

- Start of new fare initiatives, including half price for 12 to 18-year-olds.
- Pay-as-you-go scheme launched for South Wales Metro (rolling out further in 2021).

2021

- First of the 148 new trains start being rolled out.
- Free Wi-Fi for trains and stations.

2022

- Passengers will be able to board on the same level as the train on the Cardiff Valley Lines (CVL).

2023

- An additional service from Cardiff to Bridgend, via Barry is proposed, running Monday to Saturday.
- More Sunday services introduced.
- Metro services on Cardiff City line.

2024

- An additional service on Sundays on the Cardiff to Bridgend line via Barry.
- First class introduced on Swansea to Manchester service.
- Target of 100% for secure station accreditation.

Stations

The ODP is committed to the delivery of a significant investment programme in stations, to improve standards and facilities for customers, enhance the condition of the estate and increase the operational performance and reliability of the station estate. This includes:

- Full condition survey of every station across the network.
- Creation of a station asset information model to inform decision making on investment plans and investment in station asset management systems to improve central knowledge and information on station assets.

- Creation of a new Station Asset Management Plan and align/enhance processes to ensure ISO 55001 accreditation.
- Design and delivery of a Station Improvement Plan (STIP) delivering nearly £200m of station enhancements, comprising an improvement plan for every station across the network, including:
  - Monitored CCTV at every station.
  - Enhanced CIS and new digital information screen.
  - Improved station facilities including additional/refurbished waiting rooms, platform shelters and toilets.
  - Minimum of 1,500 new car parking spaces and additional cycle shelters to improve customer access.
  - Improved station commercial retail.
  - Improved accessibility through more step free station schemes.
  - Projects at key Hub and Interchange stations to improve ticket offices, customer facilities and accessibility.
  - Community based projects (including 3 Community Rail Partnerships) with funding to bring disused station space back into use.
  - Rebranding all stations.
  - A Green Stations and Art Work fund.

It is understood that Barry Docks Station is considered out of scope for the Station Improvement Programme (STIP)

Local Context

The Vale of Glamorgan Local Development Plan, 2011 to 2026

The Local Development Plan (LDP) provides a framework for sustainable development within the Vale of Glamorgan up to 2026, which will guide the growth of the Vale of Glamorgan over a fifteen-year period. The LDP identifies the infrastructure needs of the communities within the Vale of Glamorgan, in terms of employment, facilities and services needed to support that growth.

The LDP demonstrates the essential role that the Vale of Glamorgan plays in the success of the wider City-Region Area and highlights the use of Barry Docks as a key transport interchange and gateway to the town. Alongside this, the council has identified an integrated and phased approach to the redevelopment and improvement of Barry Dock Station.

Initial phases have resulted in the upgrading of the station platform and the construction of a new strategic footbridge linking Thompson Street to the Holton Reach site on Barry Waterfront. Supported by the Welsh Government and the South East Wales Transport Alliance. A Park and Ride site has also been completed at Barry Docks station, comprising the upgrading of the Barry Dock Office car park and provision of approximately 220 park and ride spaces.

Overall, the LDP Strategy will seek to promote new development opportunities in the 'South East Zone' of the county, which is inclusive of Barry. Whilst Barry Docks Station upgrade scheme will complement the public transport routes and provision of new facilities for walking, cycling and rail surrounding the station, it will also further integrate Barry Town with the surrounding area. For example, the station will link Barry's economic assets such as MoD St Athan and Barry Town to the proposed housing developments in areas such as Barry Waterfront, Llantwit Major, Dinas Powys and the Rural Vale; key employment sites within Barry,

Cowbridge and Penarth; retail developments in Barry Town Centre and Cardiff International Airport and its surrounding enterprise zone.

It will also provide improved sustainable transport access from Barry to an increasing range of employment opportunities being developed in the wider Cardiff Capital region. In particular increased Park and Ride capacity at the station will encourage greater use of rail services to access this employment and in turn reduce congestion on the 3 key road corridors between Barry and Cardiff. Many existing and emerging employment sites are located adjacent or close to the rail network. While CCR's plans for the South East Wales Metro will enhance the rail services and infrastructure available to improve the experience of rail users over the next 5 years. This includes extending provision on the Vale of Glamorgan line serving Barry from 4 trains an hour to 5 trains an hour on week days by 2023 and including Sundays from 2024.

It is envisaged that the development proposed for Barry will help to provide new and improved community services and facilities and create new local affordable housing and employment opportunities during the LDP period. In order to ensure the successful delivery of the LDP Strategy, specific area objectives have been identified for the key settlement of Barry. These objectives provide a framework for Managing Development and Growth in the area.

Objectives for Barry include:

- Create new employment, training and learning opportunities to support existing businesses and encourage appropriate economic development and inward investment to further the regeneration of Barry;
- Provide new opportunities for enhanced community services, facilities, public realm and infrastructure to support the important role of Barry, both locally and regionally, as a key settlement;
- Improve the existing housing stock through continued investment in area-based renewal and promote a range and choice of new housing, particularly affordable housing given the high level of need identified in Barry;
- Support the Welsh Government's Tackling Poverty agenda through 'Communities First' working with residents, community organisations, business and other key agencies, leading to the long-term sustainability and wellbeing of communities;
- Improve access to and within Barry, through strategic and local highway improvements and a range of sustainable transport measures, which will support regeneration whilst at the same time effectively managing congestion on the town's main arterial roads;
- Improve walking and cycling links between the town centre, the Waterfront and Barry Island;
- Promote continued investment and environmental enhancement in Barry's retail centres, particularly Holton Road and High Street to reinforce their vitality, viability and attractiveness, whilst at the same time encouraging the beneficial use of retail premises upper floors;
- Promote Whitmore Bay and Barry Waterfront as all year-round attractive tourism and leisure destinations by encouraging a range of high quality serviced accommodation, all weather attractions, improved visitor facilities and event led tourism; and
- Favour development proposals which assist the long-term viability of Barry's Port to facilitate the efficient and reliable movement of freight by sea.

Vale of Glamorgan Corporate Plan, 2016 to 2020

The Vale of Glamorgan's corporate plan sets out a programme of activity for the four years spanning 2016-2020, prioritising the short, medium and longer term needs of the Vale. The plan shapes a vision for 'strong communities with a bright future', which considers the achievements from the previous corporate plan, local needs, available resources, what staff are suggesting, the views of partners and residents, the importance of working in partnership, and the requirements of the Well-being of Future Generations (Wales) Act 2015.

This includes a number of objectives which support the council's well-being aims. The well-being aims include: an inclusive and safe vale; an environmentally responsible and prosperous Vale; an Aspirational and Culturally Vibrant Vale; and, an Active and Healthy Vale.

The upgrade for a transport interchange hub at Barry Docks station compliments these aims by supporting the delivery of transport improvement schemes associated with the Cardiff Capital Region Metro, improving accessibility, road safety, air quality, reducing congestion and encouraging active travel in the area.

The Council have developed a draft of the next Corporate Plan from 2020 to 2025. This plan will set out the new Well-being Objectives and frame how the Council will contribute to the national Well-being goals and deliver its vision for Strong Communities with a Bright Future.

2016-2020 The Vale of Glamorgan Local Transport Plan, 2015 to 2030

The Transport Act 2000, as amended by the Transport (Wales) Act 2006, introduced a statutory requirement for local transport authorities to produce a Local Transport Plan (LTP) every five years and to keep it under review. In May 2014 Welsh Government published new guidance requiring all local authorities in Wales to produce an LTP for submission in January 2015. The guidance stated that LTPs should be used to update the schemes and priorities identified in the previous plans and integrate with WG's National Transport Plan.

The Vale of Glamorgan LTP identifies the key transport issues relevant to the county, the high-level interventions needed to address these and the specific priorities for the local authority, including the transport infrastructure required to support the current LDP. The stated aim of the current LTP is to facilitate and support the development of a modern, accessible, integrated and sustainable transport system for South East Wales, which increases opportunity, promotes prosperity for all and protects the environment; where walking, cycling, public transport, and sustainable freight provide real travel alternatives.

The LTP includes a prioritised five-year programme of projects the council wishes to see delivered between 2015 and 2020 as well as medium, and longer-term aspirations up to 2030.

Specifically, in relation to Barry Docks Station access & interchange improvements, the programme states that the council believes rail journey times and frequency enhancements, as set out in the South East Wales Integrated Transport Task Force report and in line with draft NTP (3.23.8 and interventions IT6, RS2, CCRM10 and CCRM13) are required to achieve the wider economic, social and environmental priorities of the LTP and LTP guidance. The proposals include improved bus, cycle and pedestrian access, station information provision and signage, cycle storage, expansion of park & ride site and construction of a new link road.

Vale of Glamorgan, Staff healthy travel charter, 2019 to 2022

Statutory bodies across the Vale of Glamorgan, including the blue light services, Cardiff Airport and Cardiff and Vale University Health Board, have come together to establish a healthy travel charter for the area. This states the intention of each is to:

- Reduce the proportion of journeys commuting to and from work made by car; and
- Increase the proportion of vehicles used during the day which are plug-in hybrid or pure electric

They plan to achieve this through offering a range of incentives and interventions. The proposed improvements to Barry Docks station will add to the tools available for them to use.

Appendix B: Stakeholder Consultation Framework

Introduction

The Stakeholder Management Strategy is an essential part in developing the Business Case for the Barry Docks Interchange scheme. The approach to stakeholder management is a key element of the Strategic Case, although all elements of the Business Case should be linked to stakeholders at appropriate points.

Consultation undertaken to date has focussed on the overall regeneration of Barry rather, than Barry Docks specifically. However, for WelTAG stage 2 bespoke consultation is required with a wide range of organisations and at WelTAG stage 3 should include public consultation.

Some stakeholders will need to receive information on the scheme as a whole at key stages of its development, whilst others will have an active role in developing all or part of the programme. As a consequence, the requirements for engagement will vary as the design process is refined and we move through WelTAG stage 2 and WelTAG stage 3. However, he main focus of the consultation framework at this stage is on the requirements for WelTAG stage 2.

Below we set out our suggested approach to stakeholder management, defining who to involve, when and how. This includes:

- Identifying and categorising stakeholders;
- The details of individual stakeholders and their role; and
- The approaches to be used to engage stakeholders, taking account of the current Covid 19 emergency.

Stakeholder Identification and Categorisation

The aim, going forward, is to establish how to extend consultation to all stakeholders regardless of how major or minor they are. This will avoid the possibility that stakeholders are omitted, and their issues not identified and addressed but instead become evident at some point during the project's lifecycle, introducing delays or other obstacles to the project's success.

The following criteria have been used to determine if an individual or group will be included as a stakeholder:

- Will the person or their organisation be directly or indirectly affected by this project?
- Does the person or their organisation hold a position from which they can influence the project?
- Does the person or their organisation have an impact on the project's resources (material, personnel, funding)?
- Does the person or their organisation have any special skills, capabilities or knowledge the project will require?
- Does the person or their organisation potentially benefit from the project or are they in a position to resist this change?

Any individual or organisation that meets one or more of the above criteria has been identified as a stakeholder. Stakeholders from the same organisation may be grouped in order to simplify communication and stakeholder management.

Key Stakeholders

Key stakeholders are those who potentially have the most influence over the project or those who may be most affected by the project. In order to help identify these key stakeholders, a review of the potential project stakeholders has been carried out to map their likely level of interest in the Mobility Hubs scheme

and to determine the level of influence that they may have over its development and implementation, as illustrated in the figure below.

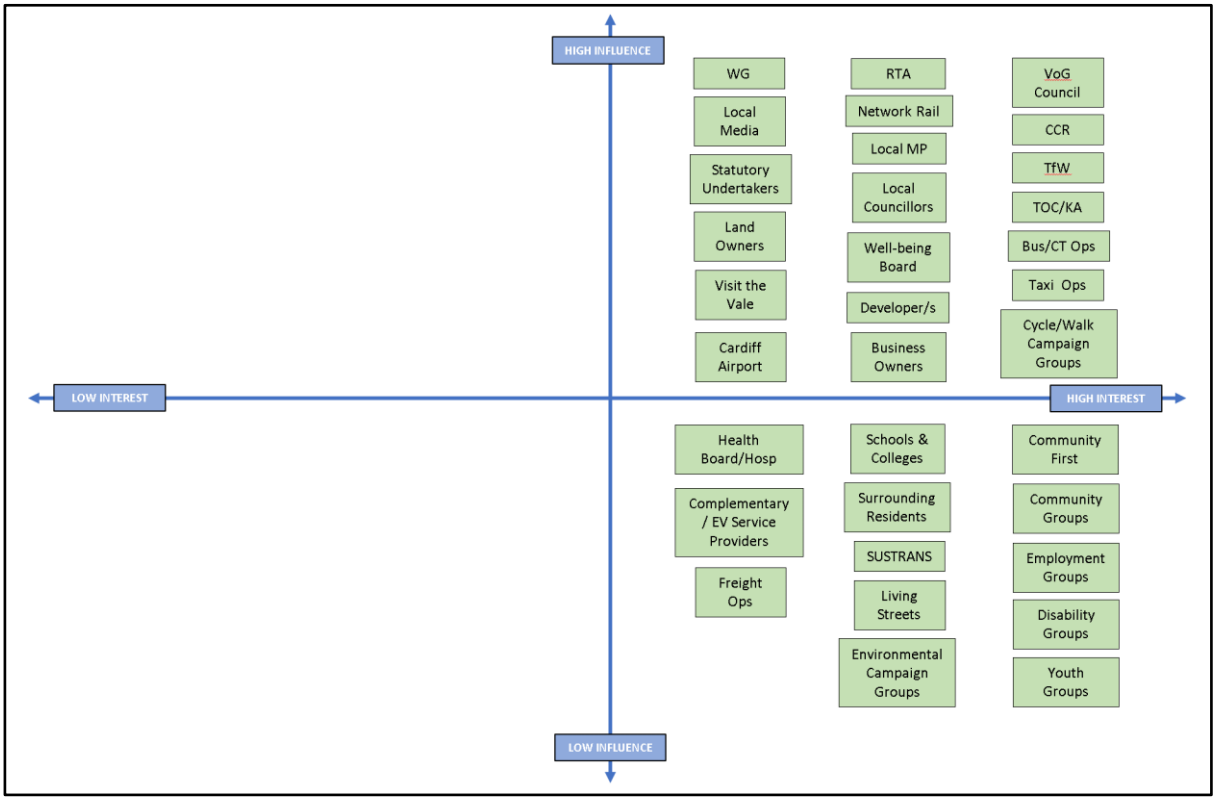


Figure 27 - Key Stakeholders

These key stakeholders are those who will require engagement and management at each stage of development. Some stakeholders have interest in and/or influence over the scheme as a whole; others will have a more specific interest in one or more component investment packages. As plans develop and at different stages, some key stakeholders may be regarded as more critical than others. Therefore, at WelTAG stage 3 this categorisation exercise will be repeated, and the mapping amended to reflect changing priorities and interests. Any significant issues arising as a result of changes will also be reflected in the Project Risk Register.

Some key stakeholders may be found who are resistant to the change represented by the project. These key stakeholders may require more communication and management throughout the project's lifecycle and will be identified through the early consultation processes.

Based on the feedback obtained, it may be prudent to involve some stakeholders on steering committees, focus groups, gate reviews, or other project meetings or milestones.

Thorough communication with key stakeholders is necessary to ensure all concerns are identified and addressed, that resources for the project remain available and that services proposed meet current and latent demand.

High-level assessment

The stakeholders identified above can be further classified according to the categorisation table below.

Table 35 - Stakeholder Categorisation

Category	Detail
Beneficiary	Stakeholders which will receive some direct or indirect benefit from the scheme
Affected	Stakeholders which are directly affected by the scheme in terms of its construction or operation
Interest	Stakeholders with some interest in the scheme though not affected directly by its construction or operation
Statutory	Stakeholders with a statutory interest in the scheme, its construction, operation or wider impacts
Funding	Stakeholders involved in the funding of the construction or operation of the scheme

Engagement approaches

Not all engagement approaches normally used can be adopted in the current Covid 19 emergency. This may change as current restrictions on social distancing and movement are eased over time. However, at this time the approaches proposed are based on the current restrictions. These are summarised and then detailed further in the two tables below:

Table 36 - High Level Engagement

Category	Detail
Intensive consultation	Stakeholders who are directly affected by the scheme and whose agreement is required in order for the scheme to progress - Consultation throughout design and implementation
Consultation	Stakeholders who are affected by the scheme and can contribute to the success of its design, construction or operation - Consultation at key stages
Information	Stakeholders with some interest in the scheme or its use - Information to be provided at appropriate stages

Table 37 - Stakeholder Communication Mechanisms

Communication Methods	Detail
Statutory Authorities & Boards	• Member/Councillor Briefing Sessions • Cabinet Meetings & Reports

	• Senior Officer Meetings • Transport Authority Meetings • One-to-one stakeholder meetings (telephone/online)
External Communications & Media	• The Council Website/Microsite • CCR Website • Social Media (Twitter, Facebook, etc) • Email, E-Bulletins • Press releases
Statutory Undertakers & Land Owners	• One-to-one stakeholder meetings (telephone/online) • Briefing notes • Site Visits & Surveys (within Covid 19 Guidelines)
Transport Providers	• One-to-one stakeholder meetings (telephone/online) • Email • Briefing notes
Developers & Business Owners	• Chamber of Commerce/Business meetings & presentations (online) • One-to-one stakeholder meetings (telephone/online) • Email • E-Bulletins • Briefing notes
Health Bodies, Training organisations & Educational establishments	• Local Forum (online) • One-to-one stakeholder meetings (telephone/online) • Briefing notes • Email, E-Bulletins
Community Organisations, Special Interest & Campaign groups	• Local Forum (online) • One-to-one stakeholder meetings (telephone/online) • Briefing notes • Email, E-Bulletins
Bespoke Surveys (within Covid 19 Guidelines)	• Geo Environment/Geo Tech /SUDS/ Embankment/ Heritage/Structures/ Environmental & ecology/Field • Car Park count • Traffic/Access count
Public Meetings and Forums (@ WelTAG stage 3, Covid 19 restrictions dependant)	• Residents meetings & presentations • Community group meetings & presentations • Environmental/Cycle/Walk Forum meetings & presentations • Public meetings, workshops & consultation events

Considerations

In current circumstances the views of organisations and members of the public will be sought through online consultation rather than surveys. Some surveys may be pursued where these can be achieved within the Covid 19 guidelines. However, it's likely that it will be necessary to rely on historic data in most cases.

Although upgrading Barry Docks to a station interchange will provide benefits to a wide range of stakeholders, some aspects of the design of the individual components will affect specific groups. This will require specific consultation geared to the scheme elements in isolation or in combination.

Consultation designed to address these scheme-specific issues should be undertaken using the mechanisms set out in Table 37. Examples include the involvement of neighbouring businesses, cycling and pedestrian groups (eg Cycle Forum, Sustrans, Living Streets) and service delivery.

Impact Assessment Report (Outline Business Case)

Barry Docks Interchange

COGL00000008/OBC

01/03/2021

ameyconsulting

Document Control Sheet

Project Name:	Barry Docks Interchange
Project Number:	COGL00000008
Report Title:	Impact Assessment Report (Outline Business Case)
Report Number:	Final

Issue Status/Amendment	Prepared	Reviewed	Approved
[Rev. 0] Draft released for client comment. Not approved for formal release.	Name: Shipra Samanta Signature: Date: 27th Jan 2021	Name: Warren Murphy Signature: Date: 1st Mar 2021	Name: Paul Beecham Signature: Date: 03/03/2021
Final	Name: Warren Murphy Signature: Date: 13th April 2021	Name: Paul Beecham Signature: Date: 13th April 2021	Name: Tony Cahill Signature: Date: 14th April 2021
	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:
	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:

Contents

Tables

Figures

ABBREVIATIONS

BCMCM	Barry Cardiff Mode Choice Model
DfT	Department for Transport
FBC	Full Business Case
LENNON	Latest Earnings Networked Nationally Overnight
LSAM	Local Station Access Model
LTP	Local Transport Plan
MSOA	Middle Super Output Area
OBC	Outline Business Case
OA	Output Area
(R)PDFH	(Rail) Passenger Demand Forecasting Handbook
SOBC	Strategic Outline Business Case
SEWTM	South East Wales Transport Model
TfW	Transport for Wales
TOC	Train Operating Company
VoG	Vale of Glamorgan
WelTAG	Welsh Transport Analysis Guidance

1. Introduction

1.1. Overview

1.1.1 The Vale of Glamorgan Council has commissioned Amey Consulting to provide an Outline and a Full Business Case (WelTAG Stages 2 & 3) for a Multi Modal Transport Interchange at Barry Docks Station, compliant with Stages 2 and 3 of the Welsh Government's WelTAG Guidance 2017. This Outline Business Case provides the justification for regenerating land in the vicinity of Barry Docks railway station to include a proposed new bus and taxi interchange, additional park and ride capacity and associated physical infrastructure improvements. In addition, it includes consideration of the potential to establish a mix of residential and commercial development alongside the transport interchange.

1.1.2 WelTAG is a guidance document produced by the Welsh Government for use in the development, appraisal and evaluation of any proposed transport intervention. According to WelTAG, the Impacts Assessment Report is a live document which is maintained and grows throughout the five WelTAG stages. It becomes a permanent record of the appraisal work on the proposed transport intervention. It contains the detailed evidence behind the summary information provided to decision makers in the stage reports.

1.1.3 This report is an Impact Assessment Report for the Outline Business Case (OBC). It sets out the base data collected from various sources in order to assess and analyse the current travel demand characteristics in Barry region. The report also sets out the methodology and development of demand models used in the estimation of future demand mentioned in the OBC.

1.1.4 This report has been produced in accordance with Amey Consulting's Quality Control procedures contained in its 'Project Management Manual, Version 5'.

1.1.5 As a result of the COVID-19 outbreak in early 2020, economic activity is anticipated to be significantly affected beyond expected fluctuations. Information provided herewith is to inform the wider economic context beyond such extreme events and for the purposes of the IAR appraisal should be viewed with this in mind.

1.2. Project Description

1.2.1 The Vale of Glamorgan Council (the Council) is seeking to upgrade Barry Docks Railway Station, including:

- Provision of a new Bus Interchange;
- Provision of a new Taxi Interchange;
- Provision of electrical vehicle (EV) charging infrastructure (Bus, Taxi & Cars);
- Provision of digital infrastructure;
- Improvements to access routes within station confines, including aesthetic improvements to the pedestrian subway;

- Improvements to Subway Rd, a key external access route to the station, including improvements to the tunnel on Subway Rd;
- Consideration of minor, station infrastructure requirements (ie cycle parking, signage, seating, information, etc);
- Consideration of a range of additional linkages to Barry Island;
- Provision of additional Park & Ride capacity;
- Consideration of the potential for housing/commercial development on land north of the station;
- Development of a high-level Station Masterplan.

1.2.2 The aim of the proposed Barry Docks Transport Interchange is to provide a bus station, enhance station access and facilities to accommodate increasing numbers of people using an increased number of trains, each with increased seating capacity, expected to stop at Barry Docks, on a sustainable and inclusive basis. The upgrades will improve local connections between the station and the town centre and between the station and developments taking place along the Waterfront. They will also improve access between the station and communities and businesses throughout the town and connect these to the Rural Vale and the wider Cardiff Capital region. Together these improved connections will offer significant support to the economic development of both Barry and the wider Cardiff City region, assist those seeking to access employment, training and other services in the region, encourage greater use of sustainable transport modes and help improve air quality and reduce congestion and noise.

1.3. Report Structure

1.3.1 This report comprises nine chapters. Chapter 1 introduces the project and the report structure. A brief description of the rest of the chapters is presented below.

1.3.2 Chapter 2 presents the background data collected for the project and analysis of the travel demand characteristics in the region.

1.3.3 Chapter 3 presents the demand assessment methodology and the rationale behind it.

1.3.4 Chapter 4 presents the process of defining the catchment area for further analysis.

1.3.5 Chapter 5 presents the process of estimation of current demand and its validation.

1.3.6 Chapter 6 presents the growth factors which are expected to have an impact on the future demand at Barry Docks Station.

1.3.7 Chapter 7 presents the estimated future demand at Barry Docks Station and its various components.

2. Background Transport Data and Travel Characteristics

2.1. Introduction

2.1.1 Barry is located on the north coast of the Bristol Channel approximately 14 km south-southwest of Cardiff. It is well known as a seaside resort, with attractions including several beaches and the Barry Island Pleasure Park. To the west of Barry is Porthkerry Park, a large area of open, green space, with woodlands, streams, and access to a pebbly beach.

2.1.2 Barry is the administrative centre of the Vale of Glamorgan. According to the Office for National Statistics the population of Barry in 2016 was estimated at 54,673. Once a small village, Barry has absorbed its larger neighbouring places of Cadoxton and Barry Island. And Sully is also close by. The town grew significantly from the 1880s with the development of Barry Docks, which in 1913 was the largest coal port in the world. Although still a port, Barry is increasingly, a prime residential location for those working in the wider Cardiff Capital region and is now considered a commuter town with manufacturing elements, and a service centre for the Vale of Glamorgan.

2.1.3 Currently, people aged between 16 and 64 make up 64% of the population of Barry. The 2011 census highlights that 73% of the working population of the Vale of Glamorgan commute by car and 45% of the Vale residents commute out of the local authority for work purposes. The majority commute to Cardiff (34.4%), Bridgend (4.8%), Rhondda Cynon Taf (3.6%) and Newport (1.9%).

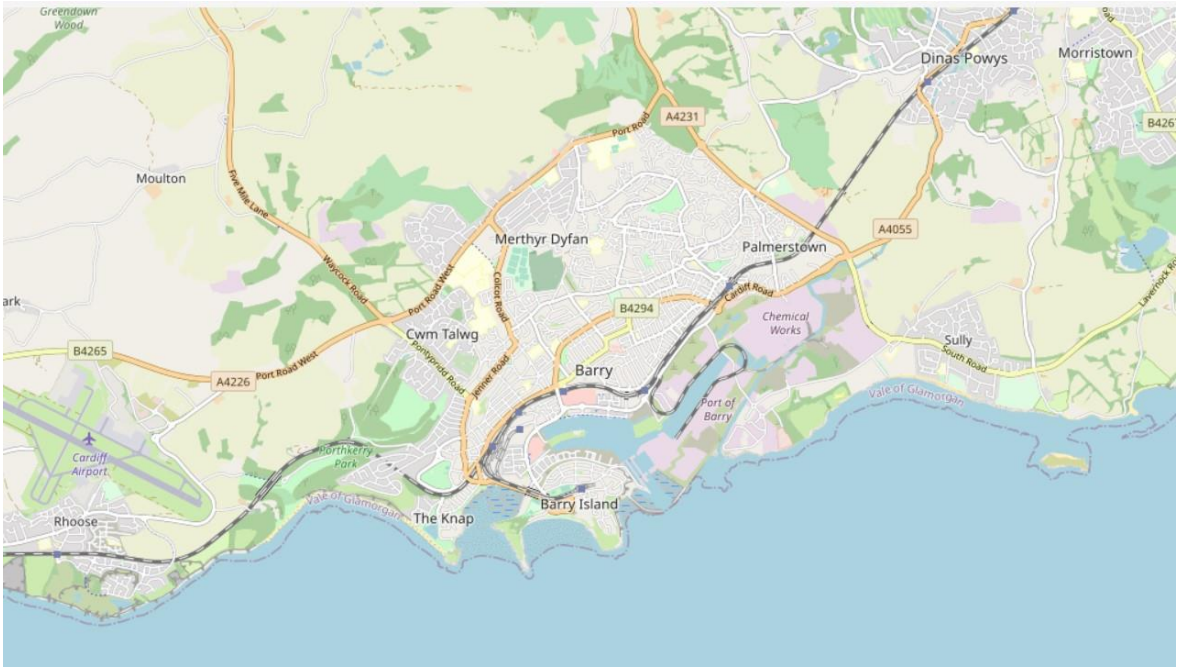


Figure 1 Barry Town Location

2.1.4 Barry Docks, and the adjoining Waterfront industrial area, form the largest employment centre in the town. The docks, whose road links were substantially improved with the opening of the Docks Link Road in 1981, now have direct road access to the M4 motorway Junction 33. Most industrial firms are located in the dock area. The largest are

the chemical producing concerns such as Cabot Carbon and Dow Corning who recently completed the development of the largest silicones plant in Europe.
Other significant employers in Barry Docks are Jewson Builders' Merchants, Western Welding and Engineering, Bumnelly and Associated British Ports Holdings who, since 1982, have administered the docks as successors to the British Transport Docks Board.

2.1.5 Information from various secondary sources was collected in order to understand the travel demand characteristics of the Barry region. The data collected served as the basis of defining a catchment area for Barry Docks Station and the future demand projections.

2.2. Data Limitations

2.2.1 The ongoing COVID-19 situation has meant that it has not been possible to collect new data by means of surveys or counts. It has not been possible to collect bespoke data on rail passengers' mode of arrival at the station, station usage counts or car park usage counts. Furthermore, the Covid situation is known to have reduced rail demand significantly but it is not clear by exactly how much, so any counts during this period are unlikely to be representative of 'normal' levels of use. Similarly, travel patterns have been severely disrupted. For example, the relative numbers of work to non-work journeys will have changed significantly as a large proportion of rail commuters stay at home to work.

2.2.2 The lack of primary data has led to a significant level of uncertainty in developing the methodology and estimating future demand. Wherever possible secondary sources of information have been used, however these do not always align with one another which means that a more-than-usual number and range of assumptions are needed to develop the forecasts. Sensitivity analysis in the Full Business Case will attempt to account for the risks around this by assessing the impact of various assumptions. Amongst other things, Appendix A sets out evidence gaps and the ways that these gaps have been filled.

2.3. Census 2011

2.3.1 Vale of Glamorgan had a population of 126,336 in 2011 which is expected to have increased to 132,165 in 2018[1]. 'Travel to Work' census data was collected for Vale of Glamorgan at Middle Super Output Area (MSOA) and Output Area (OA) levels in order to analyse the travel demand characteristics.

2.3.2 The distribution of trips from Vale of Glamorgan by different modes is provided in Table 1. Around 71% of the people in the Vale of Glamorgan travel to work by car/ van whilst around 7% travel by train.

[1] https://gov.wales/sites/default/files/statistics-and-research/2020-08/subnational-population-projections-2018-based-280.pdf

Mode of Travel	VOG
Work from Home	0.0%
UG/ Metro/ Light Rail/ Tram	0.1%
Train	6.8%
Bus/ Minibus/ Coach	3.3%
Taxi	0.4%
Motorcycle/ Scooter/ Moped	0.6%
Driving a Car/ Van	71.3%
Passenger in a Car/ Van	5.9%
Bicycle	2.0%
Walk	9.3%
Other Methods of Travel	0.3%

Table 1 Mode-wise distribution of Travel to Work Trips (Census 2011)

2.3.3 The distribution of the percentage of rail and bus trips is shown in Figure 2 and Figure 3. Some of the main observations which can be inferred are given below.

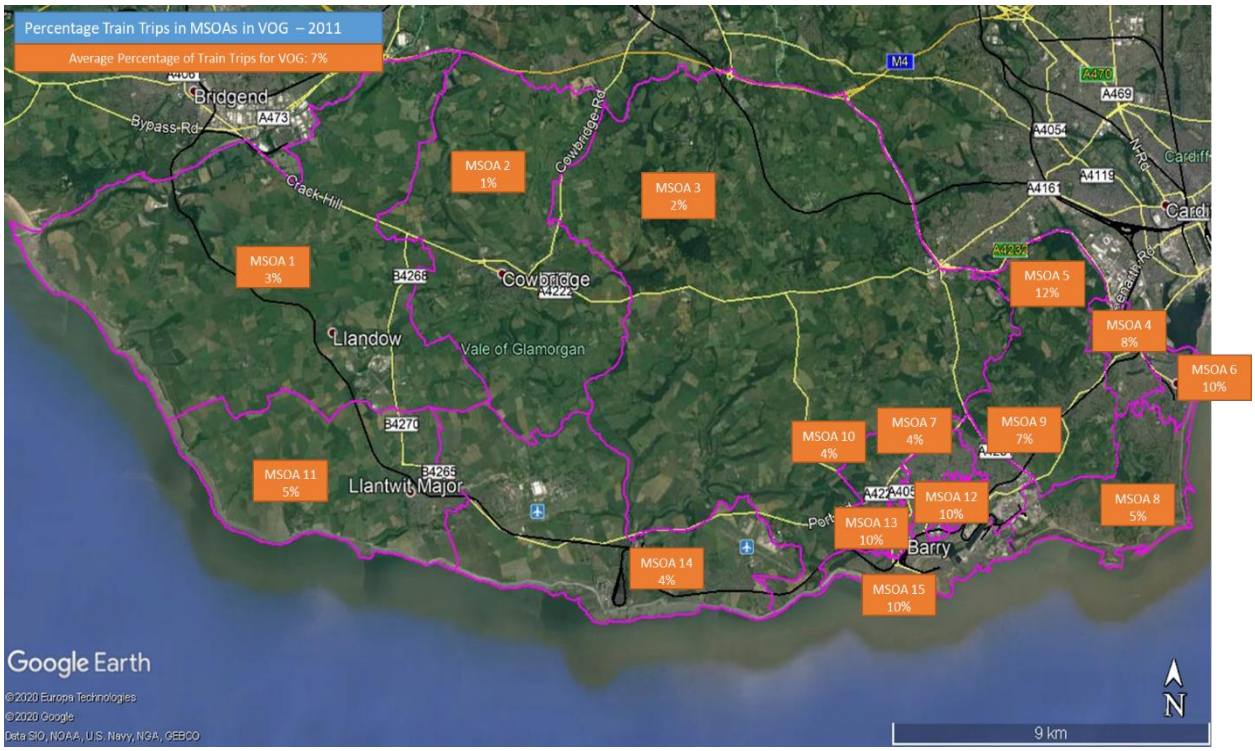


Figure 2 Proportion of Train Trips from MSOAs in VOG (Census 2011)

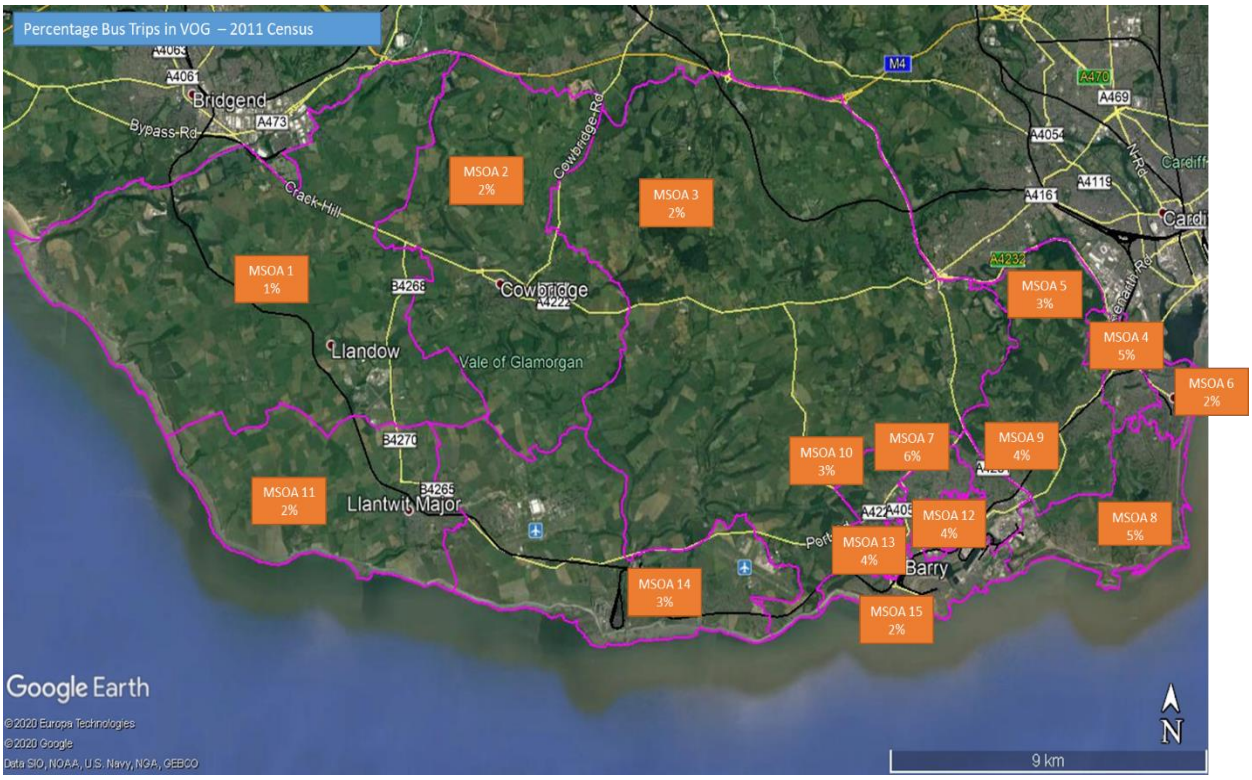


Figure 3 Proportion of Bus Trips from MSOAs in VOG (Census 2011)

2.3.4 MSOAs 12, 13 and 15 which are closest to the railway stations in Barry have around 10% of work trips by train;

2.3.5 MSOA 9 on the eastern edge of the town has 7% trips by train while MSOAs 7 and 10 on the northern edge have 4%;

2.3.6 MSOAs 1, 4 and 11 which are linked together by the Barry to Bridgend rail line show 3% to 5% travel by train;

2.3.7 MSOAs 4, 5, 7, 8 and 9 which are closer to Cardiff have a slightly higher proportion (3 to 6%) of bus use for travel to work compared to other MSOAs (1 to 4%).

Figure 4 Percentage of Work Journeys by Train (Source: DataShine Census)

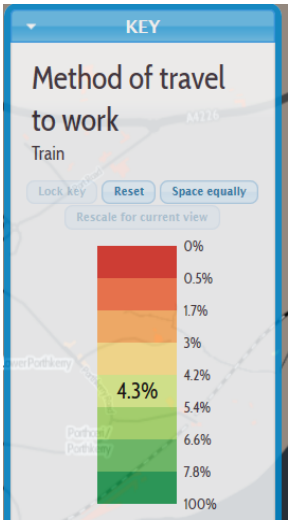


Figure 5 Key to the colours shown in figure 4

2.3.8 Figure 4 shows graphics from 'DataShine Census' at the smaller Output Area level. The key to the colours is in Figure 5. Red areas indicate that there is a relatively small amount of travel to work by train (less than 3%) and green areas show those where it is over 6%. Note that the highest percentages are close to the railway line especially near the stations (about 10%) and that the colours and therefore the percentages change quickly in moving away from the rail line.

2.3.9 Census travel to work data by destination is available at the MSOA level only. Table 2 presents the distribution of trips based on place of work for all modes and for trains. As evident from the table, while Cardiff and Vale of Glamorgan are the main destinations for travel to work trips, trips by train are mainly destined for Cardiff.

Place of Work	Work Trips from Vale of Glamorgan (Census 2011)	
	All Modes	Train
Bridgend	5%	2%
Caerphilly	1%	1%
Cardiff	36%	75%
Neath Port Talbot	1%	0%
Newport	2%	1%
Rhondda Cynon Taf	3%	2%
Swansea	1%	0%
The Vale of Glamorgan	46%	9%
Rest of Wales	1%	1%
London	1%	3%
England excl. London	3%	5%
Scotland and Northern Island	0%	0%

Table 2 Place of Work distribution of Travel to Work Trips (Census 2011)

2.3.10 Figure 6 below is generated by DataShine Commute for train travel to work from MSOA 12 only. (The figure would be similar for the other MSOAs in Barry.) The thicker the lines, the greater the number of trips. It can be seen that most of the commuter train journeys were to Cardiff including its suburbs, and some to Penarth.

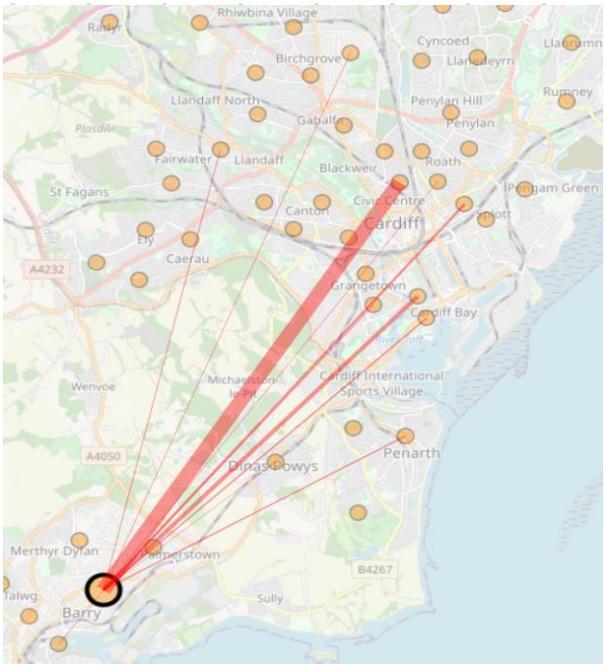


Figure 6 Travel to work journeys by train from MSOA12

2.4. Rail Services and Demand

2.4.1 Barry has four train stations, namely: Barry, Barry Docks, Barry Island and Cadoxton. Barry Docks Station is served by eight trains an hour including four to Cardiff. Three of the four usually continue to Merthyr Tydfil or Aberdare starting from Barry Island and calling at all stations to Cardiff Central and Cardiff Queen Street. A fourth service starts at Bridgend and operates via Rhoose (for Cardiff International Airport), Barry, Barry Docks and all stations to Cardiff Central. The four trains per hour per direction operate at fairly evenly spaced headways in both directions.

2.4.2 Trains take 4 minutes to travel from Barry Island to Barry; 3 minutes from Barry to Barry Docks and 3 minutes from Barry Docks to Cadoxton. The journey time from Barry Docks to Cardiff Central is 22 minutes. The fastest bus service from nearby Morrisons to Cardiff city centre is 53 minutes on bus service 96 via Colcot and Wenvoe.

2.4.3 Barry Station has about 130 car park spaces, Barry Docks has 241 and Cadoxton has 50. It is understood that all three stations are regularly at capacity which may mean that there is overspill parking into neighbouring streets. Barry Island Station does not have a car park.

2.4.4 The 241 spaces at Barry Docks Station are located on its south side. It is shared with parking for Vale of Glamorgan Council employees that work at the adjacent council building called the 'Barry Docks Office'. Council staff who work at the Civic Offices in the town centre can also park here. Provision is free and there is no time limit for staff, rail or other users. Out of the 241 spaces, 132 were built in 2011/12 on a former platform located on land parallel to the railway line. This allocation is accessed via a ramp from the main car park. It is understood that, pre-Covid, around 63% of the spaces were used by council staff and the remainder by rail users.

2.4.5 Because the stations in Barry are close together, they have overlapping catchment areas especially for journeys that access the stations by car. Google Maps indicates that journey times for most car journeys coming from the town's suburbs and rural vale are slightly

quicker to Barry or Cadoxton. This is because the quickest routes to drive to Barry Docks Station tend to be around the west side of the town centre via Gladstone Road and Gladstone Bridge or via the Gladstone Road/Ffordd-Y-Mileniwm roundabout to the east of the town centre. A typical car journey time between Barry and Barry Docks is only 3 minutes and between Barry Docks and Cadoxton is only 4 minutes.

2.4.6 Figure 7 and Table 3 show how station usage has changed over the last twelve years or so. Data comes from the Office of Road and Rail (ORR) and shows all passenger entry and exits per year since 2010-11 in Figure 7, and 2008-09 in the Table 3. This data is modified for use in the project as discussed below.

2.4.7 Barry Island, Penarth and Barry are the busiest stations in the region with annual entries/ exits more than 500,000. Barry Docks, Barry Island and Dingle Road have the recorded the highest growth of traffic in the past five years (2013-2018).

2.4.1 Barry Island appears to have the highest demand at around 832,000 entries and exits a year though as discussed below there are issues with the way that tickets are administered that over inflates the actual demand here.

2.4.2 It is not possible to tell from the ORR data what proportion of demand is by day visitors and tourists making return leisure trips and what proportion are local residents. Notably though, there has been a significant increase since 2014 -15, some of which might, perhaps, be explained by new residential development in the area that has been built in that time.

	Barry Island	Barry	Barry Docks	Cadoxton	Total	Percentage change year on year
Year	Thousands of entries and exits per year (Index: 2008 – 09 = 100)					
2008 – 09	578 (100)	480 (100)	119 (100)	261 (100)	1438 (100)	-
2009 – 10	561 (97)	505 (105)	132 (111)	257 (99)	1455 (101)	+1%
2010 – 11	618 (107)	504 (105)	149 (125)	248 (95)	1519 (106)	+5%
2011 – 12	617 (107)	506 (105)	176 (148)	254 (97)	1553 (108)	+3%
2012 – 13	592 (102)	527 (110)	191 (161)	273 (105)	1583 (110)	+2%
2013 – 14	621 (107)	559 (116)	204 (171)	278 (107)	1662 (116)	+6%
2014 – 15	608 (105)	531 (111)	205 (171)	269 (103)	1613 (112)	-4%
2015 – 16	654 (113)	544 (113)	216 (182)	282 (108)	1696 (118)	+6%
2016 – 17	712 (123)	533 (111)	224 (188)	287 (110)	1756 (122)	+4%
2017 – 18	753 (130)	534 (111)	246 (207)	282 (108)	1815 (126)	+4%
2018 – 19	832 (144)	524 (109)	251 (211)	271 (104)	1878 (131)	+5%

Table 3 Rail users at each of the stations in Barry (Unmodified)

2.4.3 South East Wales Transport Model (SEWTM), 2018 provides the following distribution of train trips by trip purpose.

Trip Purpose	% Train Trips
Work	63%
Education	6%
Shopping	17%
Other	14%

Table 4 Train use by trip purpose (source: SEWTM)

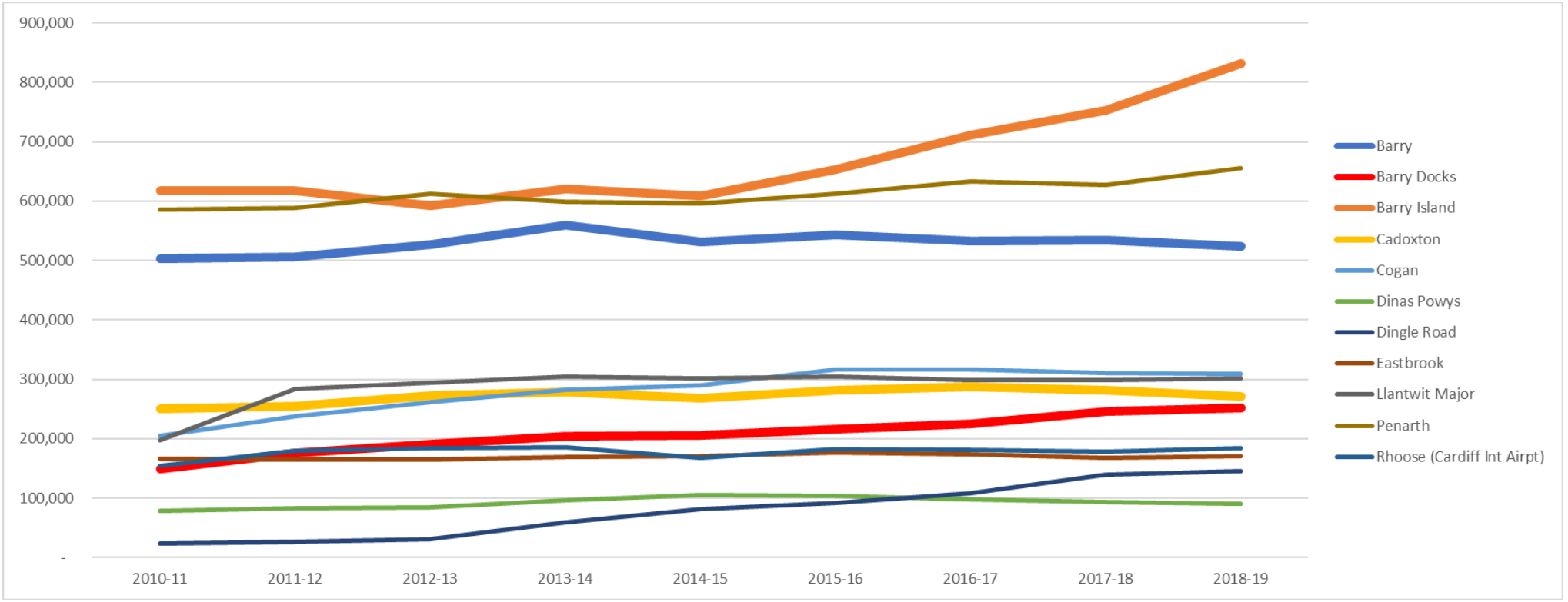


Figure 7 Rail users at stations in Vale of Glamorgan

2.4.4 Barry Docks Station has seen the biggest percentage increase in entries and exits over ten years. Apart from 2014 -15, year on year demand has grown consistently. Entries and exits of 251,000 in 2018 – 19 indicate that on average around 400 people make a trip from Barry Docks Station every day of the week (excepting Sundays).

2.4.5 Growth at Barry and Cadoxton stations has been less. Demand was greatest at Barry in 2013 – 14 since when it has slipped from 559,000 entries and exits to 524,000. Demand at Cadoxton has grown the least. It was at its highest in 2016 – 17 and has since slipped back so that by 2018 - 19 it was only 4% higher than in 2008 – 09.

2.4.6 Note, however, that demand figures at Barry Docks, Barry and Cadoxton are all affected by over inflation of the data at Barry Island. What is crucially important for the forecasting work though is that apart from a decrease in 2014 – 15, rail passenger demand across the four Barry stations has increased consistently so that by 2018 – 19 it was 31% higher than it had been in 2008 – 09. In recent years growth has been between 4% and 6% per annum.

2.4.7 The discrepancies in the data are derived from the LENNON (Latest Earnings Networked Nationally Overnight) database which is based on ticket sales. Consultation with Transport for Wales (TfW) revealed that where stations are located close to one another, and are clustered into the same fare stage, conductors selling tickets on the train will often issue a ticket to/from the furthest station in the cluster, regardless of where the station passengers are actually travelling to or from. In the case of the four Barry stations, the issue results in the inflation of LENNON or ORR figures for Barry Island Station and deflates the numbers for Barry Town, Barry Docks and Cadoxton stations. It is not the case for tickets purchased by other means.

2.4.8 Figures provided by TfW indicate that within SEWTM they reduced demand at Barry Island Station by about 54% compared to ORR/LENNON data. Analysis of Census Travel to Work data for Barry identifies that the reduction in patronage this represents should then be reallocated to the 3 other Barry stations on the following basis:

- Barry Town - 44%;
- Barry Docks - 8%; and
- Cadoxton - 48%.

2.4.9 It is likely that the issue has existed for some time. Therefore, in the time series tables below we have adjusted the data for each year to establish more accurate estimates of demand for all Barry stations over time, from the ORR published data.

Year	Barry Island (adjusted)	Barry Town (adjusted)	Barry Docks (adjusted)	Cadoxton (adjusted)
2008/09	*265,845*	*617,569*	*144,912*	*410,580*
2013/14	285,763	706,707	230,461	439,297
2014/15	279,774	675,639	231,500	426,190
2015/16	300,738	699,102	244,175	451,593
2016/17	327,434	701,729	254,996	471,638
2017/18	346,566	712,741	278,307	477,380
2018/19	382,822	721,838	286,996	486,226

Table 5 Barry Stations - Entries & Exits, All ticket types (Adjusted).

2.4.10 The data illustrates that Barry Town Station experiences the highest footfall of all Barry stations and Barry Docks currently has the lowest take-up. However, consideration of growth in patronage at each station over time indicates that Barry Docks has seen the most growth over the past 10 years. Whereas, over the past 5 years Barry Island at 34% has experienced slightly greater growth than Barry Docks at 25%.

Growth	10 Years to 2018/19	5 Years to 2018/19
Barry Island	44%	34%
Barry Town	17%	2%
Barry Docks	98%	25%
Cadoxton	18%	11%

Table 6 Growth at Barry stations

2.4.11 The footfall at Barry Island is probably due in part to seasonal visitors in the summer months. However, recent housing development in the area will have also contributed to the growth in footfall at this station over the past 5 years. The substantial growth at Barry Docks between 2008/09 and 2013/14 is probably mainly due to the additional Park and Ride capacity provided there initially in 2010. More recent growth is likely to have come from new housing and other developments along the Waterfront. As this development is planned to extend further east along the Waterfront and occur closer to Barry Docks, it is envisaged growth in rail patronage at the station will increase at a greater rate in the future. This increasing patronage will be supported and encouraged by the range of station upgrades proposed for Barry Docks.

2.4.12 Station entry and exit numbers were therefore adjusted for the four stations. Around 54% of trips to/from Barry Island were removed and allocated to the total trip numbers of the rest of the stations based on the differences observed with the census data. The model base numbers used for the three stations and their original numbers are presented in Table 7.

	Barry	Barry Docks	Cadoxton	Barry Island
ORR 2018/19	524,102	251,044	270,514	832,222
Adjusted Numbers 2018/19	721,838	286,996	486,226	382,222

Table 7 Adjusted Passenger Demand at Barry Stations

2.5. LENNON Data

2.5.1 The LENNON database consists of estimated passenger counts using ticket data and also provides information on the origin and destination of rail passenger journeys. Baseline data was supplied by the Train Operating Company - TfW (KeolisAmey). The information has been provided for 2018/19 which has hence been considered the base year for all future assessments.

2.5.2 The LENNON data is commercially confidential, so it is important to limit the amount of information published on it to that which is essential to develop the forecasts. Table 8 and Table 9 provide the data related to the main destinations of rail journeys starting or ending at Barry area stations. Table 8 shows that the great majority of rail journeys from the Barry area go to Cardiff, followed by the Cardiff Capital Region excluding Vale of Glamorgan (VOG) stations, and then VOG (excluding Rhoose for Cardiff Airport) and Bridgend.

2.5.3 The pattern is similar for rail journeys that originate elsewhere except that there are relatively fewer starting at Cardiff and there are more in rest of the CCR except for VOG.

	Originating in Barry Area				
Going to:	**BARRY**	**BARRY DOCKS**	**BARRY ISLAND**	**CADOXTON**	**Grand Total**
Barry	0%	0%	0%	1%	0%
Barry Docks	0%	0%	0%	0%	0%
Barry Island	0%	0%	0%	1%	0%
Cadoxton	0%	0%	0%	0%	0%
VOG	5%	5%	4%	7%	5%
Bridgend	2%	3%	0%	4%	2%
Cardiff	82%	82%	87%	77%	83%
CCR	5%	5%	7%	6%	6%
Rhoose Airport	1%	1%	0%	1%	1%
Rest of Wales	0%	0%	0%	0%	0%
London	1%	0%	0%	0%	0%
Rest of UK	3%	2%	1%	3%	2%

Table 8 Originating Trips from Barry (source: LENNON)

	Originating in Other Areas				
Coming from:	**BARRY**	**BARRY DOCKS**	**BARRY ISLAND**	**CADOXTON**	**Grand Total**
Barry	0%	1%	0%	2%	0%
Barry Docks	0%	0%	0%	1%	0%
Barry Island	0%	1%	0%	2%	0%
Cadoxton	1%	1%	1%	0%	1%
VOG	13%	20%	4%	12%	9%
Bridgend	8%	6%	0%	5%	3%
Cardiff	50%	46%	46%	50%	47%
CCR	14%	13%	45%	20%	33%
Rhoose Airport	5%	7%	0%	5%	2%
Rest of Wales	1%	1%	0%	1%	1%
London	2%	1%	0%	1%	1%
Rest of UK	5%	3%	2%	3%	3%

Table 9 Originating Trips from Other Areas (source: LENNON)

2.5.4 Based on the tables above, Table 10 provides the proportion of originating trips from Barry area.

Station	Originating trips from the Barry area
Barry	80%
Barry Docks	76%
Cadoxton	75%
Barry Island	61%

Table 10 Proportion of Originating Trips from the Barry Area

2.5.5 A combination of the 2018/19 adjusted ORR and LENNON percentage data provides a reasonably robust estimate of the number of baseline rail journeys.

2.6. Other Sources of Rail Data

South East Wales Transport Model (SEWTM)

2.6.1 The transport model covering South East Wales was developed by the Welsh Government between 2015 and 2017. It is currently in use as per the Transport for Wales website. A primary survey at the stations was conducted as part of development of the model. Data collected on mode of arrival at Barry Station is presented inTable 11. No equivalent data was collected at Barry Docks Station.

Transport mode (arrival)	Percentage
Walk	50.9%
Cycle	1.8%
Car (parked at or near station)	20.1%
Car (dropped off by someone)	20.1%
Taxi	2.7%
Bus / Coach	0.9%
Train	0.9%
Motorcycle / Moped	1.3%
Other (Please specify)	1.3%

Table 11 Arrival Data by Modes at Barry Station, 2015

Welsh Route Study, 2016

A Welsh Route Study was commissioned as part of creating an evidence base and collaborative approach to strategic rail planning for Wales. The Study adopts the regional urban market study demand approach to develop forecasts for the priority flows from Wales to other large UK economic centres. The estimated growth in peak demand to Cardiff is presented in Table 12.

Passenger Demand Growth for commuting into Cardiff		
Corridor into Cardiff	Estimated Growth*	
	2023	2043
Valley Lines	76%	153%
Vale of Glamorgan	80%	159%
Ebbw Vale Line	112%	205%
Swansea	56%	124%
GWML	46%	120%
The Marches	38%	96%
All Corridors	68%	144%
* Based on the Prospering in Global Stability Scenario (PGS)		
Source: Welsh Route Study, 2016		

Table 12 Passenger Demand Growth to Cardiff (Welsh Route Study, 2016)

2.7. Bus Demand

2.7.1 The Barry area is served by a combination of regional and local bus routes. Some of the main routes serving the three stations are described in Table 13 and presented in Figure 8.

Bus Route	From	To	Operator
88	Penarth	Barry	Easyway
95	Heath Hospital	Barry Island	Cardiff Bus
96	Cardiff	Barry	Cardiff Bus
97	Barry Town Service		Cardiff Bus
97A	Barry Town Service		Cardiff Bus
98	Barry Town Service		Cardiff Bus
100 (Sunday Service in summer only)	Barry Town Service		Cardiff Bus
303/304	Bridgend	Cardiff	New Adventure Travel
B3	Barry Town Service	Barry	Other

Table 13 Bus Routes in Barry

Figure 8 Bus Routes in Barry Area

2.8. Pedestrian Isochrones

2.8.1 Pedestrian isochrones from all three stations were analysed and are presented in Figure 9.

2.8.2 These isochrones give a good insight as to likely walking behaviour at each station. It can be seen that there is significant overlap among them especially the 15 minute isochrones. This is important in terms of understanding walk as the key access mode to the stations.

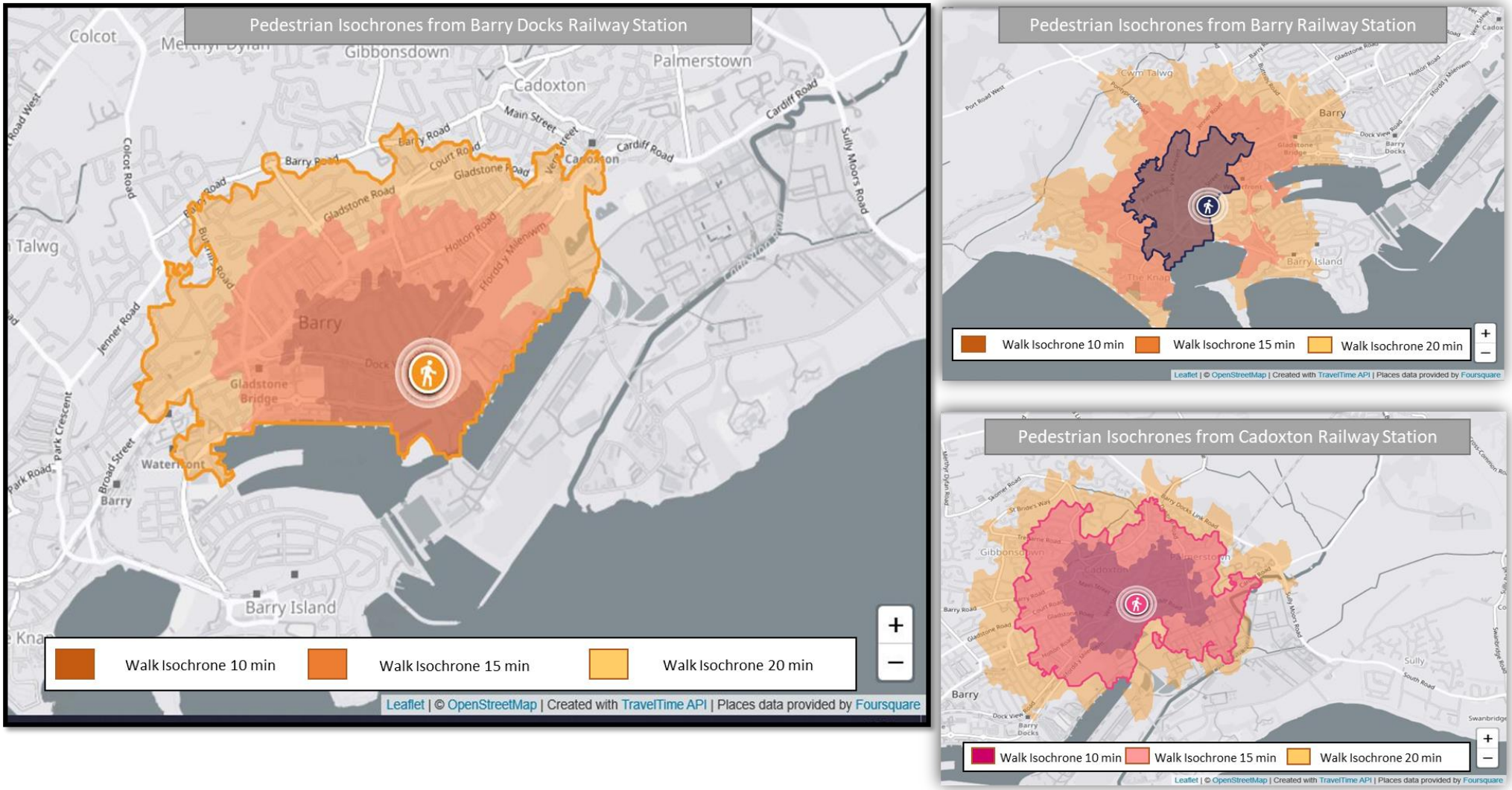


Figure 9 Pedestrian Isochrones from Barry Docks, Barry and Cadoxton

3. Demand Assessment Methodology

3.1. Objective

3.1.1 The main objective of the 'demand assessment model' is to be able to forecast the demand for additional car parking spaces, passenger demand for bus/rail interchange and demand as a result of improved walkways and cycleways. This will help determine the required size of the car park and the kind of impact the new features like bus interchange will have on the overall demand and economic benefits.

3.2. Methodology

3.2.1 A demand assessment methodology was developed as shown in Figure 10. The methodology can be divided into three basic steps which are described in the sections below.

Step 1: Assessing the Baseline Demand

3.2.2 A generalised cost model was developed as part of this stage. It would provide the baseline distribution of trips by various modes to Barry Docks Station.

3.2.3 The first step to develop the model was to identify a catchment area, assess the trips from the catchment area and then validate the trips with the trip data from ORR. This step is explained in Chapter 4.

3.2.4 The second step was to develop a generalised cost model to assess the trips from Barry to Cardiff by different modes. For ease of reference this was called the BCMCM (Barry Cardiff Mode Choice Model) and it estimated the trips from Barry by car, bus and train. The distribution of trips arrived at from the model was then compared with census information in order to validate it. This method is explained further in Chapter 5.

3.2.5 The third step was to take the trips by train found in the previous step, to estimate the access mode choice to Barry Docks Station. This was done by developing a second generalised cost model for trip access to the three stations in Barry area (Barry Island was not included). This step provided a trip distribution to the stations by car, bus, taxi and walk and cycle. This was called the Local Station Access Model (LSAM) and is further explained in Chapter 7.

Step 2: Identifying and estimating the Growth Factors

3.2.6 The second part of the methodology involved the identification and quantification of growth factors which could have an impact on the future travel demand at Barry Docks Station. In order to estimate the future demand, the following were identified as likely to have an impact on travel:

3.2.7 **Exogeneous Factors:** These are external factors which relate to growth in travel demand due to changes in population and employment opportunities at the local and regional level.

3.2.8 **Endogenous Factors:** These are internal rail-based factors and can include changes in service frequency, a new train line, redevelopment of stations, longer trains etc.

3.2.9 **Other Factors:** These are other things such as station access developments, modal interchange at station, new bus routes/ cycleways to station etc.

3.2.10 The relevant factors are identified and explained in detail in Chapter 6.

Step 3: Estimating the Future Demand

3.2.11 The third and final step in the process was to estimate the future travel demand at Barry Docks Station based on the growth factors identified and quantified in the second step. The three components used to estimate the future demand are described below.

3.2.12 The first component of future demand would be the growth in demand due to exogenous and endogenous factors.

3.2.13 The second component would be the modelled demand which would be calculated on the basis of changes in the BCMCM and LSAM.

3.2.14 The third component of the future demand would be 'induced demand' which is demand that cannot be modelled as either a change in time or cost. For example, induced demand could result from a perception that it is easier to park in one place relative to another. Induced demand is assessed on the basis of empirical evidence, usually from elsewhere.

3.2.15 The total demand calculated from the above three components is presented in Chapter 7.

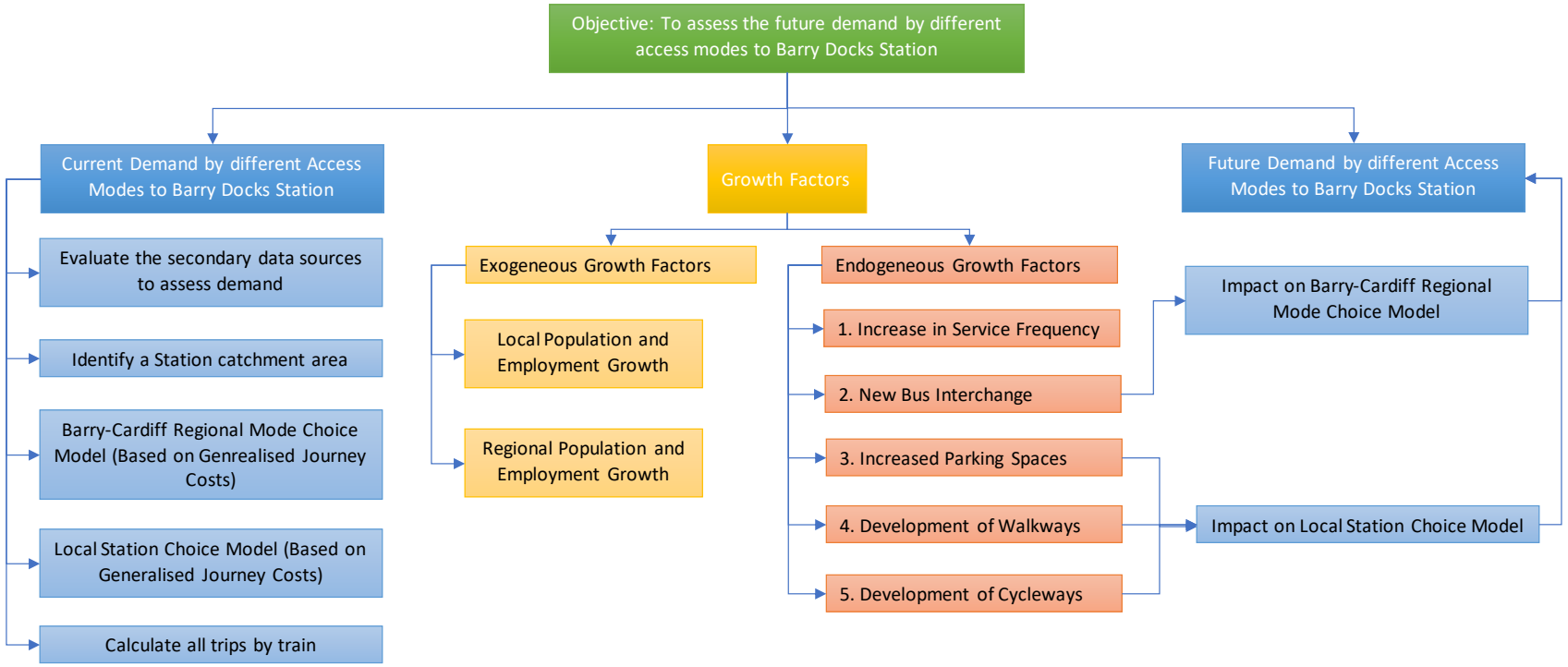


Figure 10 Demand Assessment Methodology

4. Station Catchment Area – Definition and Characteristics

4.1. Context

4.1.1 A defined catchment area is necessary to estimate the current and future travel demand from Barry Docks Station. This chapter provides details about the catchment area defined for the project as part of the first step of the demand assessment methodology.

4.2. Defining a Catchment Area

4.2.1 Based on the secondary information and data available, a methodology for defining a catchment area was drafted with the following steps.

4.2.2 Step 1: Identify the most accessible train stations from each Middle Super Output Area (MSOA). This included identifying an area within a 5-km radius of train stations in Vale of Glamorgan and its surrounding area, to identify the most accessible station from each MSOA. Figure 11 and Figure 12 shows the defined radii.

Figure 11 5-Km radius from Stations in and around Vale of Glamorgan

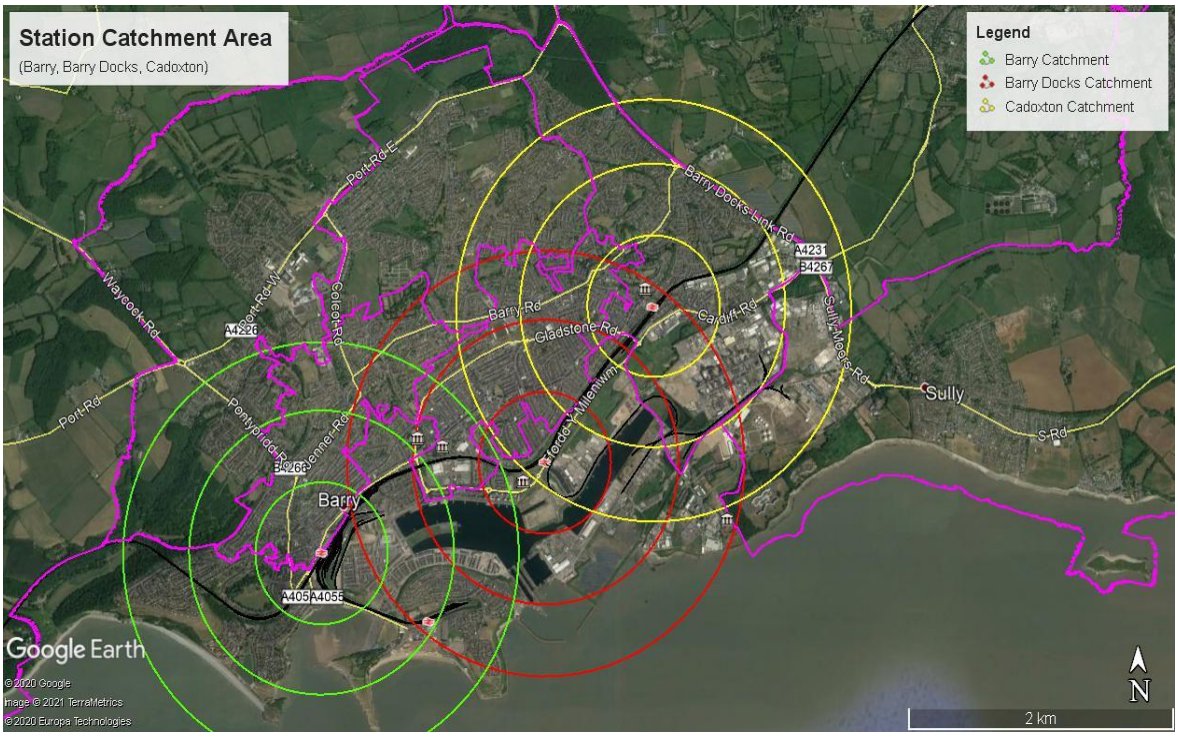


Figure 12 Different catchment radius from Barry Stations

4.2.3 Based on the above figures, the most likely catchment stations for each MSOA were identified and are presented in Table 14.

MSOA	Nearest Stations	MSOA	Nearest Stations
1	Bridgend	8	**Penarth/ Cadoxton**
2	Bridgend/ Pencoed/ Llanharan/ Pontyclun	9	**Cadoxton**
3	**Barry/ Rhoose Airport/Cadoxton/ Dinas Powys**	10	**Barry/ Barry Docks/ Cadoxton**
4	Cogan	11	Llantwit Major
5	Penarth	12	**Barry/ Barry Docks/ Cadoxton**
6	Cardiff/ Eastbrook/ Dinas Powys	13	**Barry/ Barry Docks**
7	**Cadoxton/ Barry Docks/ Barry**	14	**Rhoose Airport/ Barry**
		15	**Barry/ Barry Docks/ Barry Island**

Table 14 Nearest Rail Stations from the Different MSOAs

4.2.4 MSOAs (highlighted in bold in the above table) which have Barry, Barry Docks or Cadoxton as their likely main access station were considered for further analysis. MSOA 7,10,12, 13 and 15, which have Barry Docks as the main station, were selected for detailed analysis.

4.2.5 Step 2: Identify Output Area (OA) level catchments for the MSOAs 7, 10, 12, 13 and 15: This includes identifying the catchment areas at OA level for the selected MSOAs using catchment radii of 500 metres, 1km, 1.5 km and 2 kms. It was also assumed that a certain proportion of the trips from the other adjacent MSOAs (MSOAs 3, 8, 9, 14) will also access

either of the three stations (Barry/ Barry Docks/ Cadoxton). Figure 13 presents the defined catchment areas based on different radii.

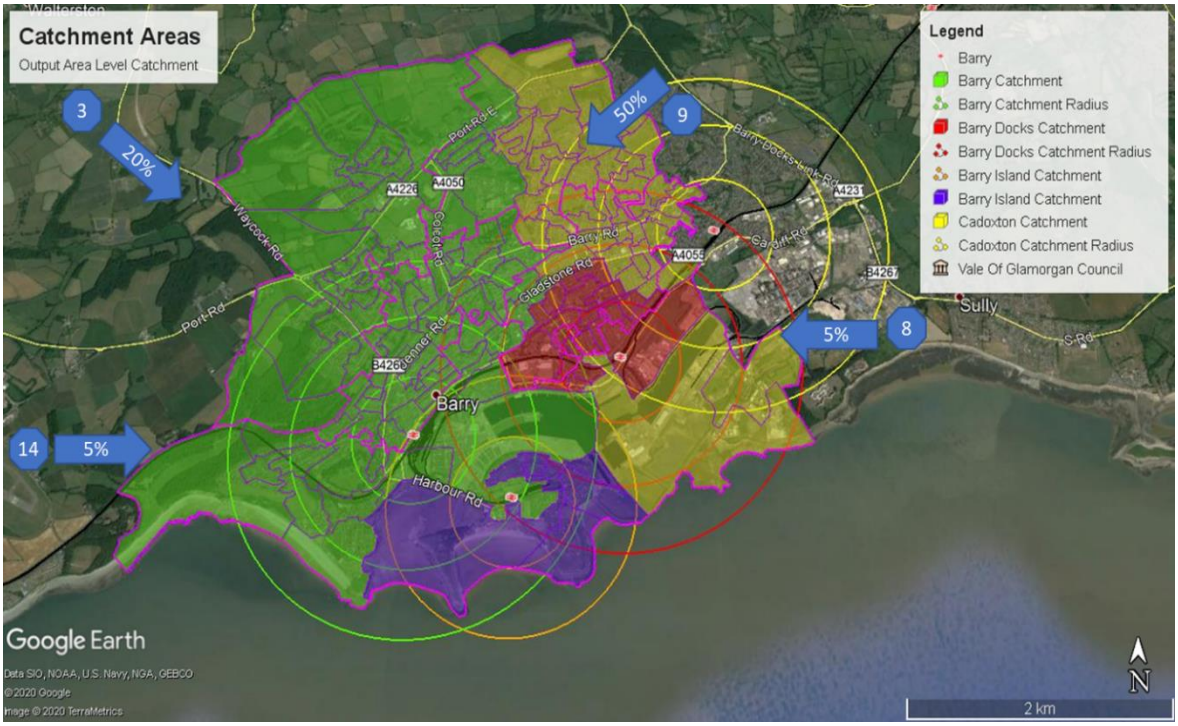


Figure 13 Output Area Level Catchment Analysis

4.2.6 Step 3: Compare the total demand from the catchment areas with the adjusted ORR data. Trip data from the census represents work trips originating from an area. Hence, the total census trips identified based on the defined station catchment were factored up to all-purpose trips (assuming 63% of the total trips are work trips) and total originating/ destined trips (see Table 4). These were then compared with the adjusted data from the ORR in order to validate the defined catchment boundary. The annual trips from ORR were converted to daily trips using an annualization factor of 253. This validation is presented in Table 15.

Station	2018 ORR Adjusted Entries/ Exits (Daily)	Catchment Area Demand (Based on Census 2011 and projected to 2018) (Daily)	Percentage Validation
Barry	2,855	3,264	114%
Barry Docks	1,138	1,180	104%
Cadoxton	1,916	2,428	127%
Total	5,909	6,872	116%

Table 15 Catchment Area Validation

4.2.7 As identified in the table above, the total demand calculated from the catchment areas is broadly comparable with the adjusted ORR data and the catchment areas defined can therefore be used for further demand analysis.

4.3. Trip Characteristics of the Catchment Area

4.3.1 Based on the above analysis, the list of OAs identified as part of each catchment area were further analysed to understand their trip characteristics and travel demand by different modes. These characteristics are presented in Table 16. A small change in modal proportions was observed at an overall catchment area level when compared to the proportions observed in Vale of Glamorgan as a whole. The proportions of some modes change significantly the further way one gets from the stations.

Mode of Travel	Three no. Barry Stations Catchment Area	< 500m	500m to 1-km	1 to 2-km	> 2-kms
UG/ Metro/ Light Rail/ Tram	0.1%	0.2%	0.1%	0.1%	0.1%
Train	6.0%	11.3%	8.5%	5.5%	3.1%
Bus/ Minibus/ Coach	3.4%	2.8%	3.0%	4.1%	2.9%
Taxi	0.5%	0.7%	0.8%	0.6%	0.2%
Motorcycle/ Scooter/ Moped	0.6%	0.6%	0.6%	0.6%	0.6%
Driving a Car/ Van	71.5%	62.2%	65.6%	73.4%	75.7%
Passenger in a Car/ Van	6.5%	7.8%	7.7%	6.7%	4.9%
Bicycle	1.5%	1.0%	1.2%	1.4%	2.0%
Walk	9.1%	12.6%	11.7%	6.9%	9.6%
Other Methods of Travel	0.8%	0.8%	0.8%	0.8%	0.9%

Table 16 Modal Split in Catchment Area

4.3.2 The proportion of trips by train and bus based on distance from each Barry station is shown in Figure 14 and Figure 15. The percentages shown are with respect to three main modes i.e., car, train and bus. Some of the observations based on the mode choice analysis of the catchment areas are provided below:

- Average non-private transport (Train/UG/Bus/Taxi) use in the catchment zones (12.6%) is higher than the overall council average. (10.6%)
- Train use is higher in MSOAs closer to Barry stations (10% in comparison to a council average of 7%). Train use decreases moving away from the stations.
- Bus use is higher in areas further away from stations and in areas closer to Cardiff.

Figure 14 Proportion of Train Trips by Distance

Figure 15 Proportion of Bus Trips by Distance

4.3.3 The trips from the catchment area were also analysed based on work destination. Table 17 presents this distribution from the catchment area.

- 52% of all mode trips from the catchment area go to within the VOG and 34% go to Cardiff.
- 79% of catchment area train trips go to Cardiff and 11% to other areas in VOG

Place of Work	Work Trips from Catchment Area (Census 2011)	
	All Modes	Train
Bridgend	3%	2%
Caerphilly	1%	1%
Cardiff	34%	79%
Neath Port Talbot	0%	0%
Newport	2%	1%
Rhondda Cynon Taf	2%	2%
Swansea	0%	0%
The Vale of Glamorgan	52%	11%
Rest of Wales	1%	0%
London	0%	2%
England excl. London	3%	3%
Scotland	0%	0%

Table 17 Place of Work Trip Distribution from Catchment Area

4.3.4 A very high proportion of train trips are to Cardiff. Table 18 presents the distribution of trips to Cardiff by different modes. It shows that 76% of trips to Cardiff are by car and 17% are by train.

Catchment Area to Cardiff	
Mode	**Proportion of Work Trips**
Train	17%
Bus	4%
Car (Driver and Passenger)	76%
Other Modes	3%

Table 18 Mode Wise Distribution of Work Trips to Cardiff

5. Assessing Baseline Demand

5.1. Introduction

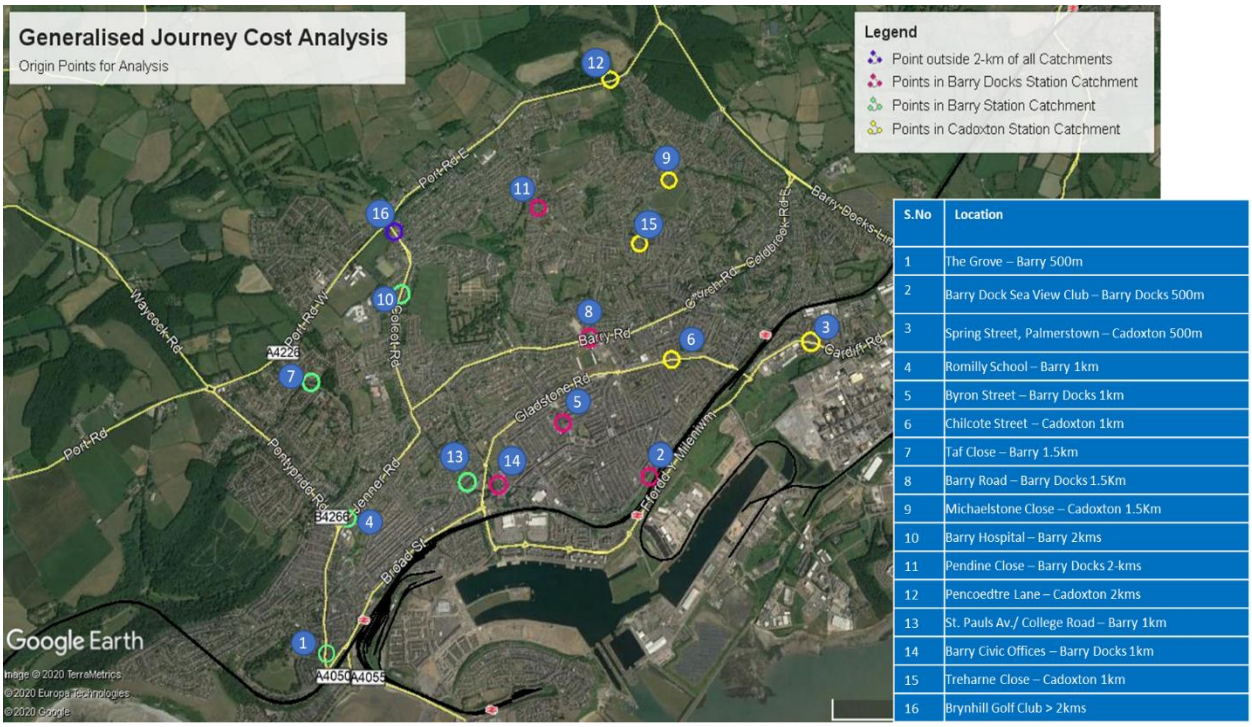
5.1.1 A generalised cost model was developed at regional and local levels to estimate the baseline and forecast future demand of trips for Barry Docks Station by various modes. As explained in the methodology in Chapter 4, this process has three sub-steps. The catchment areas – step 1 - were defined as per Chapter 4. The following sections in this Chapter provide details of the other two steps.

5.2. Barry-Cardiff Regional Mode Choice Model (BCRMC)

5.2.1 As part of the second step, a regional generalised cost model was developed to estimate the base and future mode choice of trips from the Barry area. This would then provide the overall demand for trips by train from Barry Docks Station.

5.2.2 Barry to Cardiff train trips constitute 79% (Table 17) of the total trips from the region, hence the generalised cost model at the sub-regional level was developed for Barry to Cardiff trips.

5.2.3 The model was developed using 16 points at varying distances within 2 kms of each of the three stations in Barry, excluding Barry Island. The origin points are presented in Figure 16.



S.No	Location
1	The Grove – Barry 500m
2	Barry Dock Sea View Club – Barry Docks 500m
3	Spring Street, Palmerstown – Cadoxton 500m
4	Romilly School – Barry 1km
5	Byron Street – Barry Docks 1km
6	Chilcote Street – Cadoxton 1km
7	Taf Close – Barry 1.5km
8	Barry Road – Barry Docks 1.5Km
9	Michaelstone Close – Cadoxton 1.5Km
10	Barry Hospital – Barry 2kms
11	Pendine Close – Barry Docks 2-kms
12	Pencoedtre Lane – Cadoxton 2kms
13	St. Pauls Av./ College Road – Barry 1km
14	Barry Civic Offices – Barry Docks 1km
15	Treharne Close – Cadoxton 1km
16	Brynhill Golf Club > 2kms

Figure 16 Origin Points for Generalised Cost Analysis

5.2.4 The cost components considered for this model are listed below.

- Generalised journey cost by car: This constitutes the car travel time cost and the fuel cost for travel from the various points in Barry to Cardiff.
- Generalised journey cost by bus: This constitutes the bus fare and the bus travel time cost for travel from the Barry area to Cardiff. The travel time by bus included walk time to the bus stop, wait time at the bus stop, actual journey time and average walk time to the destination.
- Generalised journey cost by train: This constitutes the train fare, average cost of accessing the stations by different modes (calculated on the basis of the Local Station Access Model described below), train travel time cost for travel from Barry to Cardiff, the travel time by train including an average wait time at the station, journey time by train and average walk time to destination.

5.2.5 The value of time was based on the Department for Transport's TAG values. However, in order to account for different 'types' of time (travel time, wait time, walk time etc.), weightages were used to calculate a standard cost estimate. These weightages and other assumptions used to arrive at the final generalised cost are listed in Appendix A.

5.2.6 The sub-regional mode choice distribution calculated by the model was compared with the census data and is presented in Table 19. As shown, the BCRMCM was able to replicate the overall distribution of trips from the Barry by different modes fairly well.

	Car	Bus	Train
Barry-Cardiff Regional Mode Choice Model	79.9%	3.3%	16.8%
Census TTW (Barry Catchment Area to Cardiff)	78.8%	3.9%	17.3%

Table 19 Validation of Barry-Cardiff Regional Mode Choice Model (BCRMCM)

5.3. Local Station Access Model (LSAM)

5.3.1 The third step involved development of a Local Station Access Model (LSAM) to assess the likely mode choice of trips accessing each of the three stations.

5.3.2 Barry Docks Station is less than 2 kilometres from both Barry Station and Cadoxton Station, both of which therefore compete with Barry Docks Station for passenger demand. As analysed in Chapter 2, there is a significant overlap between the catchment areas of these stations. The LSAM attempts to calculate the effect of this competition.

5.3.3 The 16 origin points used in the sub-regional model were also used for the local model. Generalised cost from the 16 points to all three stations was calculated. The cost components considered for the local model are described below.

- Generalised journey cost by car: This constitutes the car travel time cost and the fuel cost for travel from the Barry area to the three stations in Barry.
- Generalised journey cost by bus: This constitutes the bus fare and the bus travel time cost for travel from the Barry area to the three stations in Barry. The travel time by bus

included walk time to the bus stop, wait time at the bus stop, journey time and additional train service wait time for bus passengers (due to unsynchronised bus and train timetables).

- Generalised journey cost by taxi: This constitutes taxi fare and the taxi travel time cost from the Barry area to the three stations in Barry.
- Generalised journey cost by walk: This constitutes the walk travel time cost from the Barry area to the three stations in Barry.

5.3.4 The weightages and other assumptions used to arrive at the final cost are listed in Appendix A.

5.3.5 The local access mode choice distribution calculated by the model for Barry Station was compared with the SEWTM data and is presented in Table 20. As shown, the model was able to predict the mode choice to a large extent and hence was deemed appropriate for use in further use.

	Car	Bus	Taxi	Walk
Local Station Access Model (Barry Station)	35%	2%	3%	61%
SEWTM (Barry Station)	42%	1%	3%	54%

Table 20 Validation of Local Station Access Model

5.4. Base Line Demand

5.4.1 Based on mode choice proportions at Barry Station found in SEWTM development, the final base line access mode choice proportions and base line numbers for Barry Docks Station were calculated and are presented in Table 21. A small proportion of the walk trips were assumed to be cycle trips, as can be seen in the Barry Station data (Table 11). The annual demand was calculated using an annualization factor of 253.

	Car	Bus	Taxi	Walk	Cycle	Total
Local Station Access Model (Barry Docks)	28.1%	2.1%	2.5%	66.7%	0.6%	100.0%
Base Line Daily Demand at Barry Docks	319	24	29	759	7	1,138
Annual Baseline Demand at Barry Docks	80,707	6,072	7,337	192,027	1,771	287,917

Table 21 Base Demand – Barry Docks Stations

5.4.2 The above demand serves as the base demand utilized as part of future steps to assess the impact of various proposals on the mode choice behaviour of passengers at Barry Docks Station.

6. Future Demand: Growth Factors

6.1. Introduction

6.1.1 This chapter describes the identification and estimation of growth factors mentioned in the methodology in Chapter 3. These factors will help in estimating mode-wise travel demand at Barry Docks Station in the subsequent step.

6.2. Exogenous Growth

6.2.1 This involved calculating future 'exogenous' rail demand that will be generated by external factors such as population, jobs and services growth. This future demand may not be satisfied if the new project facilities are not provided.

6.2.2 The DfT's Exogenous Demand Growth Estimator (EDGE) model assesses growth in demand for rail travel based on exogenous factors such as employment, population and Gross Domestic Product. It uses the industry accepted method for forecasting demand based on forecasts of demand drivers and elasticities. The model is based on the National Trip End Model that was developed in 2011 and it contains annual forecast changes in rail demand after 2011 for all UK station to station flows. The data for Barry area stations was kindly provided by the DfT. Forecast changes in demand for each of the stations in the Barry area are shown in Table 22.

	BARRY	BARRY DOCKS	BARRY ISLAND	CADOXTON
2019/2020	0.6%	0.5%	0.6%	0.7%
2020/2021	1.0%	0.9%	0.8%	1.1%
2021/2022	0.7%	0.5%	0.6%	0.7%
2022/2023	0.8%	0.6%	0.9%	0.7%
2023/2024	0.6%	0.4%	0.6%	0.5%
2024/2025	0.8%	0.6%	0.8%	0.8%
2025/2026	1.0%	0.8%	0.9%	0.9%
2026/2027	1.0%	0.9%	0.6%	1.0%
2027/2028	0.6%	0.5%	0.0%	0.7%
2028/2029	0.7%	0.6%	0.3%	0.8%
2029/2030	1.1%	1.0%	1.0%	1.1%
2030/2031	1.0%	0.9%	1.1%	1.0%
2031/2032	-0.2%	-0.3%	-0.3%	-0.2%
2032/2033	-0.3%	-0.3%	-0.3%	-0.2%
2033/2034	-0.4%	-0.5%	-0.7%	-0.3%
2034/2035	-0.5%	-0.6%	-0.8%	-0.4%
2035/2036	-0.3%	-0.3%	-0.5%	-0.2%

2036/2037	0.2%	0.2%	-0.2%	0.3%
2037/2038	0.0%	0.1%	-0.4%	0.2%
2038/2039	0.5%	0.5%	0.0%	0.6%
2039/2040	0.4%	0.5%	0.0%	0.6%
2040/2041	0.5%	0.5%	-0.1%	0.6%
2041/2042	0.7%	0.8%	-0.1%	0.8%
2042/2043	0.6%	0.7%	-0.2%	0.8%
2043/2044	1.1%	1.3%	0.0%	1.4%
2044/2045	1.6%	1.9%	0.1%	2.0%
2045/2046	0.4%	0.5%	-0.3%	0.6%
2046/2047	0.4%	0.4%	-0.2%	0.6%
2047/2048	0.6%	0.7%	0.1%	0.8%
2048/2049	0.2%	0.2%	-0.4%	0.4%
2049/2050	0.3%	0.4%	-0.2%	0.5%

Table 22 EDGE Annual Growth Rates

6.2.3 The annual year on year increase in rail demand at Barry Docks Station in EDGE is forecast to be a disappointing average of only 0.5%. This is considerably lower than the actual increase in recent years shown in the ORR data in Chapter 2 and it is also considerably lower than other estimates of increases in demand such as the Welsh Route Study in 2016. When it was developed, EDGE took account of a wide range of factors including future land use developments, however, since EDGE was created, Barry Waterfront has seen significant redevelopment for housing and support services such as retail. Anecdotally, the new flatted type dwellings in the area are of the type that can attract a high proportion of residents that are more likely to use the train to commute to employment and services opportunities in Cardiff. The correlation between the increasing number of new dwellings built near Barry Island and increasing use of the station shown in ORR data seems to be significant, although – as discussed above - it is known that the LENNON ticket data has a higher number of journeys to and from Barry Island Station than is actually the case. If the demographics are similar for future Waterfront housing (including more dwellings on land adjacent to Barry Docks Station) then there is every reason to believe that rail journeys will continue to increase.

6.2.4 All current development proposals within Barry, included in the Local Development Plan, that will be supported by the proposed Barry Docks Transport Interchange, are illustrated on the map below. Each of the residential and economic developments are then listed in two tables following this, respectively, based on the number given to each on the map.

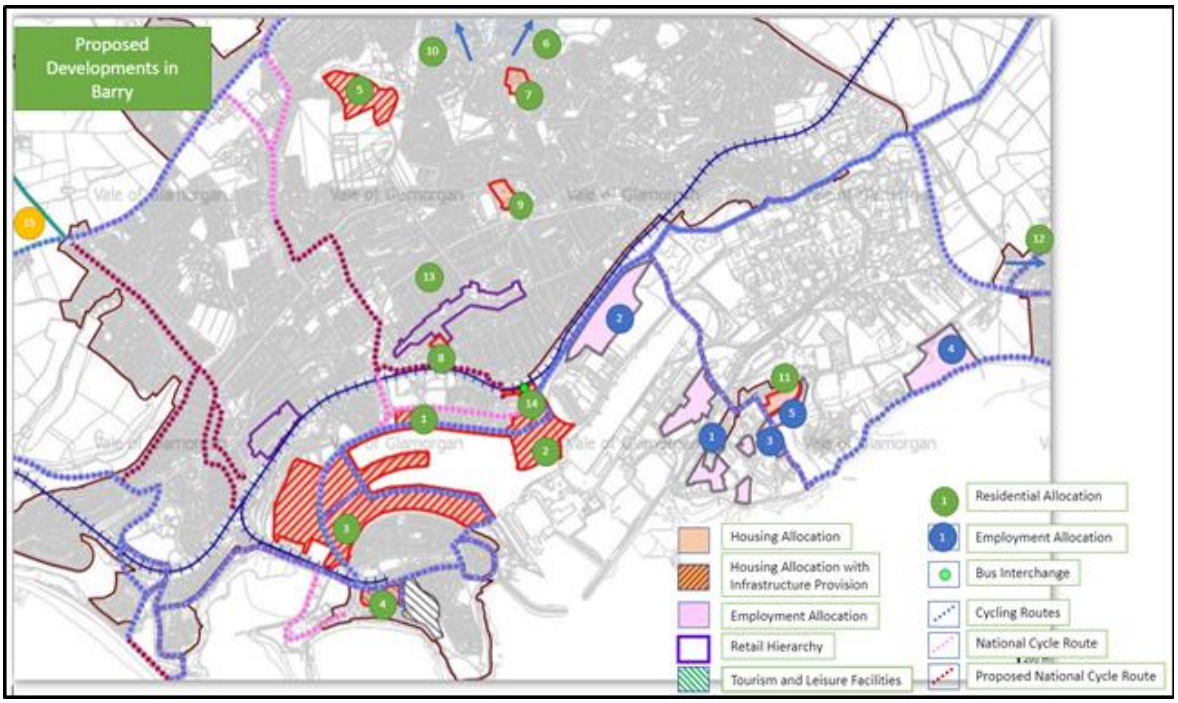


Figure 17 Proposed Development Sites in Barry

6.2.5 There are 16 separate residential development sites in Barry identified as being supported by the Barry Docks Transport Interchange scheme**.** (Table 23) The majority are expected to have a medium or high impact on demand for rail services from the station. Together the sites provide for at least 53ha of land for up to 4,106 additional housing units in the town, between now and 2026. Based on the average household size in England and Wales, identified by the 2011 census, of 2.36 persons this is equivalent to the Transport Interchange supporting up to 9,690 additional Barry residents. With four of the development sites including mixed use the Transport Interchange will also support a new site for academic learning (circa 1,000 students) due to be established by Barry College and a primary school alongside this, at East Quay, as well as emerging employment opportunities at South Quay, Barry Island and Waycross Rd.

	Projects	Status	Predicted Impact	Project Details
1	Waterfront Development – Arno Quay MG2 (1)	Completed	High due to proximity to Barry Docks	0.8 Ha - 75-200 Residential Units
2	Waterfront Development – East Quay MG2 (1)	Started (groundworks only)	High due to proximity to Barry Docks	3.1 Ha - 175 – 450 Residential Units; 130sq m of A3 uses; Potential Site for Barry College and Primary School
3	Waterfront Development – South Quay, West Pond, District Centre MG2 (1)	Almost Complete	Medium as between Barry and Barry Docks	> 19.5 Ha – 1150 – 1600 Residential Units; A1, B1, C1, D1, A3 Uses
4	Barry Island Pleasure Park MG2 (8)	Not Started	Low due to proximity to Barry Island Station	1.18 Ha - 25 Residential Units/ Mixed Use
5	White Farm MG2 (9)	Completed	Accounted in current population	12.1 Ha – 177 Residential Units
6	Residential Developments along Pencoedtre Lane, North East Barry MG2 (10) & MG2 (11)	Not Started	Low due to proximity of the location to Cadoxton	204 Residential Units (67 in east and 137 on west of the lane)
7	Ysgol Maes Dyfan MG2 (12)	Completed	Medium as between Cadoxton and Barry Docks	1.44 Ha – 81 Residential Units
8	Barry Magistrates Court MG2 (13)	Completed	Medium as between Cadoxton and Barry Docks	52 Residential Units
9	Court Road Depot MG2 (14)	Not Started	Medium as between Cadoxton and Barry Docks	1.6 Ha – 50 Residential Units
10	Holm View MG2 (15)	Started	Medium as far from Barry Docks station	1.2 Ha – 50 Residential Units
11	Hayes Wood, The Bendricks MG2 (16)	Started	Medium as between Cadoxton and Barry Docks	1.8 Ha – 55 Residential Units
12	Land West of Swanbridge Road, Sully MG2 (37)	Started	Medium as far from Barry Docks station	32.5 Residential Units
13	St. Pauls Avenue – Hafod Housing Association	Started	Medium as between Barry and Barry Docks	27 Flats
14	Residential Development, Subway Road	Started	High due to proximity to Barry Docks	72 Residential Units
15	Waycross Road Development	Not Started	Low due to proximity of the location to Barry	710 Dwellings; 10 Ha Employment Use
16	Dock View Road – Newydd Housing Association	Not Started	High due to proximity to Barry Docks	28 Affordable Housing Units

Table 23 Proposed Residential Development Sites in Barry

	Projects	Status	Predicted Impact	Project Details
1	Proposed Employment Location (Atlantic Trading Estate) MG9 (4)	2025	Medium as closer to Cadoxton	9.14 Ha – B1/ B2/ B8 Use
2	Proposed Employment Location (Land at Ffordd y Mileniwm) MG9 (5)	Ongoing	High due to proximity to Barry Docks	8.9 Ha – B1/ B2/ B8 Use
3	Proposed Employment Location (Hayes Wood, Barry) MG9 (6)	Ongoing	Medium as closer to Cadoxton	1.4 Ha – B1/ B8
4	Proposed Employment Location (Hayes Road, Sully) MG9 (7)	Current: Residential; Might be re-assessed	Medium as closer to Cadoxton	7.5 Ha – B1/ B8
5	Proposed Employment Location (Hayes Wood) MG9 (8)	Ongoing	Medium as closer to Cadoxton	1.9 Ha – B1/ B8
6	Town Centre Regeneration	Ongoing	Low	Low impact on demand

Table 24 Proposed Economic Development Sites in Barry

6.2.6 Employment in Cardiff has grown 20% in the last 12 years whilst it has increased 8.5% in the same period in the Vale of Glamorgan. This would suggest that outward commuting from the Vale of Glamorgan has grown by some 11.5%, although in the same period there has been an increase in in-commuting which has counterbalanced some of the 11.5% increase in out-commuting.

6.2.7 There are 6 separate economic development sites in Barry identified as being supported by the Barry Docks Transport Interchange scheme Table 7. The majority are expected to have a medium or high impact on demand for rail services at the station. Together these sites provide for 28.84ha of employment use.

6.2.8 It should be noted that in addition to the above there are also proposals to expand services at Barry Hospital which is located next to the current Vale of Glamorgan College site on Colcot Rd, approximately 2km from Barry Docks Station. This includes providing additional satellite services for mental health at community locations throughout the town. With the hospital serving the wider Rural Vale as well as Barry town residents some will be able to utilise the improved Barry Docks to access these services on a sustainable basis.

6.2.9 After removing the likely 'induced' impact of additional parking introduced in 2012 (which is discussed below) and any 'outlier' years, exogenous demand is considered to have increased by an average of 6% per annum at Barry Docks Station in recent years.

6.2.10 Given the expected growth in population and employment in the Barry area as well as the pre-Covid growth in the Cardiff economy, the business case uses the ORR trend rather than EDGE as the basis of future exogenous growth. The appraisal therefore assumes that 6% exogenous growth is sustained until 2049/50 when growth flattens. The period of appraisal is in line with TAG guidance. Note, however, that car parking demand is ultimately constrained by the number of additional spaces available

6.3. Endogenous Growth (Internal Factors)

6.3.1 The rail frequency change proposed to take effect in December 2023 will increase the number of trains stopping at Barry Docks, Barry and Cadoxton from four to five per direction per weekday daytime hour. The additional trains will operate between Cardiff and Bridgend and vice versa, thereby doubling the frequency to Bridgend from one to two trains per hour per direction. Rhoose Station is on this line therefore connections will

double from Barry Docks to Cardiff Airport via Rhoose. It also makes the Enterprise Zone in the vicinity of the airport and at St Athan more accessible.

6.3.2 Endogenous demand may not be realisable unless the new proposals are provided.

6.3.3 Whilst there is considered to be a high elasticity of demand for frequency improvements, the 25% increase in trains will not generate 25% more passenger demand. A more realistic increase of 15% is considered likely therefore this percentage is added to other sources of demand that are calculated for 2023/24. This is a simplification since it could take a number of years for the full impact of an additional train per hour to felt. 15% would add about 229 rail journeys per day departing from Barry Docks Station (as can be seen in Appendix B). Once applied, 15% is retained in future years at the same level without any further growth or decline. This is because any change in demand in future years will be driven by the exogenous factors only.

6.3.4 There are no other known and committed future sources of potential endogenous growth at this time.

6.4. Project Design Options

6.4.1 The following design options are proposed as part of the project. To some extent they all contain residential development.

- Option 1/ 1A: Bus Interchange located south of the station on part of the Docks Office car park and additional park & ride spaces to be located north of the station. i.e. no residential or commercial uses. Option 1 does not include a drop off point on the proposed access road to the additional parking to the north of the station whereas Option 1A does
- Option 2: Bus Interchange located south of the station on part of the Docks Office car park), additional park & ride spaces to be located north of the station
- Option 3: Bus interchange located north west of the station and additional park & ride spaces north of the station

With regards to the demand assessment, options 1, 1A and 2 are similar and are considered to be the same scenario while option 3 with the interchange on the northern side presents the second scenario.

6.5. Impact on Modelled Demand

6.5.1 Modelled demand can be computed on the basis of a potential change that a new facility can provide in the time or cost of a journey from its origin to its destination. A quicker, cheaper way of getting from A to B will attract users and it is the volume of this use that will be calculated. The facilities considered to have an impact on the modelled demand are:

- Increase in Parking: Net increase of 67 car parking spaces in scenarios 1, 1a and 2 and an increase of 130 spaces in Scenario 3.

- New bus interchange facility
- Improved walkways
- Improved cycleways

Impacts from the Barry Cardiff Mode Choice Model BCMCM

6.5.2 Rail demand is expected to alter with the new interchange at Barry Docks Station. This is because it will marginally reduce some generalised journey times. For the bus interchange on the south side of the station, the nearest bus stop is currently at Morrisons. Buses are modelled as extending to the interchange, which reduces walking time by 11 minutes whilst only increasing bus journey time by a minute or so. For a bus interchange on the north side of the station the walk from Holton Road, currently the nearest bus stop, is about 9 minutes, and the alternative bus journey time would be two minutes.

6.5.3 These changes encourage some people who currently use a car or bus to drive to their destination to use a bus to get to Barry Docks Station and then a train to get to their destination. The percentage change in the numbers doing this are shown in Table 25. The change is small because using a bus to get from the start point to the bus interchange and then a train to the destination brings in other journey components such as the walk to the bus stop (say, from home), the wait time for the bus, the bus journey time to the interchange, wait time for a train then the walk at the destination.

	Car	Bus	Train
Barry Cardiff Mode Choice Model (BCMCM) (Baseline Mode Choice)	79.91%	3.30%	16.80%
Impact of south side bus interchange (Scenarios 1, 1A, 2)	79.78%	3.29%	16.93%
Impact of north side bus interchange (Scenario 3)	79.77%	3.29%	16.94%

Table 25 Impact of Bus Interchange from BCMCM

6.5.4 Modelled demand could not include the impact of the new car park. Additional (free) parking improves the ease and convenience of parking at the station but these attributes are not simple time and cost components that can be modelled. Instead, this source of demand comes into the 'induced' elements discussed below.

Impact on Local Station Access Model (LSAM)

6.5.5 As explained in the earlier chapters, the catchment areas of Barry, Barry Docks and Cadoxton stations have a large overlap, hence changes in the accessibility of and improvements in facilities at Barry Docks have an impact on the boundaries of the catchment areas and a shift of trips from the neighbouring stations.

6.5.6 Mapping using Google Maps shows that car journey times to Barry Docks Station are, in general, slightly longer than to Barry and Cadoxton stations because the town centre street network to the north is less permeable than that around the other stations. Excluding Subway Road, the distance of the nearest bridges to cross the railway line to get to Barry Docks Station from the north has the effect of pushing traffic away from the

station before it can approach the existing car park on its south side via Ffordd Y Mileniwm.

6.5.7 The same is true to an extent for 'bus – rail' demand. In general terms, bus service accessibility to Barry Station is better especially from the west and north west side of the town. Similarly, Cadoxton is slightly more accessible than Barry Docks from most of the north and east end of the town, despite the short distances required to walk from Cadoxton to its nearest bus stops.

6.5.8 Barry and Cadoxton stations have an existing parking supply of around 130 and 50 car spaces respectively, compared to 241 car spaces (used both by council staff and rail users) at Barry Docks Station. Car spaces at Barry Docks are proposed to be increased to 308 in scenarios 1, 1A and 2 and to 398 spaces in scenario 3.

6.5.9 Current Barry and Cadoxton station users who either park at the stations or on the streets nearby can use the extended car park at Barry Docks Station in future because there will be more spaces and therefore it will be easier to park. The impact of improved parking at Barry Docks compared to Barry and Cadoxton is expected to shift demand from these stations to Barry Docks. Table 26 provides the estimated impact of this shift on the overall demand.

	Barry	Barry Docks	Cadoxton
Local Station Access Model (LSAM) (Baseline Mode Choice)	44.67%	22.25%	33.08%
Impact of 67 Additional Spaces (Scenarios 1, 1A, 2)	35.05%	35.59%	29.36%
Impact of 130 Additional Spaces (Scenario 3)	38.07%	30.06%	31.87%

Table 26 Impact of Car Parking from LSAM

6.5.10 Proximity of Barry and Cadoxton is likely to encourage the transfer of some cars to Barry Docks because of the perception that parking has become more convenient and is more likely to be available, even if the average journey time to get to Barry Docks Station is slightly higher. This makes more spaces available at Barry and Cadoxton which is still a useful way of increasing overall accessibility to the railway.

6.5.11 Car parking demand at Barry Docks was capped in the model after it reached available parking capacity. In the case of the additional 67 car spaces in scenarios 1, 1A and 2, this cap is expected to be reached in the year 2029/30, and for 130 additional car spaces in Scenario 3 demand is reached capacity by 2035/36.

6.5.12 The new bus interchange will not only result in the transfer of bus users currently accessing neighbouring stations but it is also expected to change the mode choice preference of passengers already accessing Barry Docks Station by car, taxi, walk and cycle. The impact of the new bus interchange in the LSAM is presented in Table 27.

	Car	Bus	Taxi	Walk	Cycle

Local Station Access Model (LSAM) (Baseline Mode Choice)	28.06%	2.09%	2.54%	66.70%	0.61%
Impact of south side bus interchange (Scenarios 1, 1A, 2)	27.43%	3.98%	2.49%	65.50%	0.60%
Impact of north side bus interchange (Scenario 3)	27.36%	4.19%	2.48%	65.38%	0.60%

Table 27 Impact of Bus Interchange from change in modal access to bus and change from using bus to Barry and Cadoxton stations

Induced Demand

6.5.13 Induced demand is the demand that cannot be modelled because a facility brings something other than an improvement to the time or cost of a journey. Induced demand is assessed on the basis of empirical evidence, usually from elsewhere.

6.5.14 Car park related induced demand is additional to that generated from exogenous and endogenous growth as well as demand that will transfer from Barry and Cadoxton stations.

6.5.15 The volume of induced car park demand can vary widely. Fortunately, having only opened an extension to the car park at Barry Docks in March 2012 it is possible to identify the impact the additional spaces had on passenger use.

6.5.16 As discussed above, recent year on year growth has been around 6%. When this is taken account of in the ORR station usage data the remaining growth in 2012/13 and 2013/14 is likely to be the result of induced demand caused by the car park extension. This amounts to 7.5% in 2012/13 and a further 5.5% the following year. The total (13%) can then be assumed to be constant, with further passenger demand growth in later years resulting from exogenous growth factors. 7.5% and 13% are therefore assumed to the likely induced demand percentages in the two years after opening of future additional parking provision.

6.5.17 The bus interchange facility will also encourage or 'induce' additional trips including 'bus – rail' and vice versa, 'bus – bus' and possibly 'cycle – bus' and 'taxi – bus'. It is not possible to quantify these trips but nevertheless they will have an economic value that can be assessed within the benefits. The overall baseline volume and types of modellable bus interchange journeys are relatively small so induced demand is assumed to add a further 50% of current users.

6.5.18 Proposed walking and pedal cycling measures within the site and in Subway Road will stimulate some induced demand too. It is assumed that the induced demand for walking and cycling modes would each be 1% of the current demand.

7. Estimated Rail Demand

7.1. Introduction

7.1.1 The growth factors and impacts identified and discussed above were used to calculate the overall impact on trips accessing Barry Docks Station. The demand was forecasted to 2049/2050 beyond which it was assumed to be constant in order to cap the benefits

7.2. Exogenous Growth

7.2.1 As discussed, exogenous demand has been assumed to have an annual impact of 6% on the travel demand. The estimated daily rail passenger trips as a result are provided in Table 28. This demand is slightly different for the two scenarios as the car demand gets capped in 2029 for options 1, 1A and 2 and in 2035 for Option 3 due to the number of car parking spaces being provided in each option.

Up to	Car	Bus	Taxi	Walk	Cycle	Total
Option 1, 1A, 2						
2022/23	86	6	8	204	2	305
2024/25	136	10	12	323	3	485
2035/36	523	39	47	1,239	11	1,860
2049/50	1,051	118	143	3,748	34	5,093
Option 3						
2022/23	86	6	8	204	2	305
2032/33	136	10	12	323	3	485
2042/43	521	39	47	1,239	11	1,858
2049/50	1,100	118	143	3,748	34	5,142

Table 28 Estimated Additional Daily Travel Demand due to Exogeneous Factors

7.2.2 Exogenous demand grows almost six times in a span of twenty years from 2022/23 to 2042/43. As discussed above, this can be attributed to the combination of local population growth and jobs and services growth in Cardiff and the wider area that will produce this growth.

7.3. Endogenous Growth

7.3.1 The estimated 15% increase in demand due to an additional train service will result in travel demand increasing from 2023/2024 and is shown in Table 29. This demand will be same for all the options and will be a one-off increase from the year when the train service starts operating.

From	Car	Bus	Taxi	Walk	Cycle	Total
2023/24	64	5	6	153	1	229

Table 29 Estimated Additional Daily Travel Demand due to Endogenous Factors

7.4. Impact of Car Parking

7.4.1 As explained in Chapter 5, there are two components of additional demand due to additional car parking, these are 'Induced Demand', and 'Station Choice Shift' from Barry and Cadoxton stations. This demand is presented in Table 30. The induced demand is lower in 2022/23 compared to 2023/24 as explained in Chapter 6. It will be same for both design scenarios and is expected to remain constant after the second years growth.

From	2022/23	2023/24 Onwards
Options 1, 1A, 2		
Induced Demand (effect of making it easier and more convenient to park)	30	56
Station Shift (change from car to Barry or Cadoxton to car to Barry Docks)	112	112
Total	142	168
Option 3		
Induced Demand (Car)	30	56
Station Shift (Car)	191	191
Total	221	247

Table 30 Estimated Additional Daily Travel Demand due to Car Parking

7.4.2 The station choice shift of 112 trips in options 1, 1A and 2, and 191 trips in Option 3 is because of the transfer of trips from Barry and Cadoxton stations.

7.5. Impact of Bus Interchange

7.5.1 The impact of the bus interchange on overall travel demand at Barry Docks Station by different modes is presented in Table 31.

From	Options 1, 1A, 2	Option 3
Induced Demand (effect of having the interchange encourages more use, see para 6.5.7)	12	12
BCMCM Mode Choice Model (from 'bus direct to destination' to 'bus – rail')	35	39
Station Shift (use bus to Barry Docks instead of Barry or Cadoxton)	10	10
Access Mode Choice Shift (currently arrive by another mode, not bus)	22	24
Total Increase in Bus Demand	79	85

Table 31 Estimated Increase in Daily Travel Demand at the Bus Interchange

The current daily demand of around 24 bus trips (about 2% of mode arrivals, see Table 11) is expected to rise to 79 trips with a bus interchange on the southern side of the station and 85 trips on the northern side. The main contributors to this increase are expected to be the shift in trips which are currently undertaking a direct journey to Cardiff and the shift from other access modes to bus.

7.6. Impact of Walkways and Cycleways

7.6.1 An assumed 1% increase in induced demand from improved walkways and cycleways results in 8 additional walk trips on a daily basis. This demand will be same for both the scenarios and is expected to remain constant in the following years.

7.7. Estimated Travel Demand at Barry Docks Station

7.7.1 Table 32 shows how the different components of demand build up for design options 1, 1A and 2 which include the bus interchange on the southern side and a net increase of 67 car parking spaces. In the base (2018/19) there were an estimated 1,138 trips a day through Barry Docks Station, by 2035/36 there are anticipated to be around 3 times more, with 3,460 trips. Some of the key results are as follows;

- The greatest increase comes from year on year exogenous growth. By 2035 this is expected to produce 1,860 additional trips.
- The increase in rail frequency is expected to add a further 229 trips per day.
- 112 rail passenger journeys a day are anticipated to come from existing rail users that currently park at either Barry or Cadoxton.

Type of Demand	2018-19	2022-23	2024-25	2035-36	2049-50
Base Demand	1,138	1,138	1,138	1,138	1,138
Exogeneous Demand		305	485	1,860	5,093
Service Related Demand		-	229	229	229
Induced Demand due to Parking		30	56	56	56
Induced Demand due to Bus Interchange		12	12	12	12
Induced Demand due to Walkways		8	8	8	8
Induced Demand due to Cycleways		0	0	0	0
Sub-Regional Modal Shift due to Bus Interchange		35	35	35	35

Station Choice Shift due to Parking		112	112	112	112
Station Choice Shift due to Bus Interchange		10	10	10	10
Access Mode Choice Shift due to Bus Interchange		22	22	22	22
Non Project Related Demand (exogenous and endogenous factors)		**305**	**714**	**2,089**	**5,323**
Project Related Demand		**207**	**232**	**232**	**232**
Total Additional Demand		**512**	**947**	**2,322**	**5,555**
Total Daily Demand	**1,138**	**1,650**	**2,085**	**3,460**	**6,693**

Table 32 Estimated Daily Demand Components (Options 1, 1A and 2)

7.7.2 Table 33 provides the results for Option 3 with the bus interchange on the north side of the railway and additional net parking provision of 130 car parking spaces. By 2035/36 there are anticipated to be more than 3 times more trips than in 2018/19 with 3,541 trips.

Type of Demand	2018-19	2022-23	2024-25	2035-36	2049-50
Base Demand	1,138	1,138	1,138	1,138	1,138
Exogeneous Demand		305	485	1,858	5,142
Service Related Demand		-	229	229	229
Induced Demand due to Parking		30	56	56	56
Induced Demand due to Bus IC		12	12	12	12
Induced Demand due to Walkways		8	8	8	8
Induced Demand due to Cycleways		0	0	0	0
Regional BCMCM shift due to Bus IC		39	39	39	39
Station Choice Shift due to Parking		191	191	191	191
Station Choice Shift due to Bus IC		10	10	10	10
Access Mode Choice Shift due to Bus IC		22	22	22	22
Non Project Related Demand (exogenous and endogenous factors)		**305**	**714**	**2,087**	**5,371**
Project Related Demand		**291**	**316**	**316**	**316**

Total Additional Demand		**596**	**1,031**	**2,403**	**5,688**
Total Daily Demand	**1,138**	**1,734**	**2,169**	**3,541**	**6,826**

Table 33 Estimated Daily Demand Components (Option 3)

7.7.3 Comparing the two scenarios, Option 3 with a bus interchange on the northern side and an additional 130 car park spaces has slightly higher demand compared to the other three design options. The difference in demand associated with this option is from additional car trips resulting from additional parking spaces (Option 3 has 63 more car park spaces than options 1, 1A and 2) and the impact of reduced journey costs to the north side bus interchange.

7.7.4 Table 34 and Table 35 provide a mode wise break up of estimated daily travel demand. Comparing the two tables, the overall car parking demand in option 3 is 127 trips higher than in the other options. An increased bus demand of 6 trips leads to an increase of around 133 trips. Appendix B provides a detailed mode wise break up of all demand components.

Type of Demand	2018-19	2022-23	2024-25	2035-36	2049-50
Car	319	540	680	1,068	1,595
Bus	24	109	117	146	225
Taxi	29	36	46	81	177
Walk	759	957	1,229	2,145	4,654
Cycle	7	9	11	20	42
Total Daily Demand	**1,138**	**1,650**	**2,085**	**3,460**	**6,693**
Total Annual Demand	**287,914**	**417,450**	**527,505**	**875,380**	**1,693,329**

Table 34 Estimated Daily Demand by Mode (Options 1, 1A and 2)

Type of Demand	2018-19	2022-23	2024-25	2035-36	2049-50
Car	319	619	759	1,144	1,722
Bus	24	115	124	152	231
Taxi	29	36	46	81	177
Walk	759	955	1,228	2,144	4,653
Cycle	7	9	11	20	43
Total Daily Demand	**1,138**	**1,734**	**2,169**	**3,541**	**6,826**
Total Annual Demand	**287,914**	**438,702**	**548,757**	**895,873**	**1,726,978**

Table 35 Estimated Daily Demand by Mode (Option 3)

Appendix A. Evidence Gaps, Catalogue of Data, Weightages and other Assumptions

Summary of Evidence Gaps and Alternatives Used

Gaps	Comment/Alternative method
Mode of arrival at Barry Docks Station. Not able to survey owing to Covid situation.	Based on mode of arrival at Barry Station identified within the SEWTM work.
Numbers boarding and alighting at Barry Docks, Barry, Barry Island and Cadoxton not correct in ORR and LENNON data owing to many on-train ticket sales being sold for the end of the stop (Barry Island) in the fare stage. Not able to undertake new counts because of the Covid situation.	Reworked the numbers on the basis of SEWTM findings and validated against census data.
Number of pre-Covid cars parked by staff working at the Docks Office and number using the train. Not able to undertake new counts owing to the Covid situation.	Based on anecdotal evidence of John Dent and Lucy Barker at Vale of Glamorgan Council.
Number of cars parked at Barry and Cadoxton stations in the pre-Covid situation.	Based on anecdotal evidence and Google Satellite views.
Number of cars parked on street near Barry and Cadoxton stations in the pre-Covid situation.	Numbers deduced using a combination of station passenger numbers and percentage mode of arrival at Barry Station as found in SEWTM.
Assumed 15% increase in passenger demand at Barry Docks when the fifth train per hour per direction starts operating from December 2023.	The fifth train increases service levels by 25%. 15% increase in demand would result in between 200 and 250 additional passengers per day at Barry Docks. (229 used in the calculations.) Given that the additional trains would operate to Cardiff and to Bridgend, the average number of users from Barry Docks per additional train seems like a reasonable 10 and 20 persons throughout the day. The 15% assumption will be tested in sensitivity tests.
Assumed 50% increase in bus use relative to existing calculated level of use to account for 'induced' demand growth from providing the bus interchange. The percentage existing station mode access demand by bus is about 2% of all modes so adding 50% would make this 3%.	Note that the induced component does not include other sources of increased demand for bus to the bus interchange including bus passengers using Barry Docks instead of Barry Station and 'direct bus to destination' demand transfer to bus - rail.
Assumed 1% increase in both walking and cycling to account for 'induced' demand.	Same as induced demand by bus.

Catalogue of data used

Census 2011 and in particular population data for VOG, mode of travel to work and origin destination of travel to work.

'Datashine Census' www.datashine.org.uk

'Datashine Commute' www.commute.datashine.org.uk

Local Authority Population Projections for Wales: 2018 based. Welsh Government.

Office of Road and Rail (ORR) annual station usage data.

LENNON data. Station origin and destination data provided by Transport for Wales for 2018/19. Based on ticket sales.

South East Wales Transport Model (SEWTM) data including mode of arrival at Barry Station, mode choice of journeys from the Barry area to Cardiff and percentage of work, non work and other journeys.

Welsh Route Study, 2016, data including forecasts of passenger demand growth for commuting to Cardiff.

Exogenous Demand Growth Estimator (EDGE), Department for Transport. Passenger growth forecasts by station.

Transport Appraisal Guidance (TAG), especially the TAG Databook version 1.13. Department for Transport.

Local Development Plan. June 2017. Vale of Glamorgan. Proposed developments in the area.

Google Maps. Directions and journey times functions.

Weightages and other assumptions

Weights are used in the models to reflect the relative value people generally put on different aspects of a journey. So, for example, with a weighted value of 1 for in-bus travel time, a 15 minute bus journey 'feels' like 15 minutes whereas a weight of 4 for the 'walk to the bus stop' element makes an actual 5 minute walk 'feel' more like 20 minutes. The weightages are a way to ensure that the models take account of the overall generalised journey time and cost of journeys otherwise the model results would not represent what is actually likely to occur in real life. The weights are based partly on experience from schemes elsewhere but they are also adjusted within the base line models so that the base year modal split is generally reflective of the real life modal split. Weights are fixed to their base year values in the forecast years.

- Car to Cardiff
  - Car Travel Time: 1
- Bus to Cardiff
  - Walk to Bus Stop: 4
  - Wait time at Bus Stop (Assuming Avg. 5 min): 6

- In-Bus Time: 1
- Walk Time from Bus Stop to Destination (Assuming Avg. 6 min): 4

- Train to Cardiff
  - Wait time at Rail Station: 1.2
  - In-Train: 1
  - Walk Time from Train Station to Destination: 1.2
  - In-Train Time from Barry: 25 minutes
  - In-Train Time from Barry Docks: 22 minutes
  - In-Train Time from Cadoxton: 19 minutes
- Walk to Station
  - Walk Time: 1
- Car to Station
  - Car Travel Time: 4.5
  - Car Time Pre-Covid: 1.3
- Taxi to Station
  - Taxi Travel Time: 9
  - Taxi Time Pre-Covid: 1.3
- Bus to Station
  - Walk to Bus Stop (Minimum 6 min): 4
  - Wait time at Bus Stop @ Average 5 minutes: 6
  - In-Bus: 1
  - Walk Time from Bus Stop to Destination @ Avg. 2 min: 4
  - Additional Wait Time for Bus Passengers @ 2.5 min: 1.75
- Parking
  - Parking Weightage: 0.3
  - Parking at Barry: 0.80
  - Parking at Barry Docks: 0.72
  - Parking at Cadoxton: 0.60

- Car Mileage: 11km/litre; Cost of fuel: £1.37/litre (average level pre-Covid)
- Bus Fare: Cardiff 4-week Weekly Bus Pass: £67; Average number of trips per month: 40 (Cardiff Bus website)
- Train Fare: Barry to Cardiff Monthly rail Pass: £74.5; Average number of trips per month: 40 (National Rail website)
- Bus Fare: Barry Only 4-week Weekly Bus Pass: £47; Average number of trips per month: 40 (Cardiff Bus website)
- Taxi Fare: £3 for first 0.8km and 20p for every 0.2km afterwards (Vale of Glamorgan website)
- Value of Time (Commuting): £0.121/ trip (TAG databook)

Appendix B. Estimated Daily Demand (By Mode)

Daily Travel Demand (Options 1, 1A and 2)							
		Mode	**2018 -19**	**2022-23**	**2024-25**	**2035-36**	**2049-50**
Base Demand		Car	319	319	319	319	319
		Bus	24	24	24	24	24
		Taxi	29	29	29	29	29
		Walk	759	759	759	759	759
		Cycle	7	7	7	7	7
		Total	**1,138**	**1,138**	**1,138**	**1,138**	**1,138**
Induced Demand	**Exogeneous**	Car		86	136	523	1,051
		Bus		6	10	39	118
		Taxi		8	12	47	143
		Walk		204	323	1,239	3,748
		Cycle		2	3	11	34
		Total		**305**	**485**	**1,860**	**5,093**
	Service	Car		-	64	64	64
		Bus		-	5	5	5
		Taxi		-	6	6	6
		Walk		-	153	153	153
		Cycle		-	1	1	1
		Total		**-**	**229**	**229**	**229**
	Parking	Car		30	56	56	56
	Bus IC	Bus		12	12	12	12

	Walking	Walk		8	8	8	8
	Cycling	Cycle		0	0	0	0
	Total (All Modes)			**355**	**790**	**2,165**	**5,398**
Regional Modal Shift Bus IC		Bus		35	35	35	35
Station Choice Shift	**Parking**	Car		112	112	112	112
	Bus IC	Bus		10	10	10	10
Access Mode Choice Shift	**Bus IC**	Car		-7	-7	-7	-7
		Bus		22	22	22	22
		Taxi		-1	-1	-1	-1
		Walk		-14	-14	-14	-14
		Cycle		-0	-0	-0	-0
	Non Project Related Demand			**305**	**714**	**2,089**	**5,323**
	Project Related Demand			**207**	**232**	**232**	**232**
	Total (All Modes)			**512**	**947**	**2,322**	**5,555**
Total Daily Demand			**1,138**	**1,650**	**2,085**	**3,460**	**6,693**

Daily Travel Demand (Option 3)							
		Mode	**2018-19**	**2022-23**	**2024-25**	**2035-36**	**2049-50**
Base Demand		Car	319	319	319	319	319
		Bus	24	24	24	24	24
		Taxi	29	29	29	29	29
		Walk	759	759	759	759	759
		Cycle	7	7	7	7	7
		Total	**1,138**	**1,138**	**1,138**	**1,138**	**1,138**
Induced Demand	**Exogeneous**	Car		86	136	521	1,100
		Bus		6	10	39	118
		Taxi		8	12	47	143
		Walk		204	323	1,239	3,748
		Cycle		2	3	11	34
		Total		**305**	**485**	**1,858**	**5,142**
	Service	Car		-	64	64	64
		Bus		-	5	5	5
		Taxi		-	6	6	6
		Walk		-	153	153	153
		Cycle		-	1	1	1
		Total		**-**	**229**	**229**	**229**
	Parking	Car		30	56	56	56
	Bus IC	Bus		12	12	12	12
	Walking	Walk		8	8	8	8

	Cycling	Cycle		0	0	0	0
	Total (All Modes)			**355**	**790**	**2,163**	**5,447**
Regional Modal Shift Bus IC		Bus		39	39	39	39
Station Choice Shift	**Parking**	Car		191	191	191	191
	Bus IC	Bus		10	10	10	10
Access Mode Choice Shift	**Bus IC**	Car		-8	-8	-8	-8
		Bus		24	24	24	24
		Taxi		-1	-1	-1	-1
		Walk		-15	-15	-15	-15
		Cycle		-0	-0	-0	-0
Total Additional Demand	**Non Project Related Demand**			**305**	**714**	**2,087**	**5,371**
	Project Related Demand			**291**	**316**	**316**	**316**
	Total (All Modes)			**596**	**1,031**	**2,403**	**5,688**
Total Daily Demand			**1,138**	**1,734**	**2,169**	**3,541**	**6,826**

Appendix C

Barry Dock Interchange Weltag Stage 2 Review Meeting.

22nd April 2021.

Attendence: Cllr L Burnett. (LB) Deputy Leader, Vale of Glamorgan Council

Cllr P Drake. (PD) Vale of Glamorgan Council

Cllr I Johnson. (IJ) Vale of Glamorgan Council

Cllr J Aviet. (JA) Vale of Glamorgan Council

Cllr Charles. (JC) Vale of Glamorgan Council

Mr T Cotton. (TC) Road Haulage Association.

Mr D Crutcher.(DC) Network Rail.

Ms M Wright. (MW) Network Rail.

Ms C Mabbs. (CM) Transport for Wales

Mr M Gilbert. (MT)Transport for Wales.

Mr R Jones. (RJ)Transport for Wales.

Mr A Edwards (AE) Transport for Wales.

M G Stevens. (GS)Cardiff Bus.

Mrs C Cameron. (CC) Cardiff City Region.

Mr T Cahill. (TCa) Amey.

Mr P Beecham. (PB) Amey.

Mr W Murphey. (WM)Amey.

Mrs E Reed. (ER)Vale of Glamorgan Council.

Mr K Phillips. (KP) Vale of Glamorgan Council.

Mr M Clogg. (MC) Vale of Glamorgan Council.

Mr J Dent. (JD) Vale of Glamorgan Council.

Apologies:

Cllr N Moore. Vale of Glamorgan Council.

Cllr M Wilkinson. Vale of Glamorgan Council.

Cllr Collins. Vale of Glamorgan Council

Cllr Brookes. Vale of Glamorgan Council

The meeting was chaired by Emma Reed who is the Head of Neighbourhood Services and Transport. ER introduced the purpose of the meeting and queried if the representatives had all received copies of the papers from Amey via the "We Transfer" route that was being used. A number of representatives indicated that they had not received papers and JD asked them to leave their contact e-mails in the meeting chatbar in order that the documents could be forwarded.

ER briefly referred to the Terms of Reference of the Review Group indicating that the feedback from the Group would be reported on to the Cabinet of the Council along with the Stage 2 Report. It is expected that this will happen in June 2021. Notes of the meeting will be circulated.

(GStevens,T.Cotton, MClogg, PDrake requested copies)

ER asked each attendant, in turn, to introduce themselves.

PB of Amey was then asked to make a presentation to the Group around the Stage 2 Weltag findings. PB took the Group through the basis of the study and its current findings, to date, spending a little time at the end discussing the various funding routes in play and their likely impact upon the delivery of the scheme. The conclusion was that the options concentrating the bus interchange to the south of the main line are preferred. The scheme to the north is possible but doesn't create the "vision" that concentrating on the south would achieve.

PB completed the presentation and ER asked CC to open the questioning.

CC indicated that the CCR/WG programme had originally intended to be a three year programme finishing in 2021-22. Following a review a further year has been added to the programme to enable a variety of the Metro Plus programme projects to be delivered. It was critical that any projects being funded now be delivered within the funding window. Her view was that greater certainty could be achieved by concentrating on those elements south of the main line as this land was within the control of the Council.

At this point ER had a screen freeze. JD took over the Chair and indicated they would wait for ER comments on the CC points. He asked PB to clarify the position regarding cost estimating ie the certainty around the cost estimate figures. PB confirmed that the figures in the presentation included a risk assessment and that once the various risk factors had been mitigated it was expected that the scheme costs would reduce (Optimism bias was set at 42% and risk at 15%%).

JD went on to advise the Group the background to the land holdings north of the line. The land had been auctioned in around 2007 by the British Rail Residuary Body and had been acquired by a company formed for its acquisition called Rothsay Limited. Rothsay were in liaison with the Council regarding the scheme but their preference was to maximise the amount of land utilised for a housing scheme north of the line. There was a time factor (risk) around some of these parcels of land as they were tenanted and so either alternative accommodation or a negotiated agreement might be required. In any event the landlord would have to serve appropriate notice which is seen a time risk by the officers reviewing the scheme programme. JD indicated his support for a "phased" approach to delivering

elements of the scheme and suggested alternative funding sources (WG Regeneration Tri programme) might be required given the limited funding window available via CCR/WG (LTF).

At this point ER returned to the meeting and took over the Chair.

PD asked a question whether officers had made any progress regarding the adoption of Subway Road. MC indicated that the lower section of Subway Road was part of the adjacent housing scheme development and so good progress was being made regarding its adoption. With regard to the upper sections the position was less clear but MC indicated that communication was taking place and that the Council, though not owning the road at that location, had indicated a willingness to keep it in good repair to enable its adoption.

(JD added in the summing up at the end of the meeting that if land is acquired for the transport and housing schemes being proposed that, in all likelihood, the road would also be acquired as it is unlikely that the landowner would just maintain that parcel. If that happens the road will be maintained by the Council but may not need to be "adopted".)

GS asked if in addition to the study the Council could look with Cardiff Bus at a number of the routes around the town centre, in particular, the opportunities for access through the pedestrian zone, the number of stops and layover at the main library building. ER suggested that her and KP meet separately with GS to discuss the options.

IJ indicated his support for such discussions indicating the benefit of having consistent bus connections around the town and particularly having the option to catch a bus instead of having to walk from the station up the hills perhaps at the end of a days work. He asked to be advised as to progress.

LB suggested that gender and safety are issues to be considered and suggested research that women use buses more then men. She pointed out that the Castleland Ward is the most deprived Ward in the Vale and would benefit from the scheme but wanted to know is "phasing" of the works might impact upon safety. JD indicated that safety measures would need to be reviewed but could be considered as individual projects. As an example he referenced the work undertaken a few years ago on the Powell Duffryn Bridge subway and the lighting system that had been installed in co-operation with Network Rail. JD suggested that S106 funding was still available from a variety of sources and meetings would be convened shortly to discuss that spending. CC indicated that CCR are always keen to consider safety matters.

KP indicated that the project would need to consider a variety of funding sources and part of the consideration would be the demand for parking and, in particular, whether that parking lost to the development of the bus interchange south of the line would need to be fully replaced with parking north of the line and when. ER indicated that a post covid review of parking demand at the Docks Offices would aid that discussion and JD indicated that a Phase 2 development north of the line may still be required.

PD indicated that she currently drives to the station but would welcome a wider network of bus routes.

KP indicated that integrated ticketing is still a key part of the project.

GS responded in the chatbar to a question from CC around new bus procurement being supported elsewhere in the region. He indicated that whilst that particular procurement was a specifically funded proposal that alongside this project some consideration might be given to the fleet utilised locally (perhaps smaller buses) and Section 106 funding of new fleet was always a welcome incentive whilst new routes got off the ground. ER indicated that the allocation of Section 106 funds to bus subsidy continued to be an option and is discussed in the round.

IJ indicated that Active Travel improvements in the area were also critical to the scheme following the positive consultation exercise under way. He discussed the need for the development of bus linkages to The Quays housing developments.

ER asked the Group if there were other matters to discuss.

MG asked that the Active Travel mapping exercise is taken into account. He indicated a concern about what he felt was an overemphasis on the provision of car parking within the scheme when the policy directives push towards modal shift.

ER queried if there is a need to build more car parking.? MG agreed it was a question to ask.

(JD Note. 65 of the 130 space car park proposed north of the line are replacement parking for that lost to the bus interchange and for which Docks Office demand will need to be analysed. The Impact Report indicates car parking demand for the remainder until 2035. Possible demand for local car charging spaces would make up 20 of the remaining 65 spaces. The work around electrical car charging has not yet indicated how local provisions might be made for the Ward and the “on street” versus grouped provision question will continue to be analysed).

TC indicated the scheme should make it as easy as possible for trip movements and that the preference is generally for large vehicles. He indicated issues around IR35, driver shortages, European and other drivers returning home, not being “essential workers” and an indication in overall terms costs will probably rise.

RJ indicated support for the scheme and concluded also that “phasing” will be important. He pointed out that Network Rail is the station owner but that Transport for Wales will be involved. Any work requiring their involvement will need to follow the appropriate “stage gates”.

AE indicated that the majority of works appeared to be outside the Network Rail ownership.

DC indicated he was co-ordinating the TfW/NR work around cctv at the station.

AE asked a question about management and maintenance going forward. ER indicated that would need to be part of the Stage 3 reporting and negotiation but other station upgrades had been co—ordinated by the LA’s regionally to achieve interaction of trains and buses.

PB indicated that NR had advised they wished to see a preferred scheme before getting into the detail of the works.

In conclusion ER felt that the main points going forward would be:

- Moving the scheme forward via the Stage 3 Report
- Preference to the Bus interchange south of the line
- General agreement to the need to consider phases to tie in with the funding programme windows.
- Further consideration by the Council of the need to replace parking in a preferred scheme.
- The benefits of achieving the larger preferred scheme through multiple funding sources.

ER indicated that she would give until 30th April 2021 for any written responses and such response would be added with the meeting minutes to the proposed Cabinet report.